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School Disaster Readiness:
Lessons From The First Great
Southern California Shakeout

For Earthquake Country Alliance
Los Angeles California USA
2nd Edition, November '09

Assessment & Planning

Physical & Environment Protection

Response Capacity Development



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As a reminder to any who may doubt the importance and effectiveness of their efforts, and in recognition of all of the hidden heroes whose courageous leadership may never be as dramatically vindicated or appreciated, we dedicate this report to school principal Ye Zhiping.

**School Disaster Readiness:
Lessons from the First Great Southern California ShakeOut**

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School Disaster Readiness: Lessons from the First Great Southern California ShakeOut

Risk RED &
Coalition for Global School Safety & Disaster Prevention Education:
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Executive Summary

The Great Southern California ShakeOut on November 13th, 2008 initiated the largest community-wide earthquake drill in U.S. history with 5.5 million participants. Almost four million children (80% of Southern California students in Kindergarten through 12th grades) participated in the drill through their schools. Two hundred and seven separately governed school districts and 650 private schools in 8 counties (including 1 county outside Southern California) participated.

Schools in California are required to develop and implement disaster management plans based on national emergency management systems. The ShakeOut provided an important opportunity for schools to test these plans in a community-wide earthquake simulation drill based on a scientifically selected scenario for a likely earthquake in the area. It also provided an opportunity for researchers to investigate current school disaster prevention and preparedness in California, with lessons to be drawn for school safety worldwide.

To leverage this ShakeOut drill, Risk RED - an international, California-based non-profit, with support from the Earthquake Country Alliance (ECA) - teamed with Western Washington University's Institute for Global and Community Resilience (IGCR) and the Coalition for Global School Safety and Disaster Prevention Education. Together they took a participatory action approach to research the state of school disaster prevention and preparedness in California and its implications for school disaster management worldwide.

The Risk RED team began by updating their international *School Disaster Resilience & Readiness Checklist* (www.riskred.org/schools) and preparing *School Drill Model and Templates* based on good practices by Los Angeles Unified School Districts and other districts in California (www.shakeout.org/schools/). Self-evaluation checklists included in these materials were based on the premise that the most valuable element in drill participation would be the process of self-reflection beginning before and continuing after the drill itself.

A review of history and research literature on school disaster preparedness in California established a background for the current research. A *School Disaster Preparedness Survey* and *School Post-Drill Evaluation Survey* were designed to aggregate school self-evaluation observations. The surveys were distributed via the ShakeOut website to registered schools. An international team was assembled to participate with local schools in on-site observation in an effort to fill some long-standing gaps in scientific research on community disaster risk reduction and school safety and lessons of importance internationally.

Structural safety of some school buildings remains a serious concern in California. With 75 years of public policy leadership to support school safety, new school construction standards are higher than those for regular buildings, and come close to assuring life safety. Advice regarding non-structural mitigation measures (fastening furnishings etc) has been in place for 20 years and requirements for such mitigation has been in place for ten years. While this progress is both reassuring and laudable four areas of concern remain:

- There are still some 7,537 school buildings in California constructed before 1978 that are of questionable safety
- Portable classrooms, which may account for 1/3 of all classrooms in California, may be particularly hazardous if not properly supported and fastened
- Private schools are not required to meet these same construction standards
- Non-structural mitigation measures continue to require consistent application to protect children and adults from both injury and death

Each school district and private school is strongly recommended to conduct its due diligence and report on these issues transparently to parents, staff and students, so that collective action can be taken to address these serious vulnerabilities. Neither fear nor California's persistent financial crisis in the education sector should be acceptable excuses for inaction.

California's Standard Emergency Management Systems has long required school disaster planning and drills for in both public and private schools K-12. School board members and school administrators are responsible for compliance, with an expectation of participation from school site councils and members of the school community. Similarly California schools are now expected to fulfill National Incident Management Systems (NIMS) implementation activities in close coordination with members of their local government and emergency response community (<http://rems.ed.gov/index.cfm?event=nims>). For 16 California districts and county offices receiving federal preparedness funding through the Education Department's Readiness and Emergency Management for Schools (REMS) this year, NIMS is mandated (<http://www.schoolsafetypartners.org/Funding/184.html>). In spite of these mandates plans and drills, a very large proportion of school districts have not fully engaged in these requirements.

Participation in the ShakeOut was remarkably high overall. It was particularly impressive from an international standpoint, to see ordinary citizens of all ages, in their homes, schools and workplaces, engaging in an almost real experience of disaster management at the community level. Nonetheless, a mixed picture of preparedness emerges from *school preparedness* and *school post-drill surveys* designed by Risk RED and disseminated by ECA

to registered schools. The surveys likely represent the most aware and concerned school administrators and teachers and have not yet tapped perceptions of students and parents.

School Preparedness Survey: Our school preparedness survey was presented in three sections, covering assessment and planning, physical and environmental protection and response capacity development and received responses from 197 individual schools and 9 school districts. It identifies strengths and weaknesses in the current school disaster management. Almost all school staff members are apparently aware that they are mandated disaster service workers. Almost all schools have disaster committees and disaster plans, but only 25-33% of these involve parents and less than 20% involve students and other community members. While schools notify parents about drills, most schools do not encourage either staff or students to prepare at home – forfeiting this powerful learning opportunity.

Consistent with Kano and Bourque's 2005 survey findings while schools have fire extinguishers and first aid supplies, many lack emergency water supplies, emergency lighting, emergency food supplies, supplies for children with special needs and any kind of shelter. Most school staff have first aid training, know how to turn off utilities, use a fire extinguisher and are familiar with student release procedures. However staff training in SEMS/NIMS/CERT organization and response skills and inter-agency coordination are notably weak areas. Off-site evacuation plans, back up of educational records, school continuity plans, and transportation planning for disasters with onset during the school commute are particularly weak.

There are other areas of strength. Almost all schools have smoke-detectors, fire alarms and fire suppression equipment maintained and clearly marked evacuation routes. More than 2/3 of schools now make it a practice to fasten tall and heavy furnishings and other non-structural hazards. The overwhelming majority maintain up-to-date student emergency release contact information. Similarly students have practiced 'drop, cover and hold-on' in their classrooms and building evacuations and do so in an orderly fashion. However there are areas of weakness as well: When students are outside or in classrooms without desks, they are unsure of how to protect themselves.

Although most classrooms have emergency "Go-Bags" and almost all of these contain a current class roster, most do not have a bucket to serve as a portable latrine (particularly in case of a lockdown emergency). Only a small percentage of schools involve families in providing student personal emergency supplies – a missed opportunity for both learning and sharing responsibility.

School Post-Drill Survey: The post-drill survey received 378 individual and 30 district responses capturing response that represent more than 750,000 students. The overwhelming majority of all surveyed schools practiced both 'Drop, Cover and Hold' as well as building evacuation and well over 100,000 students were in schools that conducted full simulation drills. Few problems were encountered. Respondents overwhelmingly and enthusiastically identified the drill as an important learning experience, with more than 75% of individual schools saying that the ShakeOut should be conducted annually, with the intention of continuous improvement of mitigation and response and greater public awareness. Post-drill evaluation remained mostly informal, but with significant numbers engaging in staff meeting discussions, reports and some classroom discussion (higher in private schools). Most schools that did full response simulation exercises met their expectations, and many exceeded them. Dissatisfaction was

highest in the areas of communication. In a real disaster, schools also expressed concern regarding shelter and nutrition, student reunion, health and educational continuity.

While students were actively engaged in the drill itself, the drill was largely unconnected to student experiential learning about disaster prevention in their community and in their own lives. There is potential here for a great deal more creativity and support to make better use of the time spent in drills and in reflection and action.

School-site Observations and Debriefing: School site observations were conducted by an international team of school safety activists from Algeria, Canada, Japan, Nepal, , Panama, Turkey, Venezuela, the United Kingdom, and the United States. Team members observed the drill in one public middle school, one public high school, one private elementary school and one district emergency operations center. Observations confirm that progress in school disaster management in California is in many cases exemplary, with school leadership, teachers, staff, students and parents all taking their responsibilities and the drill itself seriously.

Detailed observations revealed two striking strengths: the **seriousness and conscientiousness** with which school leadership, staff and students approached the drill and the tremendous learning that comes from long-term engagement in drills and the new discoveries and new solutions that emerge from **reflection and action after** each drill.

Persistent areas of concern related to **awareness and learning from school drills** were uncovered in both school-site observations as well as through an open debriefing. These concerns are listed below.

- **Wide participation is needed** for successful school disaster prevention and response planning. This includes leadership from school board members and administrators as well as initiative from teachers and staff. It also can and should include students, parents, and community members much more frequently.
-
- The principles underlying '**Drop, Cover and Hold**' (get down low, make yourself small, keep your head and neck covered) are not well-understood and therefore not well-practiced in settings without desks or tables.
-
- The **reflection, discussion and planning that takes place after the drill** may indeed be the most important part of the learning experience. Drill guidance materials need to emphasize that all drill participants can and should be part of this essential activity.
-
- **Drills require realism and variety** in order to maximize their effectiveness. Scenarios should include elements of the unexpected that require improvisation. Drilling with advance notice, during a predictable period of the school day, seriously limits learning opportunities for all involved.
-
- For students the learning experience can be significantly enriched through **experiential learning**, including school and community disaster prevention activities, and activities to coincide with and follow the drill itself.

- **Child-to-family transmission** of disaster prevention lessons holds powerful and untapped potential.
- **Students with disabilities** may have very specific needs in case of emergency that should be anticipated routinely as part of their Individualized Educational Plans (IEPs). This is something that special education teachers and parent advocacy groups might initiate and promote.

Specific areas of concern for **disaster response preparedness in California schools** include the following.

- **Student accounting** and discovery of missing or injured would be speeded by printed rosters with student photos and pre-printed class status report forms in classroom 'Go-Bags' to aid accountability and rapid communication. Physically separate collection and prominent visual flagging rosters with missing or extra students might help to expedite accounting and search for missing children in large schools.
- **Student release** must be practiced fully with parent to discover solutions to speed time to reunification. Prominent moveable signage for the assembly area will be a must for larger schools. Signage around schools will be needed to guide parents and community responders.
- **Marking on classroom doors** should be unambiguous so that teacher-made assessments immediately upon exit can be easily distinguished from specific search-and-rescue-team checks at a later time.
- **Plans for children on school buses** are currently rudimentary and the possibility of an earthquake during the school commute has clearly not been foreseen in most school disaster plans. Training of bus drivers, emergency contact and medication information on buses, protocols for identifying and getting children to the nearest school, preparedness for reception at any public school, agreements with teachers and classified staff unions will all need thought in the context of community-wide planning.
- **Plans to fulfill community shelter functions** should be practiced with local Red Cross chapters and organizations serving the most vulnerable in local communities, and with parent volunteers especially to discover details relevant to rapid resumption of normal daily activities (including education).

Introduction

The 2008 Great Southern California ShakeOut

The 2001 FEMA Working Group on Catastrophic Disasters, with scientifically-based prescience identified the three biggest U.S. urban disaster scenarios:

- Terrorist attack on New York City
- Hurricane in New Orleans
- Earthquake in California (FEMA, 2001).

When it comes to earthquakes, there are several expected 'big ones' in California. These are not an "if" events. They are "when" events. These earthquakes will be larger than anyone alive has experienced before, causing unprecedented damage — greatly dwarfing the massive damage that occurred in Northridge's 6.7-magnitude earthquake in 1994 or in the Loma Prieta earthquake of 1989. Minimizing the impacts of this known and expected hazard and preventing disasters depends upon exercising and acting upon our collective learning and imagination. What we do now, before a big earthquake, will determine what our lives will be like afterwards.

At 10am on November 13th 2008, five million Southern Californians took part in *Great Southern California ShakeOut*, the highlight of a week of special events organized by the Earthquake Country Alliance. The ShakeOut drill featured the first large-scale community-wide scenario exercise and drill in the United States. The drill was based on a scientifically developed scenario of a 7.8M earthquake occurring along the southern San Andreas Fault, lasting for two minutes.

The purpose of the drill was to simultaneously engage emergency services, first responders, businesses, schools, hospitals, faith-based communities, neighbors, citizens and policy makers in reviewing, practicing and improving upon their disaster risk reduction measures, their emergency plans, and their readiness to respond. It provided an unprecedented opportunity to conceptualize this type of event before it strikes.

Large-scale drills and simulations have been a cornerstone of disaster preparedness. They are considered a learning activity designed to practice arrangements, plans, and responses to emergency and disaster, and to assess the effectiveness of preceding risk reduction and preparedness efforts. What is important is that these drills go beyond rote participation in a professionally led experience, and instead are truly participatory. Drills illuminate roles and responsibilities, arrangements and connections for the complex coordination of disaster response. Demonstrated proficiency in a simulation has proven to result in better preparedness in real life. Drills help to visualize possible scenarios, consider and rehearse frightening events in a less threatening environment, encourage dialogue that might otherwise be avoided, showcase institutional and neighborhood efforts, and create pressure and constituent support for increased preparedness. (Simpson 1996, Simpson & Sephto, 1998, Simpson, 2002).

Disaster researchers despair that the test of disaster preparedness is mostly measured after a large hazard strikes – a time when the shortcomings are painfully obvious. Thus potential research data becomes impossible to obtain, and the lessons learned come too late. When 50 agencies and 1,000 participants took part in the New Zealand Ministry of Civil Defence and Emergency Management's nationwide drill in 2006, the education sector was notably absent from the list of partner organizations.

International School Safety and the Shake-Out

In the wake of the deaths of tens of thousands of school children in recent earthquakes in Gujarat, Kashmir, and Sichuan, the destruction of schools and avoidable deaths in cataclysmic events like the Indian Ocean tsunami, and Cyclone Nargis, the massive disruption to education following Hurricane Katrina and predictable recurring hazards such as annual floods throughout Asia, the need for school disaster prevention has become ever more urgent. The 2006-2008 United Nations International Strategy for Disaster Reduction, "Disaster Preparedness Begins at School" campaign brought together advocates committed to the long-term tasks of school safety. In 2005 the Coalition for Global School Safety was born, spawning a social network of school safety advocates launched in January 2009 (<http://cogssdpe.ning.com>).

With 3.6 million children enrolled in 262 public school districts in seven counties in southern California, a major earthquake in the region could cause an unprecedented catastrophe for schools, children and teachers. The announcement of the first California ShakeOut immediately caught the attention of international school disaster prevention advocates. The ShakeOut promised a tremendous opportunity to study and learn about school disaster prevention and preparedness *before* a catastrophic event, with implications for children everywhere. School seismic safety has been a policy and a community concern in California for 75 years, since the 1933 Long Beach earthquake. School emergency planning has been required statewide since 1984. However, the gap between mandates and practice is often wide. Have these far-sighted policies been effective? Have they taken root in a population that was not born, or not present at the time of the 1994 Northridge earthquake? What is the state of school disaster readiness and resilience today? How far do we still have to go?

To leverage this ShakeOut drill, Risk RED - an international, California-based non-profit, with support from the Earthquake Country Alliance (ECA) - teamed with Western Washington University's Institute for Global and Community Resilience (IGCR) and the Coalition for Global School Safety and Disaster Prevention Education. Together, they took a participatory action approach to research the state of school disaster prevention and preparedness in California and its implications for school disaster management worldwide.

The Risk RED team began by preparing resources for participating schools; updating their international *School Disaster Resilience & Readiness Checklist* (www.riskred.org/schools) (See Appendix) and preparing *School Drill Model and Templates* based on good practices by Los Angeles Unified School Districts and other districts in California (www.shakeout.org/schools/). Self-evaluation checklists included in these materials were based on the premise that for the most valuable element in drill participation would be the process of self-reflection beginning before and continuing after the drill itself.

Research Activities:

The research approach consisted of three major activities all of which are covered in this report. We designed these activities to enable us to identify strengths and weaknesses in school disaster prevention and preparedness in California and to make recommendations of relevance to both local and international school safety.

1. We reviewed the history and research literature on school disaster preparedness in California to establish a background for current research.

2. We designed a *School Disaster Preparedness Survey* and *School Post-Drill Evaluation Survey* to enable aggregation of school self-evaluation observations. These surveys were distributed via the ShakeOut web-site to registered schools. The ‘preparedness survey’ received 197 complete responses from individual schools and nine from school districts. The ‘post-drill survey’ received 378 complete responses from individual schools and 30 from public school district representatives.

3. In cooperation with the Coalition for Global School Safety and Disaster Prevention Education (COGSS&DPE) and with support from ECA and ProVention Consortium we assembled a voluntary international research team of 13 school safety activists. This team formed four on-site ShakeOut observation teams to document and to better understand school preparedness, to contribute to this report, and to share these results internationally.

School Participation in the Great Southern California ShakeOut

Almost four million children and adults were directly involved in the Great Southern California Shake Out through the participation of schools. Registered participants included 207 school districts, 95 additional individual public schools and 650 private schools in eight counties. Schools participated in a range of earthquake preparedness activities from “Drop, Cover, and Hold On”, to school building evacuation, school emergency response coordination, and full response simulation drills using standard emergency response systems. Some schools drilled with local fire and police departments to practice real-time incident command coordination. Millions more were beneficiaries of the ripple effect of children taking these lessons home to their families.

TABLE 1: SCHOOL DISTRICT AND SCHOOL-BASED PARTICIPATION IN SHAKEOUT 2009

County	# School Districts in County ¹	# School Districts Participating ²	K-12 public school Enrollment (2007-2008) ³	ShakeOut 2009 K-12 + adult school participants	ShakeOut 2009 school employee participants
Imperial	17	16	36,000	36,128	4,131
Los Angeles	81	68	1,630,000	1,766,600	182,671
Orange	28	26	503,000	511,356	44,398
Riverside	24	23	422,000	418,651	47,776
San Bernardino	34	25	428,000	332,441	31,967
San Diego	43	27	496,000	376,843	33,706
Ventura	19	6	141,000	38,886	3,130
Kern (not S. CA)	39	16	not included	74,892	7,733
Other				20,988	2,335
TOTAL	262 S. CA. 285 total	207	Approx 3.6 m S. California	3,576,785	357,847

¹ includes Co. Office of Ed. ²Mark Benthien, Earthquake Country Alliance ³ <http://dq.cde.ca.gov/dataquest>

Background

School Disaster Impacts and Key Policy Measures in California

In the past 100 years, eight earthquakes have had significant impacts on schools, children, teachers, and on educational continuity in California. None has taken place during regular school hours. But this, as we know from the recent tragedies in China and in Kashmir, is only a matter of luck. The next one could happen during the school day, or during the school commute, or during before or after school programs.

School earthquake safety has been of concern to both the public and policy-makers in California for 75 years. Seven significant pieces of legislation are milestones in these efforts. While substantial progress has been achieved, substantial challenges have continued to be uncovered as the population exposed to the earthquake hazard has steadily increased, and as the complexity of community resilience to disasters is being understood.

The Field Act, 1933 and the Garrison Act, 1938. Seventy-five years ago, the Long Beach Earthquake of 1933 destroyed 70 schools, while another 120 suffered major damage. Two children died in a school-building collapse. For two years afterwards, children attended schools in tents (COGSS, 2005). This event was a catalyst for change. Within two weeks, Assemblyman Don Field had introduced the Field Act of 1933, California’s first school safety construction legislation, covering new schools. This act was to make new schools safer by requiring higher performance standards for school construction and stringent supervision at the time when there were few construction standards. In spite of the Great Depression, because school was mandatory, funded by the public, and had performed poorly, and because parents were voters, this emergency measure won solid support.

The Garrison Act in 1938 tackled the task of making existing schools safer, requiring examination of pre-Field Act schools and mandating modernization of non-compliant structures. Investigation, however, was not required and the law would not be enforced until the 1968 amendments, when some districts would also received financial support for compliance.

The Field Act has been hailed as a high point in school seismic safety and California schools are considered the safest in the United States. Yet it remains the subject of controversy, with many school facilities managers feeling that its requirements are too stringent and too costly, and many seismic safety advocates feeling that it does not go far enough. The Act requires that structural plans be prepared by licensed structural engineers and approved by an independent state agency (the Division of the State Architect (DSA)). Schools have continuous on-site inspection (rather than periodic), by a DSA approved project inspector. Project architect and engineers must perform construction observation and administration, and a final verified report must be filed by the project architect, engineers, inspectors, testing labs, and the contractor (State of California, DSA, 2008).

The performance level required of schools is just 15% greater than that required for office buildings (whereas hospitals must be 50% greater than a typical office building). Life safety is to be expected from schools, but not necessarily immediate occupancy.

**FIGURE 1 BUILDING CONSTRUCTION PERFORMANCE LEVELS
COMPARED TO FIELD ACT REQUIREMENTS**

Building Construction Performance Levels				
Limited Safety Range			Damage Control Range	
Collapse Prevention	Life Safety	Field Act School Safety	Immediate Occupancy	Operational
Lower Performance ←-----→ Higher Performance				

A 1992 study showed only a 3.5% to 4.0% additional cost impact compared with regular construction. Of that, only one-third is associated with structural improvements and two-thirds are the soft costs for inspection and testing.

Kern County, 1952 – In 1952, the effectiveness of the Act was demonstrated when more than 50% of pre-1933 schools were damaged by the Kern County earthquake. Of the 20 schools seriously affected, most were built before 1933. In this earthquake the potential damage from non-structural building elements such as hanging light fixtures and bookcases was recognized. The **Green Acts, 1967 & 1968**, strengthened the enforcement of construction standards, and set a schedule of seismic retrofitting to be completed by June 1975. **The Geological Hazards Act, 1967** and **Alquist-Prieto Act, 1972** respectively, required a school-site hazards study and prohibited schools from being sited within 50 feet of the trace of a fault that might rupture during the life of the building. Some schools were closed as a result. Geological hazards studies were mandated for new school sites in hazards zones.

San Fernando Valley, 1971 – This earthquake provoked substantial increases in seismic-resistant design requirements that were incorporated into the **1976 Uniform Building Code**. In 1978, the legislature adopted additional improvements to the building code for the design and construction of school-buildings. These superseded performance standards in the Field Act.

Coalinga, 1983 – The Coalinga earthquake registering 6.5M struck at 4:42pm just after the school day. It did minimal structural damage but significant non-structural damage. A report prepared for the San Bernardino County Superintendent of Schools reported as follows:

Large glass windows in the library imploded. If it had been occupied deaths and injuries would have resulted. 1,000 florescent bulbs fell from their fixtures. Fixtures too fell. T-bar ceilings and glued tiles fell. Water pipes were severed and flooded basements to 5 feet. All electrical supplies and switching mechanisms were destroyed. In high school chemistry lab sulfuric acid and other chemicals stored in open cabinets overturned and broke. Acid burned through to the first floor. Cabinet doors sprung open and spilled chemical contents. Toxic fumes permeated the building. File cabinets flew across the room, bookcases, free-standing cupboards, shelving, machine shop lathes, animal cages fell over. Typewriters, movie screens and maps became projectiles.

Lessons learned led to the **1984 Katz Act (amended in 1988)** now found in **California Education Code Sections 35295-35297**. Planning and preparedness are now requirements in all public and private elementary and high schools *with more than 50 students*. The disaster plan is to maintain safety and care of student and staff. It should outline emergency roles, procedures, and ongoing training for all students and staff. The code also requires periodic drills in "drop and cover" and evacuation procedures (quarterly in elementary schools and twice yearly in secondary schools) More complicated drills are to be held once or twice a year and include other emergency response actions such as search and rescue, communications, and damage assessment. Schools are told that they should be prepared to serve as post-disaster shelter for the public. Non-structural mitigation measures are required to ensure the safety of students and staff, and the viability of the school facility during and after an earthquake or other emergency (State of California, 1998 p.7). The importance of this was detailed in California Department of Education Management Advisories in 1991 (MA #94-5). The Katz Act also refers to the personal liability of superintendents and board members for non-compliance. All of these measures have placed responsibility for school preparedness clearly with school boards and school administrators, with an expectation of participation from school site councils and members of the school community.

Loma Prieta Earthquake, 1989 & East Bay Hills Fire, 1991 – In the Loma Prieta earthquake five schools were seriously damaged: Three were pre-Field Act buildings, one a single classroom in a post-Field Act, and one a post Field Act building affected by the nearby collapsed section of freeway. The weakness of many reinforced concrete structures was revealed. Two years later, the East Bay Hills Fire revealed serious concerns about disaster preparedness and response.

The Petris Bill, 1993 (California Government Code Section 8607) required that school districts be prepared to respond to emergencies, consistent with the State's **Standardized Emergency Management System (SEMS)** by 1996. (These regulations can now be found in **California Code of Regulation Section 2400-2450**, at www.calregs.com). Consistency with SEMS strengthened the requirement that schools engage in planning, training, and exercising. Districts not complying risk losing state assistance funds for emergency response-related personnel costs (State of California, 1998).

Public Employees are Disaster Service Workers - California Government Code Section 3100. Public employees, including school personnel, take an oath accepting that when a local, state, or federal disaster has been declared, they may be required to work outside their normal hours and jobs.

Northridge, 1994 – In the 1994 Northridge Earthquake 24 of the 127 affected schools suffered significant structural damage. If the earthquake had struck during school hours, non-structural hazards would have made safe exit impossible for hundreds of children and teachers. Suspended lighting and ceiling systems in 1,500 buildings suffered damage. Falling equipment, file cabinets and other furniture caused significant damage. Many school districts undertook comprehensive non-structural mitigation efforts, fastening furnishings and equipment and new construction now requires more secure lighting installation. However, in many schools these risks remain.

Assembly Bill 300, 1999 required the California Department of General Services (DGS) to **assess the safety of pre-1978 schools** by conducting an inventory of public school buildings (K-12) that are of concrete tilt-up construction and those with non-wood frame walls that do not meet the minimum requirements of the 1976 Uniform Building Code. Wood frame buildings, alterations, additions and relocatable buildings were not included. The resulting **Seismic Safety Inventory of California Public Schools** study, found at <http://www.documents.dgs.ca.gov/Legi/Publications/2002Reports/FinalAB300Report.pdf>, looked at 9,659 buildings based on their original pre-1978 construction documents. Of these, 7,537 buildings (65 million square feet or 14% of the total at the time) were considered more vulnerable. These require detailed seismic evaluation to determine if they can be expected to achieve life-safety performance. In the report, prioritization for retrofit was suggested based on proximity to active faults. Total cost of retrofit was estimated at \$4.5 billion in 2002.

The details were not released to the public due for fear of parental and teacher reactions. The data was available to school boards and district administrators for the asking, but few requested the information, for fear of the substantial planning and financial consequences. The final report became public in 2005. However, since it was a paper study, many of the names and building uses documented may have changed, and many may have received improvements the intervening years, thereby reducing the results of the study to nothing but a vague starting point for inquiry. No systematic effort has yet addressed these potentially hazardous school-buildings.

Structural Safety Concerns in California Schools

Earthquake safety advocates have some remaining concerns about the physical safety of children in California schools.

- The Field Act does not cover either private schools. We do not know how many children attend private schools in buildings built before the 1978 Uniform Building Code standards, or who occupy buildings not designed as schools at all.
- “Portable” classrooms do not have to meet Field Act requirements. In 2001, a Department of Homeland Security survey of school districts found that about 80,000 (30% of the state’s 268,000) K-12 public school classrooms were in “portables”. In 2004 the were an estimated 80-85,000 of these classrooms. The potential hazards in these single rooms, perched on top of concrete or steel supports have been detailed by a local engineer:

“i) If unattached classrooms move relative to their stair systems (which can be structurally separated from the classroom) doors that open outward can be prevented from opening by creation of an offset, gap or obstruction that forms between the classrooms and the stairs during the earthquake, potentially obstructing egress. Obstructed egress coupled with a post-earthquake fire threat can create casualty risks.

ii) Some improperly attached classrooms are on steel or concrete supports that include steel bearing plates and height adjusters. When classroom supports dislodge from the chassis during earthquakes, the steel bearing plates and height adjusters can penetrate through the floor of the classroom unit and protrude into the floor space where occupants may be dropping, covering and holding on under furniture. Occupants may come in contact with the protruding support height adjusters and bearing plates. To date, post-earthquake images document supports protruding through floors, and no records of injuries.

iii) Other risks also common to non-portable classrooms exist such as nonstructural falling hazards from ceiling systems, window breakage, shelves and contents.” (Turner, F. 2008).

- Non-structural hazards apparently persist in many schools as user-provided goods remain unsecured. Codes generally do not covered these items. They can impede evacuation and cause fires. Furniture blocking egress, inappropriate storage hazards, science lab hazards, unrestrained heavy kitchen equipment, electronics and arts studio equipment, and inappropriate installation of remedies can all result in serious injuries (McGavin, 2008).
- The level of safety conferred by the Field Act Standards lies just above life safety and remains below immediate occupancy or operational range. This is not a sufficient target for either educational continuity or for communities to be able to rely upon school as post-disaster shelter.
- California's school funding mechanisms forces each of the 1,000+ school districts to raise the bulk of funds for modernization and new school construction through bonds placed on the ballot put to local voters. While the State matches these (and even tries to

provide incentives for including retrofit with modernization), it means a thousand separate and daunting hills to climb in a recession.

Disaster Management (SEMS) Issues in California Schools

"According to a teacher at a ... District high school, "Improper routes were laid out to follow to assembly areas, ignoring potentially deadly hazards. These were: a 120 foot water tower directly at the end of the assembly area; high tension lines along and over the routes to safety; paths... between high walls and through narrow passages; fences and gates which inhibit ingress to the assembly area, causing crowding and potential for injury and further panic; lack of safety equipment and first aid materials as well as water and food for the minimal time period." (Halgren, 1989:116)

The primary role of schools in emergency organization is the care and shelter of students. Schools are to provide shelter, meals and health care until students are released to a previously authorized adult. A secondary role of schools is to provide a location for care and shelter of the general public. Immediate priorities are evacuation, search and rescue, treating the injured, responding to fires, shut off utilities if necessary, care for students, and release students to parents.

California's Standard Emergency Management Systems (SEMS) has been required of all local government, offices of education, school districts, and community college districts for nearly a decade (California Government Code, Section 8607). SEMS is based on the Incident Command Systems method of organizing any emergency response effort into five basic functions:

1. Management: Responsible for overall policy and coordination
2. Planning/Intelligence: Responsible for collecting, evaluating, and disseminating information; developing the action plan in coordination with other functions; and maintaining documentation
3. Operations: Responsible for coordinating all operations (carrying on the mission of the organization)
4. Logistics: Responsible for providing facilities, services, personnel, equipment and materials
5. Finance/Administration: Responsible for financial activities and administrative aspects not assigned to other functions

Each district is to understand and use the following at both the district and the school site levels:

- Incident Command System (ICS);
- Emergency Operations Center (or Incident Command Post in the field);
- Coordination of school district, city and county Emergency Operations Centers (EOCs) and/or County Offices of Education, as needed;
- Incorporation of SEMS into all school plans, training, and exercises;
- Documentation of the use of SEMS in planning, training, exercising and during actual emergency.

The SEMS plan is intended to allow organizational flexibility by activating only the branches needed, consistent hierarchy with a span of control of between three to seven people, clear organizational lines of authority, and management by objectives and action planning. Training requirements for schools include an orientation for all employees, a

field course for field responders, a specific section within training courses on emergency operations center for EOC Staff, and an executive course for senior district administrators (Orange County, 2006).

Some of the key school-based disaster-management functions to be looked at include:

- Drop, cover and hold drill
- Family reunification
- Building evacuation
- Triage, first aid treatment and transportation of the injured
- Small fire suppression
- Light search and rescue
- Safety and security of children
- Shelter
- Nutrition, water and sanitation
- Communications
- Public & Media Relations
- Building Safety
- Non-Structural Safety
- ICS/SEMS Organization and coordination of response functions
- Post-earthquake damage evaluation*

While there are few studies of school emergency preparedness, fortunately, three have been carried out in California by the Southern California Injury Prevention Research Center at the University of California Los Angeles School of Public Health. These studies provide a critical baseline for the current research. In a California-wide mail survey in 2005, schools' experiences with and preparedness for emergencies and disasters was assessed. Data from 157 of 470 sampled public schools in 34 of California's 58 counties revealed that the majority of schools have experienced emergencies in recent years (Kano & Bourque, 2007b). Seventy-five percent of schools reported that at least one significant emergency or disaster, including various forms of school violence, had occurred between 2002 and 2005. As a result 78% had a lockdown, 75% evacuated classrooms, 60% suffered financial loss and damage to buildings or property, 40% suffered illnesses and injuries to students or staff and 32% reported mental health problems among students or staff (Kano & Bourque, 2007a).

Almost all the schools surveyed had school-specific disaster plans reviewed regularly with administrators, teachers and other staff involved in their development. Typically districts provide model plans or templates, technical assistance for developing plans/activities and information on preparedness. Most also provide training, organize and conduct drills, and

* (While the Division of the State Architect has the legal responsibility for determining the safety of these buildings for use as classrooms after an earthquake and requires that all schools with damage have either a DSA engineer or a structural engineer licensed in California evaluate the buildings prior to the opening of the school for instruction. Recognizing that this may take several days, OES and DSA staff have published a training program on Post-earthquake Damage Evaluation, to help school officials and facilities professionals to interpret visible damages in their buildings in the immediate aftermath of a damaging earthquake, to assist in their determination of whether they can shelter students and personnel in certain rooms, wings, and buildings.)

arrange for equipment and supplies. Less than half provide funding. Surprisingly only 56% reported that their plans were based on the Standard Emergency Management System. While 57% rated their schools overall preparedness very adequate or good, 44% rated their school's preparedness to shelter students for 24 hours as somewhat or not at all adequate.

Most of the surveyed disaster plans included:

- Procedures to be followed in fires, earthquakes and lock-downs
- Maps of the school campus and evacuation routes
- Student release procedures
- Emergency response roles for school faculty and staff
- Location of designated command posts and
- Contacts for local responders.

However many disaster plans lacked information on:

- Layout of utility lines and shut-off valves on campus;
- An inventory of emergency equipment and supplies; and
- The location of designated staging areas off campus.

Training and inter-agency coordination also appear as weaker areas. While almost all schools have fire extinguishers and first aid supplies, more than twenty-five percent lack emergency water supply, flashlights, or emergency alert system. Thirty-three to sixty-three percent of schools did not have supplies on hand for children with special needs, more than half lack emergency food supplies and less than 40% have any search and rescue tools or equipment. Seventy-one percent of schools report having no emergency preparedness coordinator, 27% have no crisis team and 22% have no funding for emergency preparedness.

Forty to seventy percent of schools involved parents in some way; developing or review plans and policies, serving on an advisory committee, or donating or raising funds for equipment and supplies. Only 20% participated in drills and training. Less than 30% of schools involved older students, and only 20% said school boards were involved (Kano & Bourque, 2007c).

The study reports that only about half of elementary schools and a third of middle and high schools information or instruction is provided to students about how they can prepare for and respond to disasters at home and notes that "Successful preparedness education can help students become positive "change agents" in their household and community" (Kano & Bourque, 2007b)

The study recommended that written plans be comprehensive, up-to-date and in compliance with state-mandated SEMS requirements and the National Incident Management System (NIMS). All staff members should receive annual in-service training and designated people should receive further training in special skills. Emergency procedures should be practiced regularly by all. Schools should teach students what they can do to be better prepared at home. Essential emergency equipment and supplies should be properly maintained and accessible from every classroom. The study suggest that every school district needs an emergency preparedness coordinator, standardized emergency management protocols need to be implemented, county offices of education need to help small school districts be prepared, and school districts need to be included in city and county plans.

Having funding for preparedness activities and a school-based emergency preparedness coordinator were positively associated with measures of school preparedness, including perceived level of preparedness, availability of emergency equipment and supplies, extent of inter-agency coordination, and provision of in-service training. School characteristics such as size, urban or inter-city, general resource base, and prior experience with emergencies or disasters were not associated with levels of preparedness.

In a focused survey of emergency preparedness in three public school districts in urban Los Angeles in 2004, 83 school sites responded to a self-administered questionnaire. While respondents generally felt their schools were well-prepared, the survey revealed need for improvements in written disaster plans, emergency response training, availability of equipment and supplies. Implementation of state-mandated SEMS and interagency cooperation were areas considered critical to successful plans (Kano et. al. 2007d).

Dr. Ramirez conducted the third study of emergency preparedness in schools with funding from the Centers for Disease Control and Prevention (CDC) from 2004-2008. The purpose of this research is to utilize both qualitative and quantitative methods to study school-based knowledge, behaviors and perceptions among staff, parents and students from two public school districts in South Los Angeles. She found that while staff report a majority of parents are involved in school emergency preparedness in some way, primarily through informal advising, few parents are involved in more than perfunctory roles such as fundraising or supervising during drills or actual emergencies (Kubicek et. al 2008). In fact, 16% of elementary, 26% of middle and 21% of high schools indicated that parents are not involved in any preparedness activities at school. Parents receive little training from schools yet consider them a reliable information source in the event of a disaster or emergency.

Most staff expressed most concern about parental response in the event of a disaster. There is fear the parents will descend upon the school in massive, uncontrollable amounts. Past experiences indicated that staff found parents “block(ing) the exits...pushing and cussing.” One staff member expressed fear: “My biggest concern is with the parents. They want to know that their child is safe. And my biggest concern is that bombarding the school, trying to get a hold of their child ... I can’t just send [the student] with an uncle who’s not on the emergency card to come to pick up the child from school. It’s just not allowable... their main concern is their child and my main concern is to make sure that they get their child but that they follow the procedures.” (Kubicek, 2008).

Dr. Ramirez and team have also analyzed drill activities and performance, compared with state mandates. In one school district, 131 drills were performed, by 17 schools during the 2005-2006 school year. Elementary schools did not meet any of the state mandates for fire (one per month) and earthquake drills (one per quarter). Middle schools did not meet the fire drill mandate but fulfilled the minimum requirement of two earthquake drills. High schools met all requirements with an average of 3.3 fire drills and two earthquake drills. Although elementary schools performed below the number of required drills, they did evacuate students at a faster rate than secondary schools. Staff and students identify drills as a potential learning tool, but report a lackadaisical attitude towards drilling. Data also revealed obstacles to communication, difficulties in managing student behavior and equipment failures. Schools in this one urban district are not drilling at optimal levels, and drills are not used as opportunities to improve procedures. Suggestions include developing realistic simulated exercises, better accountability for

drills, and creating disaster preparedness curriculum to accompany ongoing drills (Ramirez, 2009).

Dr. Ramirez is also currently the evaluator for the Readiness and Emergency Management program for the LAUSD. This project, started in Fall 2007, involves assessment of school site safety teams and evaluation of drill performance during the subsequent 18-months. Dr. Ramirez with Mr. Robert Spears (LAUSD Emergency Preparedness Division) have put into place an online tool to self-assess performance of school sites during routine drills and district-wide exercises.

ShakeOut Earthquake School Preparedness Survey Findings

Prior to the Great Southern California ShakeOut, Risk RED developed an online school preparedness survey. The survey, available online a week before the ShakeOut and until the end of 2008, was completed by 197 individual schools and nine full responses for whole school districts. The schools represented public (46%) and private schools (53%) in roughly equal percentages (including 14 charter schools). Home schools also reported (1%).

Pre-schools, primary schools, middle schools and high schools represented 12%, 39%, 6%, and 12% of the individual school survey responses respectively, with the remaining 42% of the responding schools teaching two or more of these grade ranges. Thirty-three percent of the private schools included pre-k or Kindergarten through junior high school.

In the individual school responses, Los Angeles County represented 44% of the responses. Other counties, in descending order of representation are Orange County (21%), Riverside (9%), San Bernardino (8%), San Diego (5%), Ventura (7%), Santa Barbara (2%), Kern (2%), and Imperial Counties (1%). Fourteen percent of schools responding have fewer than 100 students, 23% have 100-250 students, 26% have 250-500 students, 25% have 500-1000 and 12% have more than 1000 students.

Nine people responded on behalf of entire school districts (Anaheim, Alvor, Riverside County DoE, Temecula, LAUSD, Chino Valley, Redlands, Upland and Chula Vista). This district data represents 750,000 students (600,000 in Los Angeles Unified School District and 150,000 in eight other districts students; three in Riverside County, one each in Orange, San Bernardino and San Diego counties).

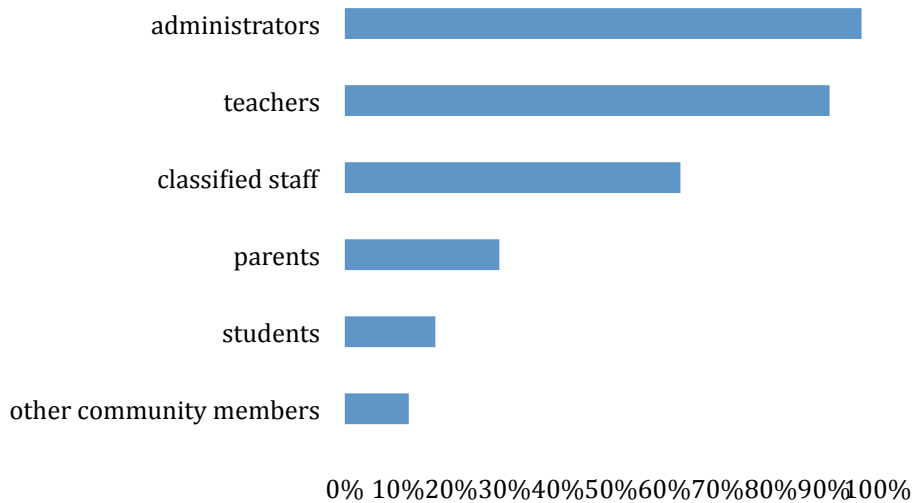
ASSESSMENT AND PLANNING

The first segment of the survey asked schools about their assessment and planning activities. This includes school preparedness committees, administrative and staff level activities as well as sharing-information with parents. The administrative level focused primarily on plans for continuity of services and encouraging community wide preparedness. The staff level preparedness actions focused on specific roles staff members may play during an emergency.

#1 - School Preparedness Committees

Of the individual schools responding, 95% responded affirmatively that they have a school preparedness committee. Virtually all schools have administrators on their committees, and more than 90% have teachers. While 78% of public schools include staff, only 54% of private schools report including staff (eg. school nurse, facilities maintenance and nutrition services personnel). Similarly while 36% of public schools report including parents, this falls to 24% for private schools. Only about 10% include other community representatives. Student participation is reported on only 17% of committees overall, increasing to 25% in schools with students in grades 9-12.

FIGURE 2: PERCENTAGE OF INDIVIDUAL SCHOOLS WITH SPECIFIC REPRESENTATION ON SCHOOL EMERGENCY PREPAREDNESS COMMITTEES



A few schools noted other people that served on their committees, including board members, church staff associated with private religious schools, and fire department representatives.

Of the districts responding fully to the question, all had administrators, teachers and classified staff on preparedness committees, but only about 1/3 had students or other community members participating.

#2 – Administrative Level Preparedness Actions

When it comes to preparedness actions that are generally taken at the administrative level one-third to one-half of individual school respondents did not provide answers to each specific sub-item in the question. Positive results are conservatively interpreted against the full denominator of everyone who answered any sub-item.

Initial questions in this section focused on administrative level actions centered on emergency response and preparedness. These actions are expected to improve school evacuation and immediate emergency response. Just under half of individual schools, 48%, were sure that they had site and neighborhood maps identifying evacuation routes and locations (Looking only at those respondents who answers positively or negatively to this sub-item 77% were sure they did and 11% were sure they did not).

Only one-third of all responding schools reported that they encourage staff and students to prepare for disasters at home and provide support material for doing so.

About a quarter of those respondents say that individual staff that may need to be released during an emergency (eg. due to medical needs, care of an elderly parent or young child) have identified themselves in advance. More of these were among private schools and fewer in public schools.

The second half of this segment also highlighted several administrative level actions for post-disaster school recovery. These actions are expected to reduce school closure and loss of instruction in the weeks, months and years following a major disaster event. Just under a quarter of schools have plans for an alternate school site for school continuity following disaster (1/2 of those who answered the sub-item). The overwhelming majority of schools report no plan for alternate schedules and methods for continuing instruction during a period of school closure.

About 28% of individual schools (more public than private schools) report having an off-site, secure back-up of educational records and emergency contact and release information in an alternate location, should they be destroyed in a disaster (78% of public schools and 37% of the private schools that answered this sub-item did so affirmatively).

About half of the individual schools (almost all of those responding to this sub-item) report having insurance coverage for school disaster risks.

Of those schools located near the coast or near a hazardous materials site, plans for evacuation to a safer location are reported by only 58% with a higher rate for public than for private schools.

TABLE 2 PERCENTAGE OF INDIVIDUAL SCHOOLS ENGAGING IN ADMINISTRATIVE LEVEL PREPAREDNESS ACTIONS

Preparedness Action	Yes	Not Sure	No or Blank	N/A
We have site and neighborhood maps and have identified evacuation routes and locations.	48%	7%	44%	1%
We encourage staff and students to prepare for disasters at home and provide support material for doing so.	35%	4%	60%	0%
Individual staff whom may need to be released have identified themselves in advance.	23%	9%	62%	6%
We know whether we are expected to provide emergency shelter in association with our local Red Cross Chapter or local government.	24%	21%	47%	8%
We have plans for an alternate school site for school continuity following a disaster.	23%	9%	67%	1%
We have plans for alternate schedules and methods as needed means for continuing instruction during a period of school closure due to disaster.	17%	9%	71%	2%
We have off-site secure back-up of educational records and emergency contact and release information in an alternate location, should they be destroyed in a disaster.	28%	12%	59%	0%
We have insurance coverage for school disaster risks.	48%	31%	20%	1%

* Seven survey respondents did not answer any part of this question (4%).

#3 – Staff Level Preparedness Actions

Many preparedness activities and procedures require significant action and knowledge at the teacher and staff level. While the questions in this section are illustrative, a large variation in non-responses suggests that some of this information is not regularly discussed or documented.

**TABLE 3 PERCENTAGE OF INDIVIDUAL SCHOOLS ENGAGING
IN STAFF-LEVEL PREPAREDNESS ACTIONS**

Preparedness Action	ALL	MOST	SOME	FEW	NONE	Not Sure N/A	Blank
School staff have reviewed and revised our plan in the past year.	48%	26%	12%	5%	3%	3%	3%
Bus drivers know where to take students, and responsibilities for emergency when children are on buses.	15%	6%	1%	1%	2%	72%	4%
Staff have completed their own Family Disaster Plans.	6%	8%	18%	9%	4%	49%	6%
We have plans to assist any individuals with disabilities, or any other special needs who will need assistance in understanding and/or evacuating.	64%	10%	4%	2%	3%	13%	4%
School staff are aware that they are expected to stay on the job as disaster service workers.	85%	7%	1%	2%	0%	3%	2%

* Eleven survey respondents did not answer any part of this question (6%).

About three-quarters of the school respondents state that all or most staff had reviewed their school emergency plan in the past year and revised it.

Since approximately half of the responding individual schools were private, and since ‘not sure’ and ‘not applicable’ answers were combined, it is unclear as to what proportion of respondents were able to answer reliably about school bus drivers’ knowledge. Most, however, report that bus drivers know where to take students and what to do in case of an emergency when children are on the bus. (Further analysis of school district policies and procedures suggests that these responses are likely to be based on standard operating procedures of many districts for drivers to contact their transportation headquarters, report their difficulty, and wait with the children nearby until a replacement bus arrives. These “emergency procedures” however may be wholly inadequate in case of disaster. Thus the answers here do not reveal the more detailed information needed.)

Of the 186 schools that responded to this segment of the survey, only 14% could affirm that all or most staff has completed their own family disaster plans. More than half could not provide an answer to this question, marking N/A, not sure, or leaving this question blank.

Fortunately, a large proportion of the 186 schools responding to this segment of the survey are sure that they have plans to assist all or most students or staff with disabilities or special needs in evacuation. Similarly, a large portion of respondents to this segment of the survey noted that teachers and staff are aware that they will be called upon in a disaster. Ninety-two percent say that all or most school staff is aware that they are expected to stay on the job as disaster service workers.

Most respondents were able to answer that teachers review their normal classroom emergency evacuation routes with almost all having done so. More than two-thirds are sure that all or most teachers are prepared to check in on neighboring classrooms.

The overwhelming majority of the individual schools responding and all districts responding stated that all of their student emergency release and emergency contact information was up-dated annually at the beginning of the school year. Similarly almost all report all or most parents know that their children will be safely cared for at school until parents or other authorized adults can pick them up.

#4 – Parent Information about Plans and Drills

All but 12% of individual schools respondents completed questions about parent notification of plans and drills. Of these almost three-quarters report that parents are notified about school emergency plans and drills. For about half, communication is mostly by letter home with students. Smaller percentages use direct teacher contact with parents, meetings and letters mailed home. Fifty-four percent send out letters in languages other than English. About half of the districts responding send letters home in multiple languages. Some note that their plans are available on the school or district webpage.

PHYSICAL & ENVIRONMENTAL RISK REDUCTION

When asked about modifications to the school’s physical environment for risk reduction and improved emergency response, schools showed significant achievements. However, this section had several large counts of “not sure or not applicable” that render results rather inconclusive. A complete breakdown of responses for the 180 schools that answered part or all of the questions in this segment of the survey is given in the table below.

TABLE 4. PERCENTAGE OF SCHOOLS THAT HAVE REDUCED RISKS FROM THEIR PHYSICAL ENVIRONMENT

Preparedness Action	ALL	MOST	SOME	FEW	NONE	Not Sure or N/A	Blank
Our school buildings meet all current standards for earthquake safety.	57%	14%	6%	3%	1%	18%	2%
Our portable classrooms are all securely fastened to the ground or their foundations.	36%	3%	0%	1%	1%	58%	1%
We have fastened tall and heavy furnishings that could fall during earthquake shaking and could kill or injure people.	36%	36%	12%	4%	3%	9%	1%
We have secured supplies, lighting fixtures, roof elements, railings and parapets, heating and cooling devices, kitchen equipment, storage tanks and other items that could kill, injure people or impair educational continuity.	40%	27%	9%	6%	4%	12%	2%
We have limited, isolated and secured hazardous materials.	60%	10%	4%	3%	3%	16%	3%
We have smoke detectors, fire alarms, automatic sprinkler systems, fire hoses, and fire extinguishers in place and maintained regularly.	79%	11%	4%	2%	1%	1%	2%

* Seventeen survey respondents did not answer any part of this question (9%).

Fortunately, the majority of schools, 71% report that all or most of their school buildings meet all current standards for earthquake safety. Twenty percent report that they are not sure, or left the question blank. Another 4% say that few or none of their buildings meet standards.

Questions about the safety of portable classrooms drew a high proportion (58%) of combined 'Not Applicable or Not Sure' responses, making it difficult to draw conclusions from this question. Of the remainder, 96% respond that they are secure, and 4% say they are not.

In speaking with local engineers, it is clear that many portables are attached to piers, but not sufficiently enough to stop them from dislodging during an earthquake. Current policies apparently contain a significant disincentive to safety: when properly tied down portables are then counted as permanent school buildings, reducing funds for their replacement.

Sixty-seven percent of the 180 schools responding to this segment of the survey say that most or all supplies, lighting fixtures, roof elements, railings and parapets, heating and cooling devices, kitchen equipment, storage tanks and other items that could kill or injure people, or impair instructional continuity had been secured, while 10% said few or none had been secured. While 72% said that all or most furnishings that could slide or fall during earthquake shaking and could kill or injure has been secured, 7% said that few or none had been secured. Districts overwhelmingly responded with the assessment that "most" has been secured.

Many schools, 19%, were not sure or say that securing hazardous materials were inapplicable. However, 70% say that all or most of hazardous materials have been limited, isolated and secured.

Most (75% of those who are sure) say that emergency lighting is available in all or most places where needed leaving a substantial proportion in the dark.

More definitively, the overwhelming majority (>90%) assert that most or all exit routes are marked and kept clear and that smoke detectors, fire alarms, automatic sprinkler systems, fire hoses and fire extinguishers are in place and maintained regularly.

RESPONSE CAPACITY DEVELOPMENT: SKILLS & PROVISIONS

A final segment of the survey focused on response capacity skills and provisions. This segment asked schools to identify student and staff training and skills for safe and effective evacuation and post-evacuation emergency response. It also asked schools to indicate whether they had sufficient emergency response supplies to adequately care for staff and students who have not yet been released to parents, guardians or their designees.

These actions are likely to reduce loss of life, injury and psychological distress during an emergency evacuation or sheltering incident.

#1 – Student Response Skills

A complete breakdown of responses for the 180 individual schools that answered part or all of the questions in this segment of the survey is given in the table below.

TABLE 5. PERCENTAGE OF SCHOOLS WITH SPECIFIC STUDENT RESPONSE SKILLS

Response Skills	ALL	MOST	SOME	FEW	NONE	Not Sure N/A	Blank
Students have practiced “Drop, Cover, and Hold On” in their classrooms, and building evacuation.	81%	10%	3%	3%	2%	0%	2%
Students know the 4 rules for building evacuation: Don’t Talk! Don’t Push! Don’t run! Don’t turn back!	46%	23%	13%	5%	6%	7%	1%
Students know that if they are outside of a classroom they should exit to the assembly area and NOT go back inside.	70%	17%	6%	3%	2%	2%	0%
Students in science labs know how to extinguish flames and isolate hazardous materials that may be in use during an earthquake.	17%	3%	9%	5%	1%	63%	1%

* Twenty-two survey respondents did not answer any part of this question (11%).

Student response capacity was high across the board. Over 80% of respondents reported that *all* students had practiced “Drop, Cover, and Hold On” in their classrooms and building evacuation and 10% more said *most* had. Just under 70% of individual school respondents (and 100% of those fully responding for districts) say that *all or most* know the 4 rules for building evacuation - Don’t Talk! Don’t Push! Don’t Run! Don’t Turn Back! – and 11% say few or none know these rules.

About 90% stated that *all or most* students know to remain outside and report to the evacuation area if an emergency bell rung while they were outside.

While not applicable to most schools, a high percentage of schools with science labs note that all or most students in science labs know how to extinguish flames and isolate hazardous materials that may be in use during an earthquake.

#2 – Staff Response Skills

Sixty-nine percent of individual schools report that all or most teachers know how to use a fire extinguisher, leaving 27% with few, some, or none (5% percent of those responding to questions in this section are not sure and none were blank).

One hundred and seventy-four individual schools, 88% of respondents, were able to answer the question about whether any staff members, administrators or teachers had training in a number of emergency response skills. The largest numbers of staff are trained in basic first aid. Substantial numbers are also trained in turning off utilities and student release procedures. Roughly 90% or more had at least one staff member with this type of training. In addition, more than half report that they have staff trained in advanced first aid, safety training, and psychological first aid or crisis counseling. About a third have staff that have taken a Red Cross Disaster training class.

Only about a quarter had anyone with SEMS/NIMS/ICS, CERT or military training. Five times as many public schools (where this is required) as private schools have trained staff. (While it is possible that individual school respondents are not familiar with the SEMS/NIMS/ICS acronym, it is unlikely that this has caused under-reporting as the terms are unavoidable by anyone with leadership responsibility or training in this area). Overall only about 20% report staff with fire suppression training, 13% amateur radio, 3% HAM

DCS. Also, 26% of public schools and 7% of private schools have someone with law enforcement training. The table below reports the percentage of individual schools with each of these trainings as well as the average number of staff with each type of training.

TABLE 6 INDIVIDUAL SCHOOLS REPORTING AT LEAST ONE OR MORE STAFF WITH SPECIFIC EMERGENCY RESPONSE TRAINING

Emergency Response Training	Percent of schools having someone with training	Average number of staff with training
Basic First Aid	97%	8
How to turn off elect., water, gas	90%	2
Student release procedures	89%	6
Advanced First Aid	62%	2
Safety Training	60%	5
Psychological First Aid / Crisis Counseling	55%	2
Red Cross Disaster Class	31%	1
CERT	25%	3
Military	25%	4
SEMS/NIMS/ICS Training	21%	3
Fire Suppression	20%	3
Outdoor Survival Class	16%	1
Law Enforcement	14%	1
Amateur Radio (HAM)	13%	2
HAM DCS Training	3%	1

* Twenty-three individual school respondents did not answer any part of this question (12%).

The 9 school districts responding report much higher rates of training across the board: 100% have staff with SEMS/NIMS/ICS, student release, first aid, how to turn off utilities, and psychological first aid training. At least 50% have staff with every other form of training. However, it is not known from this data whether these higher rates of staff training apply to each school, or only to the district as a whole.

#3 – Response Provisions

School Emergency Supplies: Schools were asked to report on their emergency supplies, as shown in the table below. Of individual school respondents 95% report having first aid supplies. Over three quarters of individual schools have sanitation and food supplies to last at least 72 hours. Roughly half also have alternative communication (89% of the districts reporting), shelter and emergency lighting. A quarter or less have emergency power or alternative transportation. Results from this question suggest significant readiness of provisions, but this is certainly not universal.

TABLE 7. PERCENTAGE OF SCHOOLS WITH LISTED EMERGENCY SUPPLIES FOR STUDENTS AND STAFF TO LAST FOR AT LEAST 72 HOURS

Emergency Supply	Percent
First Aid Supplies	95%
Sanitation Supplies	77%
Food	75%
12 liters of water per person	72%
Alternate Communications	65%
Shelter	54%
Emergency Lighting	49%
Emergency Power	25%
Alternate Transportation	16%

* Thirty-two survey respondents did not answer any part of this question (16%).

Of the districts responding to this question 67% report storing water. While individual private schools report being better resourced with food than individual public schools, 100% of the public school *districts* report having food.

Classroom “Go-Bags” and Notebooks: About 66% of individual school respondents report that there are emergency “Go-Bags” in *all or most* classrooms. Respondents were then asked to identify the contents of their “Go-Bags” and notebooks. The number of blank responses to each item varied. Of the total who responded affirmatively to any items at all, first aid kit, tissues, pens, flashlights, and notepads were supplies most often reported (88-75%). About half have batteries, whistle, emergency blanket, ace wrap and triangular bandages. Surgical sponges, ponchos, feminine pads, and radios were least often reported (26-35%). Only 9% carry a portable latrine (usually a bucket and plastic bags that can also be used in case of lockdown – others likely keep portable latrines for the school in their central emergency supplies storage container).

A current class roster is carried by 89% and 60% also have an injured/missing status report form with them to be filled out immediately and handed in at the assembly area. More than 40% have signs to hang on their doors indicating whether there are casualties or dangers or all clear inside, and almost half have a room sign to post in the emergency assembly area.

Student Personal Emergency Supplies: While 31% of respondents did not answer the question about student emergency bags, an inexplicable 17% said it was not applicable. Of the remainder about 38% do have children bring emergency supplies bag at the beginning of the year and take it home again at the end of the school year and 62% do not. Student bags, often stored in outdoor containers, typically contain a bottle of water, a long-life high-energy snack, a change of clothing, a comfort item, a list of family contact information (including emergency and out-of-area contacts), and may include a family photo, and note of reassurance. While apparently not widely practiced, this activity shares the responsibility for disaster provisioning, and involved both families and students in taking an active role in preparedness.

ShakeOut Earthquake School Post-Drill Survey Findings

Risk RED and participants in the School Safety Committee of the Great Southern California ShakeOut developed an online post-drill survey for participating schools and districts. We are grateful to Bob Spears, LAUSD and Dr. Marizen Ramirez, University of Iowa, for contribution of their previous drill assessment instruments which guided this effort.

This survey was available to schools following the ShakeOut drill on Thursday, November 13, 2008 and results were tabulated from 378 individual schools and 30 public school district representatives*¹ as of January 31, 2009. Of the individual school respondents 54% (205) were from public schools (including 5% (18) charter schools), 43% (163) from private schools, 1% (4) from home-schoolers and 2% (6) unknown.

Approximately 40% of responses of both individual schools and districts were from Los Angeles. Substantial numbers also reported from Orange, and Riverside Counties. Other counties represented in descending order of representation are San Bernardino, San Diego, Ventura, Imperial, Kern, and Santa Barbara Counties. (Note: Kern, Santa Barbara, San Luis Obispo and Tulare counties are not considered 'Southern California' counties, but are included by virtue of their enthusiastic participation and similar earthquake safety concerns). The thirty school districts completing responses were distributed as follows:

TABLE 8. POST-DRILL SURVEY RESPONDENTS BY COUNTY

County	Individual School Responses		District Responses	
	Count	% of schools	Count	% of districts
Los Angeles	144	38%	12	40%
Orange	79	21%	4	13%
Riverside	53	14%	4	13%
San Bernardino	29	8%	4	13%
San Diego	32	8%	2	7%
Ventura	18	5%	1	3%
Kern	11	3%	2	7%
Imperial	9	2%	1	3%
Santa Barbara	2	<1%	0	0%
Tulare	1	<1%	0	0%
TOTAL Schools	378	100%	30	100%

Pre-schools, primary schools, middle schools and high schools represented 12%, 30%, 10%, and 12% of the survey responses respectively, with the remaining 36% of the schools that responded teaching two or more of these grade brackets.

The breakdown of school participants between students, parents, and staff is suggested by the proportions reported in the individual school responses:

¹ Whole districts include: Alhambra Unified, Anaheim Union High, Antelope Valley Union High, Apple Valley Unified, Beaumont Unified, Bellflower Unified, Brawley Elementary, Covina-Valley Unified, Cypress, Downey, Etiwanda, El Rancho, El Tejon Unified, Fullerton, Hawthorne, Lancaster, Los Nietos, Menifee, Mountain View, Pleasant Valley, Redlands Unified, Rialto, Riverside, San Jacinto Unified, Santa Monica - Malibu Unified, Sweetwater Union, Tehachapi Unified, Torrance Unified, Valley Center-Pauma Unified, Westminster.

TABLE 9. SCHOOL SHAKEOUT PARTICIPANTS

Group	%
Administrators	<1%
Teachers	4%
Staff	3%
Students	78%
Parents	15%
Others	<1%
Total	100%

Individual school responses capture data for more than a quarter of a million children and adults. District data captures responses for more than three-quarters of a million students. Because there is some overlap, the totals are not aggregated. Since any voluntary survey is attracts disproportionate responses from those with higher levels of interest and performance in the subject, the strength of this sample is in the magnitude of the population that it represents.

The following is a summary of the survey findings.

DRILL FREQUENCY, PROCESS & EVALUATION

The following is a summary of survey findings in the are of drill frequency, drill process, and drill evaluation.

1 – Type of Drill Practiced

For the ShakeOut schools and districts had several types of drills they could practice. Seventeen percent of responding individual schools did “Drop, Cover and Hold-On” drills only. Fifty-five percent did this and followed with a building evacuation to the designated assembly area. Thirty percent practiced the full mandated ICS/SEMS drill. At least twice as many public schools as private schools did full ICS/SMES drills. Districts reported that higher levels of full ICS/SEMS drills as well as different levels of drills throughout the district.

TABLE 10. TYPES OF DRILL PRACTICED

	Drop Cover and Hold on (DCH) only	DCH and Building Evacuation only	Full ICS/SEMS (including DCH & building evacuation)	EOC drill	N*
All Schools	17%	55%	30%	3%	397
Public schools	10%	50%	40%	5%	195
Private schools	25%	60%	20%	2%	174
Districts	7%	37%	63%	37%	43

** N=Total number of responding schools and districts. Since many reported performing more than one type of drill, percentages total more than 100%.*

2 – Frequency of Drill Exercises

Frequency of drill exercises is an important attribute to understand the extent of Southern California preparedness. As expected, the fire drill was the most frequently exercised drill across all school types with 66% of schools reporting doing fire drills

monthly. Thirty-seven percent report doing a full evacuation and ICS/SEMS drill at least 2 times per year and another 27% to them annually. However, 29% of individual schools (34% of private schools and 23% of public schools) report doing a full simulation drill only once every couple years or never. Similarly, 15% of individual schools (22% of private and 7% of public schools) report never having done a lock-down or shelter-in-place drill.

Since the respondent group is likely skewed towards those who *do* participate in regular drills, it is likely that a higher percentage of schools are not practicing these drills.

TABLE 11. TYPE AND FREQUENCY OF DRILLS

Drill Type	School Type		Count and Percent of School Responses						
			Monthly	4x / year	2x / year	1x / year	1x / couple years	Never	Did not Answer
Fire	Schools	Count	229	58	41	11	4	4	0
		%	66%	17%	12%	3%	1%	1%	0%
	Districts	Count	24	4	1	0	0	0	0
		%	83%	14%	3%	0%	0%	0%	0%
disaster evacuation ICS/SEMS	Schools	Count	10	41	76	92	56	44	28
		%	3%	12%	22%	27%	16%	13%	8%
	Districts	Count	0	6	7	10	6	0	0
		%	0%	21%	24%	34%	21%	0%	0%
lock-down or shelter-in-place	Schools	Count	9	54	93	83	28	51	29
		%	3%	16%	27%	24%	8%	15%	8%
	Districts	Count	2	8	10	5	2	0	2
		%	7%	28%	34%	17%	7%	0%	7%

* Thirty-one individual school respondents (8%) and one district (3%) did not answer this question.

3 – Responses to Unexpected Threats or Events in Past Two Years

A large proportion of schools have had unexpected events in the past two years that have been occasion to activate their emergency plans. These have provided opportunities to practice and improve school plans.

TABLE 12. EMERGENCY PLANS ACTIVATED IN RESPONSE TO UNEXPECTED EVENTS

Responded to unplanned event in past 2 years		fire	violence or bomb- threat	earthquake	other
All Schools N = 372	Percent	30%	16%	33%	16%
	Median #	2.0	1.0	1.0	2.0
Public Schools only N= 187	Percent	31%	19%	27%	14%
	Median #	2.0	1.0	1.0	1.0
Private schools only N=163	Percent	29%	11%	40%	19%
	Median #	2.0	1.0	1.0	2.0
Districts N=30	Percent	50%	47%	33%	43%
	Median #	1.5	4.0	1.0	3.5

* Six individual school respondents (2%) did not answer this question.

4 – School Drill Evaluation Process

Fifty-seven percent of schools and 33% of districts engaged in informal post-drill evaluations. Seventy-two percent of individual schools and 21% of districts did an

evaluation in staff meetings. Forty-one percent had post-drill evaluation discussions with students (59% in private schools and 24% in public schools). Twenty-two percent included a written report. Twenty-two percent of public schools would have this reviewed at the district level while 67% of responding districts said reports would be reviewed (indicating that responding districts have a higher level of oversight of their drills than non-responding districts). Outside observers were involved in 12% of individual school and 33% of district evaluations.

TABLE 13. SCHOOL DRILL EVALUATION PROCESS

COUNT/PERCENT*	informally	using self-evaluation forms	in staff meeting	In class with students	including outside observers	written report	report reviewed at district level
All Schools							
response count	211	84	269	153	46	81	44
% respondents	57%	23%	72%	41%	12%	22%	12%
Public Schools							
response count	115	42	125	45	24	37	40
% respondents	62%	23%	68%	24%	13%	20%	22%
Private Schools							
response count	80	36	131	95	19	35	3
% respondents	50%	23%	82%	59%	12%	22%	2%
Districts							
response count	10	17	21	9	10	12	20
% respondents	33%	57%	70%	30%	33%	40%	67%

* Since many did more than one form of evaluation, percentages total more than 100%

** Six (2%) individual school survey respondents did not answer this question (two public schools (1%), three private schools (2%)). All districts answered.

5 – School Drill Frequency

Of the individual schools represented, 44% do ‘drop cover and hold on’ drills once or twice a year and of the districts 61% do so. However, 56% of school respondents and 54% of district respondents think it should be done four or more times a year.

In the case of full ICS/SEMS drills, most school and district respondents do these and think they should be done once or twice a year. When it comes to fire drills most schools do these and think they should be done monthly.

6 – Significance & Frequency of the Great Southern California ShakeOut

Of individual school respondents 79% believe that this kind of community drill should be done annually, 17% every two years, and 3% every five years. Of districts 76% think it should be done annually and 24% every two years.

For 88% of individual school respondents, the ShakeOut was a significant opportunity to improve their own response, 84% found it an opportunity for greater public awareness, 80% an opportunity to collectively improve response, 76% look forward to this being an opportunity to individually and collectively improve response preparedness. Seventy-one percent appreciated the opportunity to practice unified command and to know that they are drilling with other schools. District respondents put an even higher premium on the value of the ShakeOut for public awareness and improving collective response.

DROP COVER & HOLD & EVACUATION DRILL

7 – Evaluation of Drill Elements

Most drill elements were very positively evaluated with *all* or *most* students and teachers adopting the ‘drop, cover and hold on’ position and staying there during the shaking. Following the shaking *all* or *most* teachers and staff check to see if anyone is injured and make a mental note of any damage or hazardous materials and assemble in a safe area outside.

Apparently only a minority of schools make it a practice to leave an indication on their room as to whether everyone is out and any casualties or dangers inside. About half of respondent report that *all* or *most* teachers/staff check to see if neighboring rooms need help, but this too is not a universal practice yet. In the case of individual schools 59% report that staff complete a status report on injured/missing for each classroom. For districts, however 82% report that *all* or *most* do this. This seems a clear indication that where district leadership is strong, this has become a standard practice.

TABLE 14. EVALUATION OF DRILL ELEMENTS

Drill Element	School Type	Percent of Responses					
		All	Most	Some	Few	None	Not Sure or N/A
1. When the drill began students adopted the “Drop, Cover and Hold On” position and stayed there “during the shaking”.	Individual Schools	76%	23%	0%	0%	0%	0%
	Districts	82%	18%	0%	0%	0%	0%
2. When the drill began teachers adopted the “Drop, Cover and Hold on” position and stayed there “during the shaking”.	Individual Schools	60%	30%	5%	1%	1%	2%
	Districts	77%	23%	0%	0%	0%	0%
3. Following the “shaking” teachers and staff checked to see if anyone was injured (and offered transport or treatment as appropriate).	Individual Schools	60%	14%	6%	2%	5%	11%
	Districts	45%	36%	9%	5%	0%	5%
4. Following the “shaking” teachers/staff checked and made mental note of any damage or hazardous materials.	Individual Schools	41%	22%	13%	3%	7%	13%
	Districts	45%	36%	9%	5%	0%	5%
5. Following the “shaking” teachers/staff left sign on their room indicating that everyone was out or that there were casualties or danger inside.	Individual Schools	29%	9%	2%	4%	40%	13%
	Districts	23%	27%	32%	5%	5%	9%
6. Following the “shaking” teachers/staff checked to see if any neighboring rooms needed help.	Individual Schools	30%	16%	11%	7%	18%	16%
	Districts	26%	27%	18%	5%	5%	5%
7. Following the “shaking” teachers/staff led students out of the building in a quiet and orderly evacuation.	Individual Schools	79%	9%	1%	0%	5%	4%
	Districts	82%	18%	0%	0%	0%	0%
8. Students, faculty and staff assembled in safe area outside following the “shaking”.	Individual Schools	85%	3%	0%	0%	6%	3%
	Districts	91%	9%	0%	0%	0%	0%

9. Staff completed a status report form on injured/missing for each room.	Individual Schools	59%	6%	2%	0%	17%	14%
	Districts	73%	9%	14%	0%	0%	5%

** N= 352 individual schools and 22 districts. Twenty-six (7%) respondents from individual schools and eight (27%) of districts did not answer this question.

8 – Total Evacuation Time

The average total time for building evacuation (from the drill start to last staff or students arrive at assembly area) for all (301) individual school respondents was eight minutes. While 124 private schools reporting had an average time of about six minutes, 154 public schools had an average time of 10 minutes. This may well be a function of size of their respective schools. Note that two minutes of this time would have been spent in ‘drop, cover and hold-on’ position.

9 – Problems Encountered During ‘Drop, Cover, and Hold’

A full 81% of schools reported no problems encountered during “Drop, Cover and Hold” though non-participation of staff and distractions affected 16-20% of schools. Student non-participation was minimal and no cutting of school was reported.

TABLE 15. PROBLEMS ENCOUNTERED DURING OR AFTER DRILL

Problem(s)	Individual Schools	Districts
None	74%	71%
Distractions	11%	14%
Non-Participation (Staff)	8%	10%
Non-Participation (Students)	5%	10%
Cutting School	0%	0%
Other	11%	10%

* Forty-six (12%) of individual school respondents and nine (30%) of district respondents did not answer this question.

10 – Alert System Used for Drill

A variety of electronic and manual alert systems were used to announce the drill to schools – and sometimes more than one method. It is not clear whether most schools have thought through how they would use their communication systems in the likely event of power system failure immediately post-disaster.

TABLE 16. ALERT SYSTEM USED AT START OF DRILL

Alert System Type	Individual Schools	Districts
Intercom/public address system	66%	82%
Bell	35%	55%
Radio	8%	36%
Bull Horn	8%	27%
Whistle	4%	5%
Other	12%	5%

* Twenty-nine (8%) individual schools and eight (27%) district respondents did not answer this question.

11 – Students or Staff with Disabilities Participating in the Drill

In most cases where students with disabilities were present they participated in the drills. However in about 15% of schools, some or all children with disabilities did not

participate. Anecdotal reports suggest that some special education classes may organize their own drills at other times to avoid adverse health and behavior consequences.

TABLE 17. PEOPLE WITH DISABILITIES PARTICIPATION IN DRILL

Response	Percent of School Responses	
	Individual Schools	Districts
Yes, all	49%	57%
Yes, some	6%	17%
No, none	4%	0%
No, not present	32%	0%

* Twenty-nine individual schools (8%) and eight districts (27%) did not respond to this question.

12 – Activities for Students During the Drill

The survey asked what activities students were involved in during the drill. The intention of the question was to find out whether the drill went beyond the simple act of ‘drop, cover and hold on’ and building evacuation to engage students in disaster prevention learning activities. However, the very wide discrepancy in results between individual schools vs. district emergency coordination responders suggests that the term was too widely open to interpretation to yield reliable conclusions.

TABLE 18. ACTIVITIES FOR STUDENTS DURING THE DRILL

Response	Percent of School Responses	
	Individual Schools	Districts
Drill-related Activities	35%	82%
Something fun	21%	14%
Regular school work	6%	14%
Nothing	47%	18%

*Thirty-nine individual school respondents (10%) and eight districts (27%) did not respond to this question.

13 – Evaluation of Response Functions & Procedures

Respondents who implemented them, evaluated their school-based incident command functions in the drill, stating whether the function exceeded expectations, met expectations, did not meet expectations, or were not practiced. This question was posed especially to encourage self-rating and reflection.

For the most part individual schools and districts met their own expectations, and many exceeded them. The strongest areas were Incident Command and Command Center with 77% of individual schools and 81% of districts meeting or exceeding expectations, and Assembly Area with 83% of individual schools and 95% of districts meeting or exceeding expectations.

Districts also rated the following highly: Communications & Public Information with 72% meeting or exceeding expectations and First Aid & Mental Health Team with 87% meeting or exceeding expectations.

Not more than 18% of respondents selected *does not meet expectations* for any single item. Since responses did not distinguish between *not sure* and *not applicable* (ranging between 10 and 40%) and since 11% of individual schools and up to 5% of districts left some answers blank, responses cannot be used to pinpoint specific areas of concern.

ICS / NIMS / SEMS DRILL

Incident Command Systems (ICS), National Incident Management Systems (NIMS) or Standard Emergency Management Systems (SEMS) all refer to the functional model for disaster response planning that anticipates a chain of command to facilitate communication and dissemination of resources, distributed decision-making designed to do the most good for the largest number of people, and division of labor with flexibility to respond to specific needs encountered.

14 – Drill Response Functions & Procedures for Simulation Drill

Responders who undertook full drills assessed the quality of drill performance districts rating themselves consistently higher than individual school respondents.

TABLE 19. SCHOOL RATINGS FOR RESPONSE FUNCTIONS DURING THE DRILL

	Responses	Exceeds Expectations	Meets Expectations	Does Not Meet Expectations	Not Sure or N/A
Incident Commander/Command Center	Individual Schools	13%	64%	3%	18%
	Districts	9%	73%	9%	5%
Communications & Public Information	Individual Schools	9%	56%	7%	25%
	Districts	14%	59%	18%	5%
Emergency Supplies Center	Individual Schools	10%	49%	18%	21%
	Districts	9%	68%	14%	9%
First Aid / Mental Health Team	Individual Schools	12%	55%	10%	22%
	Districts	5%	82%	0%	9%
Simple/Light Search and Rescue Team	Individual Schools	12%	52%	8%	25%
	Districts	14%	68%	9%	9%
Request Gate	Individual Schools	9%	41%	6%	40%
	Districts	9%	50%	5%	32%
Reunion Gate	Individual Schools	8%	42%	7%	39%
	Districts	9%	50%	5%	36%
Assembly Area	Individual Schools	20%	63%	3%	12%
	Districts	9%	86%	0%	5%
Security (incl. Utilities)	Individual Schools	12%	56%	6%	24%
	Districts	9%	64%	5%	18%
Sanitation & Shelter	Individual Schools	8%	43%	16%	30%
	Districts	5%	50%	14%	27%

*Forty individual schools (11%) and eight districts (27%) did not respond to this question.

15 – Parent Participation in the Drill

Of individual schools responding to the question, fewer than half had parent participation in the drill. Where they were involved parents were volunteers and/or observers. Of those schools that did have parents participate the average number of participants was 10 per school, with more participants in public than in private schools (*One-hundred and fifty-six individual schools (41%) and nine districts (30%) did not respond to this question.*)

16 – Problems Encountered During Evacuation and Simulation

Individual schools and districts identified problems differently. While most had no problems, district respondents identified particular problems with supplies, alert systems, students and evacuation routes.

TABLE 20. PROBLEMS ENCOUNTERED DURING EVACUATION & SIMULATION

	Individual Schools	Districts
Alert systems	10%	18%
Students	4%	12%
Staff	6%	6%
Parents	1%	6%
Supplies	12%	47%
Evacuation Route	7%	12%
None of these	66%	41%
Other (please describe)	18%	12%

** One hundred and sixty-seven individual schools (44%) and thirteen districts (43%) did not respond to this question.*

17 – Expected Problems During a Real Disaster

In a real disaster respondents expect to have problems with shelter, student reunion, nutrition, educational continuity, physical safety, and health. These expectations are probably quite realistic.

TABLE 21. EXPECTED PROBLEM DURING A REAL DISASTER

Type of Problem Expected	Individual Schools	Districts
Physical Safety	28%	10%
Shelter	40%	57%
Nutrition	29%	43%
Health	17%	24%
Student Reunion	35%	52%
Educational Continuity	23%	62%
None	16%	0%
Other (please specify)	14%	19%

** One hundred and sixty-one individual schools (43%) and nine districts (30%) did not respond to this question.*

SURVEY FINDINGS FROM A COUNTY OFFICE OF EDUCATION

In addition to the multi-county survey, the Riverside County Office of Education, serving more than 400,000 students in 24 school districts, conducted its own survey of 271 individuals: 38% from school sites and 62% from office locations. Drop, Cover and Hold was the immediate action taken by 89%, 2% went to door frames, 5% sat in their seats, and 4% did nothing. After the shaking stopped 25% had assigned roles and 75% did not. Overall assessment of the exercise was that it was well-structured and organized,

plausible and realistic, participation was beneficial, allowed the workplace to practice and identify capabilities, and to deal successfully with such a scenario. However, more than 22% thought the exercise lacked realism and 21% don't feel prepared to handle such a scenario successfully. An overwhelming 78% would like to see more such drills and only 9% would not.

Respondents identified many things that went well:

- overall organization was good
- good guidance
- evacuations good
- participants took the drill seriously
- good communication and team work
- drop, cover, and hold good
- students followed directions and
- students also discussed safety at home.

Respondents had many observations of things that could be improved:

- slow evacuation
- lack of control over students in assembly area for reunification
- non-participation
- some disabled students balking at participation
- defective equipment
- apathetic or disinterested attitude of some staff
- lack of shelter for small children
- inexperience with equipment
- inappropriate behavior during "aftershock" and
- not enough help to evacuate mobility-impaired children.

Respondents learned some important lessons. Comments included:

- We should have drills without warnings.
- The value of the CERT was obvious.
- We need to be prepared at home.
- I need an emergency kit for the car.
- I needed to clear out more area under my desk.
- The site will reevaluate where the special ed. students will stand since under power lines just wasn't a very good idea.
- Communications through the telephones or speakers immediately after a real earthquake might not be possible. What is the contingency plan for those who do not have the radio/walkie-talkie system?
- We need to secure computer monitors, tall bookcases, and filing cabinets.
- The county program on this site needs to coordinate with the school site better. Eg. copies of our emergency cards, student information needs to be updated, team members integrated between the two programs
- Items to occupy students need to be included in emergency kits.
- We need to practice and prepare annually or semi-annually.
- Educational presentation about the real risks was much better than just being told what to do.

School-Site Observations & Debriefings

Risk RED's international school preparedness observation team was comprised of researchers and school safety activists from Algeria, Canada, Japan, Nepal, Turkey, Panama, Venezuela, United Kingdom, and the United States. The team visited school sites and observed the ShakeOut drill in one public high school, one public middle school, one public school district emergency operations center, and one private elementary school. These observation sites, rather than being considered 'typical', must be considered among the best prepared schools, those that have accomplished sufficient amount to be willing to open themselves up to observation, as well as being interested in feedback as part of a continuous process of improvement. As individual case studies, these highlight some of the great strengths, and some of the continuing concerns for school disaster preparedness in California.

Observations in the district emergency operations center of a large school district noted that the EOC team followed ICS principles of functional coordination and noted that public information – particularly instructions and reassurance messages passed issued to parents both to speed reunion and to ensure child protection had key importance. In spite of the wide geographic reach of the district, surprisingly geographic information systems were not employed to support emergency operations.

Additional sources of information were individual interviews with students and parents in the Los Angeles area, and blog comments from teachers, parents and students following the ShakeOut (see Appendix). One case study is presented in full to illustrate the richness of the drill as a practice and learning opportunity.

Case Study: An Earthquake Drill in one Public High School

For the High School, the ShakeOut drill was the first of the school year. Over the past two years the school has had three unscheduled drills (one bomb scare evacuation, one violence-related lock-down, and one real earthquake (Chino Hills).

The High School observed provides the highest caliber of model for others concerned with school disaster management to follow. Non-structural measures have been taken throughout the school: most (though not all) tall, heavy, or sliding furnishings and equipment are secured, doors open outwards, exit routes are free of obstacles. School administrators, staff, teachers and students have rigorously and regularly practiced emergency drills, and staff have implemented a Standard Emergency Management ("SEMS") coordination system, achieving a high degree of mastery in these efforts. The school safety plan is used constantly, reviewed annually and updated, and "never gets dusty". The School Site Council provides many inputs into the plan. The Principal has researched training materials and found that Fairfax Co. Virginia's school website is particularly helpful, as the tragic and violent attack of a single disturbed individual at Virginia Tech has heightened their experience. The Principal has passed useful materials on to the District.

Regular fire drills are held monthly and two full "SEMS" drills are held every school year with different scenarios. Unforeseen (real) evacuations serve as additional "practice". The District Safety Committee creates a variety of drill scenarios for practice. The District has assessed school vulnerability to all natural hazards as well as to air transport, railway accidents, and prison breaks. The 1995 Northridge Earthquake was the impetus for the serious planning and training that continue today. Individual and institutional-memory both support the current state of readiness.

Staff training: Faculty received initial training from the local fire department. New staff members receive a three-hour training in basic emergency procedures and continue to learn through rotating assignment of responsibilities and mentoring during regular drills. Staff also participates in two periods of in-service training per year, during regularly scheduled “conference” periods when the Principal or Assistant Principal covers emergency procedures with small groups of 10-18 staff members. Faculty have learned triage, CPR, LSAR, and to distinguish evacuation from shelter-in-place and lockdown conditions and pass this knowledge on to one another. Staff members are aware that they are all disaster service workers. Some drills take place when principal is off campus, encouraging others to take leadership and practice flexible role adoption.

Student training: Students do not special receive training for disaster preparedness, other than guidance to “drop, cover and hold” under their desks and evacuation. First aid is taught as part of the health and physical education curriculum.

Parent preparedness: Parent Teacher Association works intensively with parents in elementary and middle school but less for high school. The public is exposed to information during Earthquake Awareness Month (April) through joint efforts of TV, newspapers, supermarkets, Do-It-Yourself shops. The local fire department Open House, and public agency efforts complement public awareness.

Drill implementation: Faculty, staff and students were all forewarned of the drill the week before, the day before, and 15 minutes before. Students and teacher immediately dropped to the floor and sought shelter under desks. Desks and tables were free of underneath storage and thus afforded some protection. Many people did not fit under the desks or had no desks nearby. Most students did not hold on to their cover. Students who happened to already be outside during the drill, and who heard the alert, did not exhibit awareness of the many outdoor dangers they were exposed to (from adjacent buildings, overhead lighting, fencing, equipment and utilities) and did not exhibit any self-protective behavior.

When the shaking had stopped the teacher instructed students to evacuate and then left after students had evacuated the room. Normally a chalked mark “X” on a door is used to signify “nothing out of the ordinary” and empty rooms are locked upon exit. In a real event teachers are instructed to leave doors unlocked. For this drill teachers were instructed *not* to mark the doors, so that every room would be systematically checked. One student took the Emergency Go Bucket containing Class Number sign, first aid kit, gloves, crowbar, playing cards, dust mask, chalk.

Students evacuated in an orderly fashion, with no talking, running, pushing or going back. Stairs were used rather than elevators. There was no pushing or dangerous behavior. There were, however, some bottlenecks along the evacuation route. Special education classes were evacuated by a different route. In this exercise they evacuated earlier to avoid additional stress to students, though they are prepared to evacuate together under real conditions.

All buildings were evacuated and students assembled in the grid area associated with their current class period within five minutes. (If drill occurs during lunch or passing period students would assemble in the space associated with their immediate previous class). This is to facilitate student accounting as late arrivals and early departures during the day are difficult to track if students assemble in their first period class positions.

Teachers show students where their place is on the grid at the beginning of each semester.

The assembly area was a large field free of power-lines and therefore, visually free of hazards. The principal's office also contained a complete campus map showing all utilities, and power lines. While it had been determined that the assembly area was free of underground hazards, there were some potential overhead hazards that might have rendered part of the assembly area unusable or hazardous.

Most student accounting forms were turned in within the first 8-10 minutes but the full accounting was completed 21 minutes from start of drill. Student Accounting forms were pre-printed with Teacher Name and Room number and retrieved from Classroom Evacuation Buckets. Student runners delivered these to one person standing at the head of the assembly area. Preprinting was recommended based on prior experience that in the excitement of the drill, and conditions outside, handwriting was not always clear and legible. One teacher took an extra step and had made a print out of her class roster with photos of each student, so that she could quickly note anyone missing or absent. Due to damp grass, students did not sit down until plastic sheeting was provided from disaster supplies storage.

Two classes with severely disabled children were evacuated. Some were on medications requiring sun protection. Special evacuation routes have been planned to avoid the larger crowds. Special education teachers modify drop, cover and hold position and practice with their students. One teacher reported that he sees his classroom as a ship, and he the captain who will be the last one out.

One child was feeling ill and was discovered in the building in a restroom, and this was incorporated into the drill. Discipline was dispatched to retrieve the student. In a real-life situation the porta-potty would be set up in the field and student taken to first aid or to porta-potty with improvised privacy shelter.

Once assembled, students remained quiet and attentive, some speaking softly or studying for the duration of the exercise. Students were not engaged in any special learning activities connected with the drill.

In order to save instructional minutes, generator was pre-positioned to provide power to the public address system. The school principal acted effectively as both Incident Commander and Public Information Officer by using a generator-powered public address system. His primary role was to stand at focal point of the assembly area, to address the students, and to provide ongoing communication on status and instructions, pushing out information to both students and to those at request/reunification gate.

The principal first instructed students to send a text message to their parents that they were participating in the community-wide earthquake drill and that they were with their class and were safe. He also called for Associated Student Body (ASB) teams to retrieve water from storage area, distribute one container per classroom, and to set-up and later reposition eight overhead sun shelters to protect a limited number of students in turn. The ASB mobilized a practiced team to distribute water and to erect the mobile shelters. These useful activities directly and indirectly involved students in a simple response.

An Assistant Principal headed Operations at the nearby Command Post, and was in communication with five Light Search and Rescue (LSAR) Teams who called in several

times, in turn, to report on checking rooms. Three recorders listened to reports and cross-checked each other while marking off each room and other areas (including storage cabinets, locker rooms and other areas) using a large map with plexiglass overlay. One PTA representative with a special interest in school safety was present for this drill. (She reported that she first became interested when her church preschool requested parents to send in a large black garbage bag that she assumed would be used to line an improvised toilet, but was informed that it was to be a body bag!) Otherwise there was no parent involvement in the drill.

One person with radio communicated with school district Emergency Operations Center (EOC), reporting injuries, building damage, and overall student accounting. No codes of any kind were used in communication as faculty has learned that codes are confusing and easily forgotten.

The logistics team opened the nearby supply shed containing water in ten-gallon opaque plastic containers (found to be optimal size as larger containers are difficult to manage), paper cups, stretchers, first aid supplies, and sanitation supplies. The generator is started every other month during regular fire drill. It works for eight hours straight with a full tank of fuel. Additional supplies are positioned in every classroom. These "Go-Buckets" are checked by classroom teachers before the first day of school and replenished. In lockdown situation these buckets are intended to serve as improvised toilets. In some schools the PTA has helped to replenish Go-Bucket supplies.

Toilet facilities available during the drill were not those that would be required in a real event. During the drill, facilities located underneath football stands (that may not be safe), and construction area porta-potties (that might have already toppled during a real event) were used. Staff reported that portable potties are available, and that they are aware that privacy would have to be improvised in a real event.

Once students were assembled, teachers on the LSAR team turned their student supervision over to a teacher in adjacent section of the grid, informing all of the arrangement and handed their classroom accounting report in on the way to reporting to the LSAR Assembly area near the supply storage container. The Operations Chief sent out five LSAR teams with three persons each. Each team received and checked a bucket with their supplies and departed swiftly to their assigned sectors of the campus.

The free-standing gymnasium building was checked first to see if it could be cleared for re-occupancy in case of inclement weather or long waits for student pick-up.

The LSAR team leader stayed in the hallway, recording findings on a campus map and reporting several rooms in turn to the command post by radio, while the other two team members went inside of the rooms one by one. They used a set of keys to enter the rooms because all doors were locked. Only one room was inaccessible because it contained the students' tests. Searchers called out "Is anybody here?" loud and clear in each room and looked under and behind the furniture and equipment. They also checked for building damage and particularly any gas leaks. Following search, each door was marked with an "X" to indicate 'all-clear'. For the purposes of the exercise two dead bodies were "found" in the administrative area, one person was locked in a room, and one "unscheduled" find in a restroom. These were reported to the Operations Chief who asked the rescue team to continue and sent additional help for the student.

One LSAR team was surprised to find that nobody was positioned at the main door of the school. Two people waiting outside were told that they have to wait until the drill was over to be able to access the building. There was no person or signage to communicate with anyone arriving at the front door.

For this exercise most doors were locked but unmarked, forcing the teams to do a full search (In real life, most doors would be marked with an all-clear "X". Some doors on the second floor were already marked with an "X". The team was uncertain whether the marking had been done by the classroom teacher at time of evacuation, or by another LSAR team. LSAR was completed in approximately 40 minutes (previous drills have taken one hour). LSAR Teams were called to convene at the command post.

When one person was found unconscious with a heart attack after 30 minutes, the team stayed with the individual and requested the nurse. When the nurse didn't respond a runner was sent. One person was found in a locked room – emphasizing the need to check even those rooms that are locked. Command Center requested ambulance for the heart attack victim (later speculating that in real life the late find may have resulted in a fatality.)

At the Command Center the communication liaison person requested "heavy equipment" from District Office "to move structure" although there was no report of anyone trapped inside or missing (it was unclear whether this inappropriate request for resources was a deliberate 'inject' to challenge the district EOC, or whether this was naively inappropriate. The district EOC response to this is unknown.)

The School nurse and psychologist were positioned in the medical response area. The medical response area was centrally located at the front of the assembly area, and may not provide shielding and privacy needed in a real life event. The observation team does not know if students' medications and records were retrieved from nurse's office during the evacuation.

The Request gate was well-staffed with appropriate forms and equipment. Small signs at head height informed parents of these functions. Student runners were available to facilitate location and communication. No students are allowed to leave until parents come. Students are first released to parents and only later to others on the emergency list, if parents do not come. Students (even those over 18 years old) seem prepared to comply with this. Several teachers were hopeful that all students can be released within an hour or so.

The Request and Reunification Gate was located at the same exit. Following the Chino Hills earthquake, when many students were released to parents, large numbers of impatient and anxious parents at the gate had been problematic. The leadership team was prepared to split these two functions into different locations if needed, but did not do so for this drill. Requests are received from incoming parents, checked against emergency contact forms, and then runners take student names to Incident Commander who reads names of students using public address system (or megaphone) for release.

Staff have found in real-life scenario that releasing 2,700 students using emergency contact cards is too slow (eg. Five teams, each taking one minute per student, releasing one student every twelve seconds, would take nine hours). Administration has requested two laptop computers equipped with student records to facilitate speedy student release.

At the end of the drill the Principal dismissed the students and they returned to their classes in an orderly manner with teachers bringing up the rear.

Recommendations: The international team believes that in general, it is the school community's own debriefing process that has and will continue to yield the greatest benefits to ongoing learning and adaptation, and to avoid complacency. In spite of the many exemplary practices observed, the following recommendations are offered in a spirit of collegiality to support this as a case study that others can use to challenge and improve upon their own practices.

- While the rote "drop and cover" rule is well-practiced under school desks, neither students nor general public have been able to generalize from this to many other situations away from a school desk. There is a clear need to teach everyone what to expect in terms of the feeling and severity of shaking, limitations on movement, the range of dangers from falling and sliding objects indoors and out, the most vulnerable parts of the body (head, neck, thorax), the need to hold on to their cover, and alternate ways to protect themselves. Everyone must be encouraged to think through a variety of 'personal scenarios' appropriate to the many different places they may be when an earthquake strikes. (In a similar public school one student reported anecdotally that no one in her dance class, surrounded by mirrors on three sides, knew what to do, though they moved away from the glass, they did not know to get down on their knees and make themselves small, covering their head and neck with their hands, and keeping their faces covered.
- To support this process of understanding, teachers and students in all classes should spend some time problem-solving to identify hazards in each indoor and outdoor area, from windows, furnishing, equipment, suspended ceilings and lighting, buildings, poles, power lines and so forth, and to identify best means of protection. Priority should be on dropping down (to prevent falling down and to provide maximum control over mobility in military crawl position), making yourself a smaller target, covering head, neck, thorax and eyes, and holding protective cover. Students in wheelchairs should lock them.
- Students and families would benefit from annual reminders to update their own family disaster plans, have emergency supplies at home, work and in cars. Video education about non-structural dangers would help students and families to accurately imagine severe earthquake impacts.
- During the drill, students can be encouraged to count together one-thousand, two-one thousand etc. to help stay calm.
- There continues to be some lack of realism about the severity of actual conditions that may be faced after an expected earthquake, and a general community-wide lack of appreciation for the nuances associated with protective behavior during earthquake shaking.
- Drills should be scheduled for very different times of the day, without notice to either students or staff. Support of staff unions should be sought for this important measure to learn how to safeguard employees and students alike. (N.B. ShakeOut.org now has an audio file that gives DHC instructions along with

realistic “earthquake noises.” This audio file may help enhance learning during the DCH drill).

- For schools where teachers have hundreds of students in changing classrooms, it seems prudent to provide printout of roster with student photos, to aid in memory and identification of absences.
- Students should be prepared so that those at the head of the line in the classes at end of corridor exiting first should be especially cognizant of dangers that they may encounter, and the need to re-route and to warn those behind (For instance, broken glass could be on the floor in front of exit doors. Covered walk-ways could be partially collapsed and dangerous to walk under.)
- During an actual earthquake some closed classroom and office doors may become jammed due to building shifts. Everyone should be taught that the person nearest the door should immediately prop open their classroom door prior to drop, cove, and hold.
- Outdoor, overhead hazards should be assessed as well as potential need for flexible routes and access to assembly area.
- To prepare for a real life situation students should reassure parents that they will be safe and will wait at school, that parents should protect themselves and help people immediately around them, and that when they come they should be prepared to wait patiently for student release. (Dangerous parent behavior and release without authorization has been observed in other schools in other districts. Such incidents may be reduced and avoided through frequent parent outreach with explanations of emergency release procedures).
- In general all communication channels should be reserved post-disaster for actual physical emergencies. In real life students should be instructed *not* to use their cell phones (parents being well-advised in advance about their location and well-being). Students should be instructed to turn off their cell phones after 15 minutes to conserve battery life for later use, and perhaps to turn on again for 10 minutes per hour to receive incoming messages. (Cell-phones use should be guided by district and county-wide policy developed in consultation with communications professionals to be certain that excessive use of SMS messaging will not negatively impact emergency communications.)
- In a real life situation, water should not be immediately distributed, as under stress, larger amounts will be consumed unnecessarily. Water should be conserved for measured distribution later. (Timing and measured water distribution should be guided by district and county-wide policy developed in consultation with emergency medical and public health experts).
- Portable privacy screens for toilets can be made from large appliance boxes cut in half vertically, and kept in the emergency supplies container.
- Regular drills could be more fully exploited as teaching/learning moments through selection of one of several experiential activities designed to develop teamwork and communication skills in a crisis situation. (See addendum below).

- Whereas the teacher marking system on the door may be a simple, “X”, the LSAR teams should mark the door with their team number upon exit. This will eliminate confusion about who marked the room and will also facilitate communication with any professional team that may be required later.
- For efficient checking, the standard procedure of LSAR teams may need clarification. If teachers have marked the rooms as All Clear with an “X”, and locked the door, this should be used as a trusted mechanism to focus LSAR initially on unmarked and unlocked areas and return for a second round to the marked and locked doors if safe to do so. This would be designed to turn up injured victims much earlier.
- If the command center has not accounted for everyone, then the team should not stay with an unconscious victim that cannot be revived by two rescue breaths, but should proceed to complete search (where someone else may be bleeding to death). The nurse may be otherwise engaged and should not be expected to come to attend to unconscious victim, so additional first aid volunteers will be required.
- The school should consider having an AED machine available to treat heart attack victims.
- The large numbers of students to be released requires considerable manpower and planning given to speeding identity-check of the pick-up person and matching student for release. In real life, conditions will be exacerbated by people coming without proper identification, and requiring visual confirmation. The schools plan to streamline checking emergency cards on laptop computers seems reasonable. The manual card system would still be needed for back-up and to allow additional simultaneous manual search. Extra charged laptop batteries would also need to be maintained. Additional measures to streamline reunification may be to break down last name by alphabet with different teams assigned and signage directing parents to line up by first letter of last name.
- Experience with parents in real life situations in other school districts suggests that without considerable training provided to parents, their impatience and anxiety may lead to unsafe behavior, and breakdown in reunification process. It is especially important to inculcate newcomers into the districts well-practiced plans.
- Prominent moveable signage for major response functions that can be seen over the heads of a crowd will be helpful. Signage directing parents to request and reunification gates is especially important in order to easily communicate and guide a large crowd of gathered parents. A note can also be entered on the school site map to indicate that the reunification and request gates may be moved to alternate locations for safety.
- Staff and older students would benefit from more experience in small fire suppression.
- The individual emergency needs of students with disabilities may need to be considered in the context of their IEPs, especially with respect to storage of adequate life-saving and behavior management medications for prolonged stays (eg. three days).

Post-Drill Debriefing

The day after the ShakeOut an open debriefing session elicited an additional round of observations from county and school officials as well as observers. Positive remarks concerned the value of the drill as a school-community learning opportunity, the ongoing lessons to be mined in each school and district and the value of the materials offered on the ShakeOut website.

General concerns raised include:

- What happens when we drill in close collaboration with local authorities?
- Will parents remain calm and patient during the potentially lengthy process of reunification? There is insufficient signage at schools to direct parents.
- With communications systems down the main method of transmission will be hand delivery. For many districts this will be extremely time consuming (eg. one larger districts covers 7,000 square miles, includes rural areas, and takes three hours to traverse by automobile).
- Are schools prepared for their role as community shelters? Are they ready for their sanitation and nutrition roles?
- How will schools handle community members wanting to help during an emergency?
- Are before-school, after-school and transportation systems prepared for an earthquake outside of regular school hours? Where will they go and where will students be reunited with their parents? How will they handle blocked roads?
- Are we doing all that we can to include the needs of students and staff with disabilities in our planning?
-

Breakout groups discussed specific concern detailed below.

Realism: Many districts could benefit from increased realism and variation in scenarios to address different hazards. Each scenario sets provides a story that frames the exact nature of the emergency the drill is practicing. Unexpected elements, known as ‘scenario injects’, should be designed to address specific realistic concerns associated with each school.

For example, one school decided to play out a scenario where based upon structural assessments of their own school buildings there was a partial building collapse. While administration knew that a school building collapse would be part of the scenario, individual teachers and staff were surprised with this inject. Immediately after Drop, Cover and Hold, teachers and students in one wing of the school were told over the loud speaker that there had been a partial collapse of the building, jamming classroom doors and making it impossible for them to evacuate. Teachers and students had the opportunity to experience their own feelings and frustrations being trapped and to consider how they would actually handle such an emergency. Based upon this realistic scenario input, trapped students and teachers strongly advocated for the purchase and inclusion of a window ladder for upper story classrooms.

Gently testing participants to allow them to discover their own reactions, strengths and potential weaknesses would require more thorough debriefing outlets to handle feelings, stresses and action planning. Finally, the most effective ShakeOut drills would be those

where the timing and specific scenario were unknown to the widest possible number of participants, allowing for more realistic improvisation.

- At least one unannounced full SEMS drill per year could incorporate various elements of surprise. These could include:
 - Surprise day and time
 - Involve transportation staff fully
 - Involve kitchen staff fully
 - Involve all parents in full student release
 - Practice at very beginning or end of the school day.

- More sophisticated drills can also incorporate “scenario injects”. These can be done both ahead of time and through notes opened by various actors, during the drill, introducing new information and challenges. For example, injects may include:
 - Blocking some exit paths and simulating building damage
 - An aftershock that causes a building collapse
 - Learning that a water main has broken and there is flooding the field
 - Students that pretend to go into shock or need medication while in assembly
 - Invitation for PTA members to simulate anxious parents or community members, and mutually supportive response
 - A media request for an interview or for information part way through the drill, or
 - A simulated change in weather that requires decisions about student and staff protection or safety

- The school may also want to consider emergency response issues that are external to the school site:
 - In the context of county-side planning, the district may consider each school having a “reception team” to handle students (even from another district) that may have been on a stranded bus in the neighborhood, and require safe haven, and
 - Joint drills with the local Red Cross branch, converging to use the space for shelter, emergency medical response.

Before/After School & Transportation: There has been a tendency to schedule all drills at predictable times during the school day. This hides the very real possibility that such an event could occur early in the morning while children and teachers are still on their way to school, or late in the afternoon when they are on their way home. In both cases hundreds of thousands of children are in before or after school programs, or are on buses commuting significant distances. School-based exercises and table-top drilling would be a first step to discovering the myriad of unaddressed problems expected to arise.

Some of the concerns include:

- Before and after school programs may not drill and caregivers may not have the same kind of training as school personnel
- Teachers and staff may not recognize the need to continue to or to return to school

- Agreements, plans and maps do not exist to guide bus drivers to solicit help in bringing students to the nearest school (which may not even be in their own district)
- Students and parents are unprepared for what to expect at such times
- Bus drivers do not have student emergency contact information with them, nor emergency supplies of life-saving or other student prescription medications and
- Schools are not prepared to accept students other than their own, arriving on foot from buses stopped nearby.

Measures to address transportation planning might include:

- Training for school bus drivers
- Bus route maps showing nearest schools along the route
- Information for parents
- Inter-district agreements for reception for students
- Teacher/staff protocols to return to school or continue to school in the event of an incident during school commute
- Emergency contact information kept with bus drivers
- Current medication prescription information kept with bus drivers, and
- Emergency medications policy and safekeeping system developed.

Students and Teachers with Disabilities: In many cases the particular challenges of drilling with students with disabilities may be avoided rather than addressed and problem-solved. While emergency planning is not a routine part of each disabled student's Individualized Educational Plan, this would be an effective way to ensure that each student's unique needs in case of disaster were properly considered. Available resources to guide evacuation, and inclusion of both children and adults with disabilities in the full course of disaster planning can be more widely disseminated via the ShakeOut site. Specialized task groups including teachers, parents and older students are needed in school districts to address the range of challenging issues (Kailes, 2000. 2002. 2006a. 2006b. 2008a. 2008b.)

Conclusions

The participation of schools in the first Great Southern California ShakeOut in November, 2008 is nothing short of spectacular. Thanks to the outstanding initiative and advocacy of school disaster management leadership in all the largest counties in Southern California, the drill was adopted as a region-wide event. The drill itself provides a rich opportunity for practice, discovery and action planning. The strongest recommendation coming from participants in the ShakeOut is that it becomes an annual event, spurring the continued and ongoing process of disaster prevention and preparedness.

Voluntary online surveys, observations at schools, debriefing, and blog comments all provide valuable insights into school disaster prevention and preparedness in California. This study has been able to document a variety of strengths as well as potential weaknesses and priorities of major concern to school readiness for major earthquake impacts.

Awareness: While awareness of the earthquake threat in California is high, understanding of what this may mean in reality, the specific consequences, and the range of problem solving skills to address this remain unrealistic and inadequate.

Policy Guidance: California's long and pioneering history of public policy for school safety and more recent federal legislation making National Incident Management Systems a condition for receipt of federal funding have made California a leader in school safety. Where school districts have designated leadership and have taken compliance seriously, this is a guiding beacon. However lack of compliance and lack of systems of training for compliance is also cause for alarm.

Leadership: In those counties and school districts where there is school disaster management leadership, supported by conscientious board oversight, and receptive superintendents, school disaster prevention and preparedness has made significant strides. School principals and assistant principals play the pivotal role in making disaster prevention and preparedness a sustainable part of school culture and standard operating procedures. Where leadership has not made time for this, the adverse consequences are likely to be tragically felt. Television newscasters and other prominent role models have continued to fail to demonstrate to the public, long-recommended planning measures and safe behaviors.

Broad participation in planning: Parents, students, and classified staff remain in peripheral roles and can play a much greater role in both advocacy and support for school disaster management goals than they currently do.

Plans vs. Planning: The most meaningful school emergency plans are not static documents written by administrators, but documents that are in constant revision by the very people who are practicing and using them.

Training & Drilling: Many schools have been extremely conscientious in addressing school disaster prevention and preparedness. Through staff training, regular practice and reflective self-assessment refine and improve their plans continuously. However a high proportion of schools are sorely lacking in ICS training of any kind.

Reflection and Action After Drills: Drills provide an indispensable practical testing-ground for learning. However, the planning done before a drill, and the reflection and action planning that take place after the drill - by everyone involved - are the most significant steps of all.

Student Knowledge and Skills: Students are not fully engaged in the knowledge, skills and competencies for disaster prevention and preparedness, nor in carrying these messages home. Few are involved in school disaster management committees. In spite of rote training to "drop, cover and hold" students may be unprepared to think through and apply a range of behaviors for safety in different situations.

Involving and Communicating with Parents: Communication with parents may mean the difference between successful post-disaster response and chaos. Little thought has gone into how to involve parents in successful response, and how to communicate with them to prepare them for a range of roles and responsibilities.

Structural Safety: While new school construction is considered safe, significant questions remain about as many as 7,537 school buildings constructed before 1978 that were identified by the Office of the School Architect as being potentially hazardous in the AB300 paper review. School boards, superintendents and parents should waste no time in ascertaining that each of these buildings be looked at individually to ascertain and to document safety or to make plans for retrofit.

Non-Structural Mitigation: While many schools have taken thorough non-structural mitigation measures, there are others where building furnishings and contents continue to pose a hazard to occupants. A quick school-wide earthquake hazard hunt, and a joint effort by teachers, facilities maintenance personnel and parent volunteers could address these at the school site level. Links to guidance materials for non-structural mitigation are available on the ShakeOut site (McGavin).

Family Reunification and Child Protection: Schools are aware that one of the most problematic areas is ensuring child protection and safe student/family reunification. Schools must be diligent in ensuring that emergency contact information is updated at the beginning of every school year. School-based signage directing parents to separate request and reunification gates are likely to help this process. As yet little attention has been paid to parent training, perhaps the weakest link.

The School Commute: In spite of transportation of tens of thousands of students daily, planning for an earthquake that takes place during the school commute time is almost entirely lacking.

Licensed Family Child Care: In California, there are more children in home-based licensed family child care hour for hour than are enrolled in school (due to longer hours, more days, and before and after school care) and yet there are neither regulations nor clear guidelines for disaster planning with these licensed child care providers.

Realism: Drills currently lack realism. Improved quality of drills can be achieved through annual practice of full simulation drills, more unannounced events, realistic scenarios and drill “injects” to make these drills more useful in guiding school disaster management.

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APPENDICES

School Disaster Reduction & Readiness Checklist

ACTION STEPS

- Convene local school safety committee representing administration, faculty, staff, students and parents, and local community.
- Study the school safety planning and action steps below together.
- As needed assign sub-groups or individuals to be responsible for investigating and making recommendations for each task.
- Create plan based on task group recommendations.
- Implement the plan, involving the whole school community, setting milestones and taking action steps to achieve risk reduction and response preparedness.
- Communicate and coordinate as needed with education authorities using the resources and support available, and advising them of resource and support needs.
- Review and revise the plan as necessary, at least annually.
- Be sure to keep all staff, parents/guardians, and students advised about the plan.

ASSESSMENT & PLANNING

<input type="checkbox"/>	An ongoing school safety committee has been established to lead disaster risk reduction and disaster response planning in our school. We hold regular meetings (including staff, parents/guardians, students and local community leaders) to develop and review our mitigation, preparedness and response plans.
<input type="checkbox"/>	We have learned about local resources and assets (eg. fire extinguishers, first aid kits, people with response skills, generator, ladder, search & rescue equipment) available in the community nearby from private and public sources, and discussed shared use of resources post-disaster.
<input type="checkbox"/>	We have researched historical events and current scientific studies and considered all of the different hazards that could affect us. We are aware of the needs of vulnerable groups or individuals such as young children, students with disabilities, and language minorities, as well as the concerns of staff, students, parents and community.
<input type="checkbox"/>	We have site and neighborhood maps and have identified alternate staging and evacuation locations.
<input type="checkbox"/>	We have assessed and are addressing physical risks posed by buildings, building non-structural elements and building contents, and hazards in our neighborhood.
<input type="checkbox"/>	We have evacuation plans, including safe assembly areas, evacuation routes, safe havens and alternatives, buddy system. Student transportation systems have plans to take students to nearest safe school in case of disaster during student commute. Parents/guardians are informed of location of all possible safe havens for reunification. The evacuation plan has been shared with the nearest police, fire and hospital officials and established communication and understanding in advance of emergency situations.
<input type="checkbox"/>	We have established a communication system for emergencies, including a warning system wherever appropriate. All necessary contact information is available for emergency response and family reunification.
<input type="checkbox"/>	We have established student release procedures to ensure that children are released only to adults approved by parents/guardians.
<input type="checkbox"/>	If needed we have planned to provide emergency shelter for our local community.
<input type="checkbox"/>	We have a plan for educational continuity for our students including alternate locations to continue classes, alternate schedules and methods of instruction as needed and secure back-up of educational records.
<input type="checkbox"/>	We have plans and regular contact with local news media (radio, newspapers, television) to communicate planning and emergency messages to families, and to use our school-based activities to promote risk reduction community-wide.
<input type="checkbox"/>	We provide significant practical local disaster risk awareness and reduction activity at all age levels, through school-based activities and projects and/or through the formal curriculum.
<input type="checkbox"/>	We encourage staff and students to prepare for disasters at home and provide support material for doing so.

<input type="checkbox"/>	We have insurance coverage to pool economic risks.
PHYSICAL PROTECTION	
<input type="checkbox"/>	Our building has been located appropriately, designed and built according to current building codes/safety standards for disaster safety, and inspected by a qualified structural engineer.
<input type="checkbox"/>	The building has been checked by local fire department for fire safety.
<input type="checkbox"/>	If our school required repair or retrofit, this has been completed with minimal disruption of education.
<input type="checkbox"/>	We practice preventative maintenance on our buildings, protecting them from damp and other damage, and repairing damage when it occurs.
<input type="checkbox"/>	<i>Earthquake, windstorm:</i> We have fastened tall and heavy furniture, secured computers, televisions and other electronic equipment, hazardous materials, supplies, propane gas tanks, water tanks, lighting fixtures, roof elements, railings and parapets, heating and cooling devices, storage tanks and other items that could kill, injure, or impair educational continuity. We have put latches on cabinets, and hung pictures securely on closed hooks to protect ourselves from injury and financial losses.
<input type="checkbox"/>	<i>Flood, storm, volcanic eruption, landslide, avalanche, tornado:</i> We know about early warning systems in use in our community and have plans to respond to these in order to move people and assets to safety.
<input type="checkbox"/>	We have taken fire prevention measures and have response tools such as fire alarms, fire hoses, fire extinguishers, buckets of sand, and maintain these. Our building exit routes are marked and have automatic emergency lighting.
<input type="checkbox"/>	We have limited, isolated, and secured any hazardous materials to prevent spill or release.
<input type="checkbox"/>	We have off-site back-up of critical information, including student records, emergency contacts and release permissions.
<input type="checkbox"/>	School transportation is inspected for safety and drivers and students are trained in respective safety skills. Seat belts, helmets and other transportation safety measures are advocated and promoted.
RESPONSE CAPACITY: SUPPLIES & SKILLS	
<input type="checkbox"/>	We have guidelines for and we hold post-disaster drills to practice safety skills with all staff and students at least twice a year. We have a buddy system for those needing help. We hold simulation exercises at least once a year where operational teams practice response organization as well as procedures and skills in damage assessment, information-sharing, light search and rescue, first aid, fire suppression and family reunification. We discuss and improve on our practice.
<input type="checkbox"/>	We have skills and practice building evacuation drills twice yearly as well as applicable drills for the threats faced (eg. first aid skills for life safety, drop, cover, and hold for earthquakes, water safety and swimming skills for floods, shelter-in-place for violent threats). . We follow basic building evacuation rules: "Don't talk. Don't run. Don't push. Don't go back".
<input type="checkbox"/>	We have access to reliable external information sources on disasters and to an internal communication system. We have practiced receiving updates on emergency situations, warning our community and informing the relevant authorities.
<input type="checkbox"/>	We have emergency supplies for students and staff to last for at least the first 72 hours (including at least 12 liters of water per person, food, first aid supplies, emergency power, emergency lighting, alternate communications, alternate transportation, shelter and sanitation supplies) (Students can be asked to bring emergency supplies bag at the beginning of each year, and take it home again at the end of the school year).
<input type="checkbox"/>	School staff and older students have and learn response skills including: first aid, mass casualty triage, light search and rescue, fire suppression, wireless communication, psychological first aid, emergency power operation, student release procedures, shelter, nutrition, and sanitation skills.
<input type="checkbox"/>	School staff know how to turn off our electricity, water and gas.
<input type="checkbox"/>	We have a standard organizational system and know the principles for organizing post-disaster self-help.
<input type="checkbox"/>	We have identified resources for psychosocial support if needed.
<input type="checkbox"/>	We have plans to use our resources for mutual aid and to support local community response.



Post-Drill Self-Evaluation Form

A. DEMOGRAPHICS

1. District: _____
2. School Name /Site: _____
3. School levels *Check all that apply:*
 Pre-school K-6 6-9 9-12
4. School type Public Charter Private Homeschool
5. Principal: _____
6. Time started (when alert system was activated): _____ AM/PM
7. Time full drill was completed (when ALL Clear was sounded): _____ AM/PM
8. Total numbers of people involved in drill:
_____ Administrators _____ Teachers _____ Classified staff
_____ Students _____ Parents and Volunteers
_____ Others: _____
9. How did you evaluate this drill? *Check all that apply:*
 informally using self-evaluation forms In staff meeting(s)
 In classrooms with students including outside observers

B. DROP COVER & HOLD AND EVACUATION DRILL

1. When the drill began students adopted the "Drop, Cover and Hold On" position and stayed there "during the shaking".

ALL MOST SOME FEW NONE NOT SURE N/A

2. When the drill began teachers adopted the "Drop, Cover and Hold" position and stayed there "during the shaking".

ALL MOST SOME FEW NONE NOT SURE N/A

3. Following the "shaking" teachers and staff checked to see if anyone was injured (and offer transport or treatment as appropriate).

ALL MOST SOME FEW NONE NOT SURE N/A

4. Following the "shaking" teachers/staff checked and made mental note of any damage or hazardous materials.

ALL MOST SOME FEW NONE NOT SURE N/A

5. Following the "shaking" teachers/staff left sign on their room indicating that everyone was out or that there were casualties or danger inside.

ALL MOST SOME FEW NONE NOT SURE N/A

6. Following the "shaking" teachers/staff checked to see if any neighboring rooms needed help.

ALL MOST SOME FEW NONE NOT SURE N/A

7. Following the “shaking” teachers/staff led students out of the building in a quiet and orderly evacuation

ALL MOST SOME FEW NONE NOT SURE N/A

8. Students, faculty and staff assembled in safe area outside following the “shaking”.

ALL MOST SOME FEW NONE NOT SURE N/A

9. Staff completed a status report form on injured/missing for each room.

ALL MOST SOME FEW NONE NOT SURE N/A

10. Total **Evacuation Time** (time from START of drill until when last staff or students arrived at staging area): _____ Minutes and _____ Seconds.

11. Problems encountered during or after the drill:

- distractions non-participation – staff
 non-participation – students cutting school none

12. What type of alert system did you use to alert students/staff of the drill?

- Bell Intercom/P.A. Bull Horn Whistle Other

13. Did students or staff with disabilities participate in the drill?

- Yes No

If yes, about how many students? _____ how many staff? _____

14. Did you encounter any special challenges with the students or staff with disabilities?

- Yes No If yes, please describe:

15. During the drill we kept students busy with:

- drill-related activities regular school work
 something fun nothing

C. ICS / SEMS DRILL

1. We established an Incident Command Post: Yes No

2. We used our School Emergency Plan: Check all that apply:

- Yes, during the planning. Yes, during execution of the drill.
- Yes, after the drill. No, we did not use our plan
- No, we do not have a plan.

3. We had individuals prepared to assume responsibility for these functions?

- Incident Command Reunification
- Communications Emergency Assembly Area
- First Aid Security /Utilities Controls and Building Check
- Light Search & Rescue Fire Suppression
- Operations Logistics
- Planning and Intelligence Shelter and Sanitation
- Security Public Information/Media Relations
- Psychological First Aid Nutrition

Comments:

4. I would rate the following response activities during our drill

LOCATION	ACTION REQUIRED	EXCEEDS EXPECTATIONS	MEETS EXPECTATIONS	DOES NOT MEET EXPECTATIONS	N/A WE DID NOT ACTIVATE THIS
Incident Commander Command Center	Direct and coordinate all emergency operations. Assign staff role adapting for absentees or injuries. Credential emergency personnel.				
Communications Team Emergency Supplies Center	Coordinate external communications to other schools, district, media and relay official communications from IC to staff, students, parents and public.				
First Aid / Mental Health Team First Aid Center	Ensure that all first aid supplies are up-to-date, available, and properly administered.				
Light Search and Rescue Team Command Center	Coordinate light search and rescue operations, inform IC of fires and put out small fires.				

Reunification Team: Request Gate Reunion Gate	Meet parents at the Request Gate and escort students to the Reunion Gate. Receive parents and reunite them with their children at the Reunion Gate.				
Emergency Assembly Area Team Assembly Area	Account for all students. Supervise. Check periodically. Assist with locating and reunification. Implement buddy system for use of restrooms and other assistance.				
Site Team Security, Utilities, Sanitation & Shelter	Secure campus, direct parents to reunion gate, check and shut off utilities as necessary, provide sanitation and shelter sites.				

5. We used supplies during the drill? Check all that apply:

- Yes, our staff took supplies out their storing area.
- No, we did not use emergency supplies.
- Yes, our staff used the supplies during the drill.

6. Parents participate in drill:

- as formal observers as informal observers
- as IC team members as volunteers not this time

If yes, # of parents participating: _____

7. We encountered problems with:

- Alert systems Students Staff
- Parents Supplies Evacuation Route
- None of these

If yes, please describe:

8. In spite of our best planning efforts, we should expect some problems in these areas during a real disaster.

- Physical Safety Shelter Nutrition
- Health Student Reunion Educational Continuity

Some problems we expect, and why:

D. DEBRIEFING SUMMARY

1. What went well?

2. What did not go well?

3. Changes Recommended for Next Time?

4. Top Three Lessons Learned?

5. Any Other Comments?

IN ADDITION TO THE GENERAL SURVEY ABOVE, A SERIES OF ICS/SEMS POST-DRILL SELF-EVALUATION FORMS WERE ALSO MADE AVAILABLE FOR THOSE UNDERTAKING FULL DRILLS. Separate forms are available for: Incident Commander, Communication Team, First Aid/Mental Health Team, Light Search and Rescue, Reunification, Emergency Assembly Area, and Site Team.

International Resources for School Disaster Management

1. Model drill guidance materials and templates and other learning materials are available on the Great Southern California ShakeOut website at: <http://www.shakeout.org/schools/>
2. The DREAM Collection of Disaster Reduction Educational Materials includes resources for both students, teachers and administrators and can be found on UNISDR's Prevention Web at <http://www.preventionweb.net/english/professional/trainings-events/edu-materials/?pid:6&pih:2> At the bottom of this page, a "submit" button allows you to add to this effort at a comprehensive multi-lingual collection.
2. Everyone is invited to subscribe to the Coalition for Global School Safety and Disaster Prevention Education Online Newsletter at: <http://groups.preventionweb.net/scripts/wa-PREVENTIONWEB.exe?A0=COGSSANDDPE-NETWORK>
3. Those interested in networking for School Safety and Disaster Prevention Education in general are invited to join the COGSS&DPE social network at: <http://cogssdpe.ning.com>
4. Interested teachers are invited to participate in an online network for sharing experiences and develop means for testing impacts of school activities. Join the Edu4DRR Teachers Network at <http://edu4drr.ning.com>

Experiential Learning for Students

A range of supplemental experiential learning activities might be implemented on a voluntary basis by individual classroom teachers, grade-wide, subject-wide, or as school-wide activities. Still others may be take-home activities to encourage parent-child conversations and encourage protective actions at home. Some may be conducted in the weeks preceding a future drill, some on the day of and during the drill itself, and some may be used as follow-up activities.

1. Bucket Bridgade Drill

Two very large water containers sit at one end of the field and similar empty ones at the other end. Two teams line up at arms length between the full and empty containers. Teams compete to move the water from the full to the empty container. First team that reaches mark with least spilled wins.

Why?

- Develops fire suppression skill and teamwork
- Develops imagination about the response skills required
- Develops sense of responsibility and experience as a community responder

You will need:

large water containers 2-full, 2-empty.

5-10 buckets – varying the size based on age is a good idea.

2. School Hazard Hunt

Classroom groups are given a hazards check -list activity for outdoors, which they are to fill in while seated in assembly area. How many can they spot? This can be used as a starter activity to hazard hunt in the classroom or school, which means that the drill is not an abstract exercise but one in which connections are made to their safety in school and at home – As homework students could carry out their own home hazard hunt with parents for instance.

Why?

- Develops awareness of non-structural earthquake hazards
- Completes preliminary step to reducing non-structural risks

You will need:

Hazard Hunt sheets for school yard
Classroom hazard hunt sheets for group exercise.
Home Hazard Hunt worksheets (1 per student).

These and other activities can be found at: www.riskred.org . Teachers interested in disaster reduction education are encouraged to join the DRR Education Teachers' Network at <http://edu4drr.ning.com>

Other activities:

In addition to the range of experiential exercises mentioned above, additional “live lessons” can be encouraged, including:

- Arranging a visit of a mobile earthquake simulation room – providing an on-site demonstration of what happens in an earthquake as well as ways to protect yourself from falling objects.
- Interviews with earthquake survivors.
- Lifesaving skills/first aid and transportation of injured people taught by Red Cross/Red Crescent volunteers.
- Cooperating with scouting organizations to learn how to put up tents.
- Fire Department demonstration and training in use of fire extinguishers by staff and older children.
- Special evening seminars on home structural mitigation and earthquake coverage, featuring local engineers and insurance agents, for parents and interested community members.

ShakeOut Blog Comments received related to Schools and School Children

Pj McGinty Teacher - First Grade McMillin Elementary School

Our Shake Out drill was amazing! Our school was very ready and it appeared that all 850+ students confidently got through it.

One of the students in my class whispered to me (I was under a desk next to him) that our principal, Mr. John Gugerty, was doing "karma" while speaking on the intercom. I asked what he meant by that. He replied, "Mr. Gugerty is doing karma because his voice is soft and calm and that is what we are hoping the earth will be like instead of shaking."

Wow! This was such an astute observation. When our leaders are calm, yet firm, we are led to control and excellence. Thanks for organizing such an important thing for us to practice across CA.

Marissa Angulo

I was in school when the drill begins. I am studying english in School of Continuing Education, Anaheim Campus. My classroom was prepared and we evacuated the building in the time required, almost everybody was ready, but a few people wasn't ready in the last minute they mix up the instructions and they feel insecure, the information was clear about the drill, but some people don't take seriously the exercise and they can make problems with the evacuation. I am thinking what if the earthquake was real?. I have more information but we need to share the information with everybody around us and first of all we need to be prepared.

Annie Delgado, Principal Our Lady of Talpa School

As a small private Catholic school, this drill was a great opportunity for us to practice an important event. It is a reminder for us all to be ready and prepared. I was proud of all the faculty, staff, and students as they quickly followed all the drill instructions. Thank you for bringing this event to our attention.

Mardee Jessop Home School

Today my family took part in the Shake Out at exactly 10 am. My kids were surprised and taken off guard. We were in separate rooms. My husband had our 3 boys under a counter and I had my daughter in a closet in one of the bedrooms. We practiced medical attention, turning off the gas, checking the electricity, food and water supplies. We checked the house structure and pretended to clean up all the glass on the floor. We told the kids of our experiences during the Northridge Quake and how loud and scary it can be but that if we were prepared we would feel at peace because we would know exactly what to do. We also have a ham radio and cooking equipment. At the same time we discussed what we didn't have and wrote a list down to follow through over the next two weeks getting additional supplies. It was a great experience and one that I think we should and will do at least in our own home every year. Thank you for organizing this. I know it will pay off when that day comes because it always does. I am a six generation Californian and everyone in my family has been in at least 1 major earthquake which is something else we taught our kids today that it will happen and we must prepare for it. Thanks again! Until next year...be safe - be prepared!

Administrator West Valley Christian Academy

We have been having a drill for 20 years. Each year we learn new things and add new things to the drill. We ring the school bell for 2 minutes. When the bell stops the shaking has stopped. We have children running and hiding, being injured and getting hysterical. We have classes that can't get out of the room, classes whose teacher is injured or missing, and all kinds of fires, water leaks and gas leaks.

This year we added hysterical parents trying to get their children and parents that were volunteering that day trying to leave with their children. We also had a staff member trying to leave with her children. We definitely need to work on our release procedures! One of our staff members had a head injury but wouldn't tell us so she kept telling people to do the wrong thing. We also added aftershocks to our drill. When a loud long whistle was blown it was an aftershock so the teachers had to decide what to do with the classes.

We learned this year that we have too many walkie-talkies so communication was difficult because too many people were talking at once. We learned that our porta-potties need to be staked down if there is any breeze. We found that we have some holes in our first aid supplies. We had a parent nurse with us this year. We found that we were missing some forms in our emergency book that had emergency release information. As I said earlier we

found that we need to work on our student release procedures. We didn't have a smooth and easy way to release the children - we thought we did but with hysterical parents yelling at us we found it didn't work the way we thought it would.

It was a good drill. We always learn but always pray that everyone is at home in bed if/when a big earthquake occurs.

Sandy Cram, Asst. Director Shepherd of the Hills Luthern Pre-school

Here at Shepherd Center Preschool we had 52 children between the ages 2 and 5, and we had 10 adults we talked about the bunny in the hole (which means go under the table and cover your head). The children were great. Our complete drill time was 5 minutes from start to finish. We did Bunny in the hole and then we all went to the front yard away from buildings, wires and tall trees. At that time we took roll and made sure everyone was accounted for. Our staff here is very well trained.

Tony Birge, Administrator Victory Christian Schools

Our entire elementary school and preschool participated in the Big Shake Out Earthquake drill. We have done earthquake drills before, but this time we actually simulated injuries, search and rescue, triage and evacuation procedures with simulated obstructions. Our entire staff used the time to teach the children what we would do had this been a real severe earthquake. We spent approximately 30 minutes with the entire student body going over basic earthquake preparedness, and basic do's and don't's. We had an opportunity for questions and answers. Some of our students played out the part of injured and our search and rescue team used radios to get help to them and get them safely out of the buildings to the first aid tent. We also discussed with the students how we might have to take care of them for up to 72 hours if their parents were unable to get here.

Jeff Plank, Teacher

I shared with my class some stories about earthquakes in the past and this week they were prepared for today's drill. I showed them the website on Monday on my smartboard at school. We had a great time with it. We did the drill very well and the kids were not nervous at all. Thanks for setting this up for our school and county. We need to be aware of what is going on in the state of California. Very informative website. The students loved the website game with the skaking and making decisions on what to do in that room.

M Edwards

I was at my child's elementary school during the "Shake-Out".

Although the school should be praised for participating, it wasn't taken as seriously as I would have liked. Most parents didn't know it was happening. The school could have learned a lot from having the parents that were nearby, arrive at school. This would have given the school staff an idea of how to deal with the parents as well as the students.

Although they have a plan for releasing the children, they didn't practice it today.

Also, I will be taking a C.E.R.T. class because of the "Shake-Out".

I see now that most adults are not prepared to deal with a REAL emergency. I'm sure I could learn a lot from the class.

Bee McEachen, Teachers Aide Alhambra Parent Education--Adult Ed.

Today is our three year-old class which consists of three year olds, and their parent or caregiver. I was surprised at how many did not know of the Shake Out, but we clued them in quickly. At ten o'clock I flickered the lights in the gym off and on quickly as teacher Sandra informed the adults of the earthquake. As people scrambled to fit under tables and hang on with their little ones we could see the areas needed to be worked on as far as being aware of surroundings (high windows, exits, hanging lights, etc.). We then assembled outside, and reviewed what happened and will happen in the event of a real earthquake. In the next few weeks we will be reviewing with the parents so that we can fine tune the areas that need improvement. This drill opened up a very good discussion on being prepared for emergencies especially where little ones are involved.

Thank you for having this drill along with the tv coverage as support.

Viann Sandera, teacher Los Serranos Elementary School

I explained to my third grade students, what I do during an earthquake. After I have dropped, covered, and hold I try to feel the movement of the quake. Is it going east and west, north and south, up and down. We were discussing the importance to notice what was happening. Then when everything has settled down, they can go on USGS and answer the questions to help the scientist.

Joy Mendoza PTSA President Jackie Robinson Academy K-8 PTSA

It was around 9 am when the vice principal came in the Parent Center to tell us that today was the day for the Shake Out. She also said that she needed a volunteer to pretend to have a head injury. Always the willing volunteer that I am, I raised my hand not knowing what I was supposed to do (aside from drop, cover and hold on). And then she told me what I was supposed to do. Aside from pretending to have the injury, I should be in a corner where the floor monitor could not easily find me. She also gave instructions to the other parents about leaving me in the room and hanging a card on the door saying that an injured person was in the room. And then the announcement and the warning bells started to sound. It felt real hearing the footsteps of the students from the second floor as we were told through the PA system that it was shaking hard. All the parents at the Parent Center dropped on the floor, hid under tables and held on. I was under the table and put a red wet paper on my forehead for props (Ms. Maria's dramatic idea). Another announcement came and it was for us to evacuate. Of course the other parents had to leave me because that was what the instruction was. I lay on the floor, seriously taking the 'injured person' role. I could hear the students coming down of the stairs and heading to the field. After 10-15 minutes, there was dead silence and I felt a little bit anxious. It felt real now. Being injured after an earthquake and being left alone in the room did not feel right at all. I heard Ms. C., our counselor, calling to ask if someone was in the room. And of course, I did not respond because I had a head injury and was unconscious. She went inside the room and searched all over until she found me under the table. She then radioed to other staff that there is an injured person in the Parent Center. She told me to relax and help was coming and to stay as still as possible.

When she left, it dawned on me that if this was a real incident, I would really be scared to be left alone with an injury. But I guess that was what the protocol was about. I waited patiently and thoughts started to run through my head. Was my son ok? Did his class make it safely to the field? Did my brother's high school participate in this drill? How about at my sister's work place? And then time was running so fast, I was feeling everything as if it were real. The corridors were quiet, I was lying on a cold floor, my props was dripping because Ms. Maria had to soak it in water and was by myself in an empty room. Oh my God! I sure hope this does not happen in real life. I could have sworn I was praying as if it were real and I was fighting for my life. And then I heard the rescue team come with their stretcher and first aid backpacks. I was so relieved. In my whole life, I have never been this close to worrying about my life in a natural disaster. The rescue team brought me to the Triage along and there were a couple of other injured people there. The medical team was there, too. It was so nice to see the nurse especially on this day that I pretended to be injured. I always see her and say 'Hi' to her, but it's just today that I felt excited to see her. I told you I took my 'injured person' role very seriously. Finally, after more than 30 minutes of pretending there was a big earthquake, everyone got cleared and was sent back to their classes and rooms. It was a great day to learn and a great day to realize that anything can happen and that the only real thing that we can do is be ready for it. Thanks to everyone who cared enough to organize the Great Shake Out. Talk about another historical moment. Aside from electing a new president. More power.

Juanita Godwin, Director Boys & Girls Club of Coachella Valley

We, at the Coachella Boys & Girls Club, held our drill after school. At 3pm the drill began, members dropped under pool tables, air hockey tables, bleachers etc. After 2 minutes we all gathered in our gym and discussed safety practices during earthquakes. At the end of the drill, a 12 year old boy, who really took all the information seriously and to heart, came very concerned and teary eyed..he asked me if his grandma would be OK after the "BIG" earthquake. He informed me that she lives alone in Mexicali, MX. and is not in good health. Not knowing how to answer, I told him the importance of being prepared. I, as an adult know the importance of water, flashlights, food etc. during an earthquake, but to some youth the important thing is making sure that their loved ones are OK. It was a simple conversation with a huge impact, so lets ask our children what they fear about the "Big" earthquake, to ease their mind.

Arthur Gresham, Facilities Manager Escondido Christian Schools

We are a private school with preschool through 8th grade. We began Monday, briefing the teachers, and showing them the web based material they could show in their classrooms on computer-projection screen, including the animated Drop Cover Hold On page, the simulation, and other pages. Teachers involved the students each day with various resources appropriate to their grade level and students.

We also played for the teachers the sound track with the narration to understand the valuable tips it contained. But our staff felt that the full narration was not appropriate for all our students, as we have children as young as 3 years old. So for the conduct of the drill I edited the narrated, with the non-narrated version, to create a customized version. We played this over the intercomm system. I have sent our modified version by separate email.

We rescheduled all classes to be in classrooms for this drill to maximize the particular learning goals we wanted. We plan later to run drills at times when we have students outside on recess, giving use an opportunity to train them for that situation also.

We found the Preparedness Self-Evaluation survey to be very valuable,as it has brought to light many things we need to better prepare and plan.

Thanks to the many who helped provide the many resources and the work that went into this.

Lynda Metzger, Parent Grant Elementary School Santa Monica Learning Resource Committee
I didn't know this was such a large event until my friend e-mailed me this web link.
My son came home and told me he did the drill with his whole school. He is a Special Education Student and he was very proud to be so successful and know how to do the right thing when the "earthquake " happened.

Sr. Sharon Lamprecht, Principal St. Jeanne de Lestonnac Catholic School (Private)
We have 3 year olds in our school and we go up to and including 8th grade students. My 8th grade and 7th graders felt so important because they were able to interact with the younger students. One of my 3-year olds asked, "If this is an earthquake and the ground is shaking, why don't I feel it?" The teacher explained to the child that this was like a game. The child responded that the best part of the game was when they were outside in the big yard they were able to sing, and play games. They thought that was so nice.

This drill gives the older students the opportunity to realize what an important role they have as the leaders of the school and they "step up" to the challenge.

No one was silly or frightened and everyone was aware of someone else besides themselves. We were there to help and protect one another.

Michael Logan, Crafton Hills College
At 10 a.m. on November 13, 2008, over 5.3 million Southern Californians, have registered on the Shakeout website and made a commitment to "wherever they are at the time", take part in the largest earthquake preparedness drill in U.S. history, and Crafton Hills Collage (CHC) was no exception.

The "Shakeout" is designed to practice "drop, cover, and hold on" to protect ourselves during an earthquakes. This is ongoing so if you did not register for the event before, don't worry you still can if you participated by default like many CHC students

Many student were not even aware that there was going to be a drill, but even the ones that were, were not expecting the evacuation of certain buildings after "the quake". Several buildings including the library, classroom buildings, and even the OE Buildings where future paramedics and emergency personnel are being trained, participated in the drop and cover, as well as the immediate evacuation.

CHC has had plans in place at least as far back as 1992 for evacuations and emergencies such as terror attacks and other disasters, so this is just one more facet to their emergency preparedness.

Jim Holbrook, a professor at CHC, has been a big advocate of emergency preparedness for some time. "We are a collage and we are here to help people be successful," said Holbrook, who among many other things is always telling students after a disaster to remember "the 4 W's of personal safety". The 5 W's are as follows, "widow makers (things that can fall on you, or in some other way kill you) water, wood. Wearing, and wiggly's (things like snakes and other critters that could harm you".

Holbrook also hands out to students' things like a product called "MiniTissue" which is pretty much what it sounds like, a mini tissue. Only this tissue is individually wrapped, is 100% cotton and is about the size of a breath mint until you add a few drops of water to it, and presto, it expands into a surprisingly large hand towel. He demonstrated one for me, and considering the size it started out as, it is really amazing! It can be used for everything from basic cleaning to emergency wound dressing, and can even be rinsed out and reused.

Holbrook also stresses to all his students the fact that we all need to keep emergency kits at home as well as carry emergency preparedness kits in our cars, as well as keep one handy at work. These kits should have at least a day or two of water and stable foodstuffs that are not susceptible to heat, cold or other elements. For information on what kinds of things to use there are many sources on the Internet.

The main things to ask yourself are "what will I need to survive?" and "what else might I need to be comfortable?" include not only water and food, but also medications, and maybe things as simple as a deck of cards. A deck of cards you say? Well not only will it give you something to do if you are stranded, but the cards can be used to mark trails out of an office building, and they can be used to make splints for a broken finger.

After the Shake out I walked around and asked random people how well they thought they were prepared, and regardless of the reality of the situation, I was surprised to find out that this was really a "perspective" issue depending on the point of the person I was speaking to. Answers ranged from one who was not worried at all, and is relying on the "greed" and or "generosity" of people. In his mind he did not need to carry water or anything else in his car, or any other places, because he felt he could survive even a day or two without water and even longer without food. And if he needed to, he could ask someone else for a drink. With that, he flashed his credit card and continued "and there will always be the profit seekers... I'm sure I can just buy what I need until the stores are empty, and by that time emergency supplies will be on their way"

Just as interesting as the ones who felt they had nothing to fear, were the differences in opinions of the ones who were seemingly well prepared. Others who did carry water, food, and first aid kits in their cars and keep items at work and at home, (depending on who I spoke to) considered themselves anywhere from a 6 to a 9 on a scale from 1 to 10. Some who had less items, considered themselves more prepared than some who had more. Many just admitted to not being prepared at all.

In particular EMT students and staff who have had training (as well as carry advanced first aid and survival kits with them) on average, rated themselves lower on the scale than those that have not had this kind of training.

It kind of makes you wonder just how prepared we really can be, and we really just don't know how well we will ultimately deal with an emergency until we are faced with a "real emergency". And if the guys that are trained in what to do in an emergency, and are always ready to deal with emergencies don't rate themselves high on the scale, maybe we should take a harder look at how well we really are prepared.

On the other hand I spoke to some of the campus police, and they feel as a whole they, and CHC as a whole, are pretty much prepared for most any disaster that could come our way. They have emergency plans in place, and people that know where to go, and what to do to help people (student or otherwise) get to the right places, and assist the professionals in their jobs.

Lorie Heineken, Health Coordinator Mission Viejo Christian School

We have children from preschool through eighth grade. Everyone participated. We used the recorded Youtube audio broadcast over our intercom. Our preschool followed up with an evacuation. We sent home flyers before and after the event.

Jan Galla, Assistant Principal Bishop Alemany High School

Our school participated in the largest drill in southern California. The Governor and the Mayor of LA attended along with Lucy Jones and scientists from around the world. Our school supplied over 300 victims to a scenario enacted with the LA City Fire and Holy Cross Hospital. This link is to some of the media coverage.

http://www.alemany.org/apps/news/show_news.jsp?REC_ID=76377&id=0&rn=9261750

Gloria Simmons, Education Coordinator San Diego County Office of Education

We are a school for severely emotionally disturbed students, ed -3d through 12th grades. Our students do not do well with transitions, changes in routine or dealing with the unknown. The majority of students followed the

protocol well while 3 others did not. We practiced two times prior to the shake out and rewarded the students with pizza when they took it seriously. However, on the day of the shakeout, these 3 students dug in their heels and chose not to leave the classroom. As I was checking each classroom to assure that all students were evacuated after the drop-cover-hold, I noticed one student arguing with his teacher- I redirected him to be my helper to put the door signs up on each classroom showing that all students were evacuated from that classroom. Wow, did he jump at the chance of being my helper! The other student ready to throw a tantrum turned to look at me and I gave him the leadership role of assuring that all classes were standing on their marks on the blacktop. It worked! All out...no more problems!

Yvonne Luchau, Director Slater Montessori Academy

We have little ones here-2 years to 2nd grade so we used some worse case scenarios

what if you were in the bathroom
what if the wall fell
what if your teacher was caught inside

they did real well and had some good answers on how they would get
out-all knew where to meet and what to do when they got there

Steve Escoto, Fire Captain Los Angeles County Fire Department

The Earthquake - Tsunami Tabletop exercise we held back in September 2008 prepared us to participate in the Great Southern California ShakeOut by holding a full-scale exercise in the City of Avalon on Catalina Island. The simulated magnitude 7.8 earthquake caused massive infrastructure damage similar to the mainland followed by a tsunami train with waves up to ten feet high. (30 -60 foot potential)

Under the direction of Avalon Fire Chief Steve Hoefs all the city's public safety personnel began to respond according to their respective discipline. Each had their unique challenges including the Harbor Dept., Fire Dept., Public Works, Sheriff's & CERT, Baywatch Lifeguards and LACo Fire Station 55 through Automatic and Mutual Aid.

The highlight of the exercise was the 20 - 30 victims from Avalon High School who were made up with real looking injuries and scripted with real medical and trauma information. Their ability to "stay in character" until they were triaged, treated and transported gave many of the first responders and Catalina Island Medical Center personnel more than a taste of the grim reality and challenges a real event would pose.

Overall it was a great exercise and each agency is now busy documenting their lessons learned and preparing their After Action Reports and Improvement Plans AAR/IP's in preparation for the next exercise or incident. Many thanks to all sponsors of the ShakeOut Exercise, we are better and stronger for it!