

Instructor Guide for Volunteer Training Course



GEOHAZARDS  **INTERNATIONAL**
A Nonprofit Working Toward Global Earthquake Safety

**Training Materials for
School Earthquake
Safety**

December 2008

PREFACE

Many parts of India face a high level of earthquake hazard. India has experienced many damaging earthquakes in the past, and earth scientists say that strong earthquakes will continue to strike the region for the foreseeable future. Sadly, earthquakes often have tragic consequences for school-children. In the October 2005 Kashmir-Kohistan earthquake, 17,000 children died when their school buildings collapsed. The May 2008 Wenchuan, China earthquake killed about 19,000 children in school collapses. Many of the catastrophic consequences of these earthquakes were preventable. Schools can be made safe from earthquake threats with community support, hard work, and dedication. A first step towards school earthquake safety is to educate teachers, school administrators, students, and parents about earthquake risks and how they can reduce the risks they face.

Purpose

You will use this set of training materials to conduct a two-day training course for new volunteers or employees who will work to improve earthquake safety in a local school. GeoHazards International prepared this set of training materials to train Bechtel Corporation volunteers to improve the earthquake safety of a school in Gurgaon, Haryana, but the materials can be easily modified for use by other organizations in other locations. The training materials include a presentation in Microsoft Powerpoint™, this instructor guide, and a student handbook. This instructor guide will take you through the presentations slide by slide and will identify important aspects you should highlight.

Audience

The audience will consist of corporate employees who are volunteering their time. Many will be engineers, but some will also be from other departments such as accounting and human resources. Some volunteers may not have a technical background. When you make the arrangements for the training course, try to obtain information about the participants' level of technical background so you can prepare appropriately.

Training Objectives

This instructor guide will help you effectively communicate information about earthquake safety and prepare the volunteers to work in a school. The first day of training covers basic information on earthquakes, safety, and preparedness that the volunteers will need to know so they can teach the school's administrators, teachers, students, and parents about earthquake safety. The second day of training covers how to carry out a school earthquake safety project.

After the first day's session, the trainees should be able to do the following:

INSTRUCTOR GUIDE | VOLUNTEER TRAINING COURSE

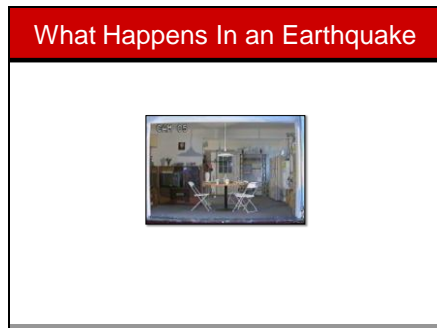
1. Explain the basics of earthquakes, the damage they can cause, and the consequences in simple terms
 - a. The basics of earthquake hazard in the Delhi region (i.e., what causes earthquakes, earthquakes can affect Gurgaon)
 - b. What might happen to the school building and to its furnishings, equipment, and systems if a strong earthquake occurred and why
2. Explain in basic terms how to reduce the damage and consequences caused by an earthquake
 - a. How to anchor or relocate items that can fall, slide, or topple and cause injury or block exits
 - b. Why the school will need to develop a school emergency preparedness plan and practice it with drills
 - c. What to do before, during, and after an earthquake
3. Make themselves, their families, and their homes safer
 - a. Make a family preparedness plan
 - b. Recognize and know how to fix falling hazards at home

After the second day's session, the trainees should be able to do the following:

1. Understand how to work together as a team with each other and with the school
2. Hold initial discussions with the school and form a school safety committee
3. Communicate earthquake safety information effectively to administrators, teachers, student, and parents
4. Guide school administrators and the school safety committee through the falling hazards mitigation process, specifically:
 - a. Lead school administrators, staff, and students on a "hazard hunt" to find falling hazards
 - b. Mitigate those hazards using simple measures and show school administrators and staff how to do so
 - c. Determine when falling hazards require mitigation measures designed by an engineer (such as in the case of heavy equipment)
5. Help the school plan ahead and prepare for earthquakes and other disasters, specifically:
 - a. Lead school administrators, staff, and students through the process of developing a school evacuation plan and communicating it to the rest of the student body
 - b. Help the school plan and conduct an evacuation drill
 - c. Show the teachers how to conduct "Drop, Cover and Hold On" drills
 - d. Help the school develop a student release policy
 - e. Help the school communicate earthquake safety information, the preparedness plan, and student release policy to parents

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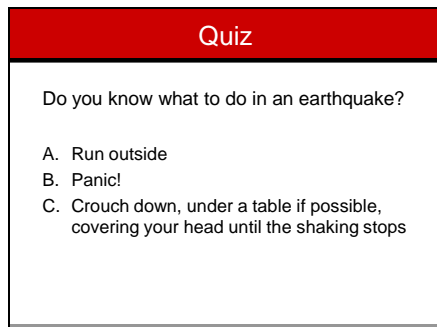
Use any of the few videos of internal shaking in a real earthquake rather than the simulation which has lesser effect on the audience.

Some good videos include:

<http://www.youtube.com/watch?v=0plbf5w0sbA>

<http://youtube.com/watch?v=JWtA-TxRO7A>

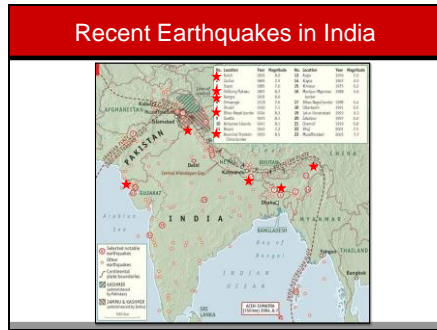
<http://youtube.com/watch?v=yJPS4lokxtw>



After the quiz, do at least one of these activities:

- ICE Breaker: Make everyone get under their desk/table or squat down and cover their heads. Turn off lights, knock over bookshelf, play recording of earthquake sounds, etc. Be creative...

- Ask them to think of similar shaking happening in their class/ office room. What will be the effects? What will slide, topple or fall?



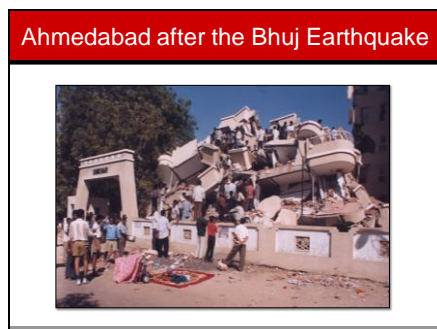
Explain the occurrence of earthquakes close to the plate boundary. Highlight the fact that there has not been a great earthquake between Kangra and Bihar for over a hundred years and how scientists believe that a major earthquake is due in this region. Gurgaon and the National Capital region can be affected by such an event. These areas fall under Zone IV according to the Seismic Zoning map of India in IS 1893:2002.

Earthquakes Can Affect Gurgaon

Past earthquakes that caused damage in Delhi region:

- 1505 Nepal border earthquake – damaged Agra
- 1720 Gharwal Himalayas earthquake – damaged Old Delhi
- 1803 Baharat earthquake – damaged Qutab Minar

Many other earthquakes felt in Delhi that caused little or no damage



Explain the damage that happened in Ahmedabad- over 110 multi-storeyed building complexes collapsed in the earthquake that was epicentered 270 km away in Bhuj. It is important to get them to recollect the Latur earthquake in 1993 in which 8,000 people died. Then, tell them that both these places are in Zone III- i.e. at a considerably less hazard than Delhi that is in Zone IV.

Schools are Vulnerable to Earthquakes



- In the past 35 years:
 - More than 21,000 children killed in schools
 - Hundreds of schools with major damage but no children inside at the time of the earthquake



Ask the participants whether they think a daytime earthquake or a night time earthquake will be deadlier. After the inevitable 'night-time earthquake' answer, mention that in daytime earthquakes, the percentage of children affected goes up (as has been seen in the Kashmir earthquake) due to unsafe, unprepared schools.

Simple Actions Can Save Children's Lives



School in Mexico City, 1985



Child during earthquake drill in Ludlow Castle Govt. School, Delhi

Simple actions can save a lot of losses in schools. Examples include basic disaster awareness, falling hazards mitigation, preparedness planning, etc.

Program Objective and Activities

Objective:

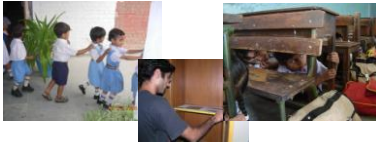
- Improve earthquake safety in schools in Gurgaon

Activities:

- Two half-day training sessions
- Work with one school to improve their earthquake safety
- After working with us in this school, you can work in additional schools

The programme aims to improve school safety in Gurgaon by creating a replicable model in one school. You will undergo two training programmes after which you will be able to work with one school to improve earthquake safety. After completing the activities in one school, you will feel confident to work in additional schools.

Purpose of the Training Sessions



To turn all of you into change agents who can guide schools in Gurgaon to take steps to make them safer in future earthquakes

These pictures are pictures of the Ludlow Castle School project.

Tell the participants that they will be expected to be the ones who will influence behavioural change in school staff and students. For this to happen, the trainers will have to exude confidence in the subject. Tell them to feel free to ask questions.

We Will Start Working in One School

Gyan Devi Public School, Senior Secondary



- Sector 17, Gurgaon, Haryana

We will start working in _____ School and there will be many more schools to be influenced.

At This School We Will:

Work with the Principal, teachers, parents and students to:

- Build awareness of earthquake risk and how to reduce and manage that risk
- Prepare school emergency plans that describe what to do before, during and after earthquakes
- Secure falling hazards, furniture, appliances and other contents that fall, slide or topple during earthquakes
- Encourage preparedness at home for teachers and parents

Emphasize the home preparedness part of all participants – especially of the teachers who will need to have their family preparedness plan developed in such a way that they are able to remain at the school and carry out their duties.

Your Role

- Meet with school Principals, teachers, students and parents
- Lead, teach, and show them how to take earthquake safety steps
- Continue this work in additional schools
- Represent Bechtel Corporation and GeoHazards International

You will need to develop your 'lateral leadership' skills as you will be leading the school administrators and teachers from the side, rather than from the front. Always remember that you represent Bechtel and GeoHazards International in this project.

The Project is Not

- An engineering project: we cannot deal with buildings
- A guarantee of earthquake safety

Emphasise once during the training programme that this is indeed not an engineering project. We will not be discussing the earthquake safety of the school building. The project will improve the earthquake safety of the school and its occupants tremendously, but there is no guarantee of complete earthquake safety.

Overview of Training Program

- | | |
|--|---|
| <ul style="list-style-type: none">• Day One (Today)<ul style="list-style-type: none">– Review earthquake basics– Learn about school earthquake preparedness plans– Learn how to reduce falling hazards | <ul style="list-style-type: none">• Day Two (15 March)<ul style="list-style-type: none">– Practice reducing falling hazards– Learn how to plan and conduct meetings with principal, teachers, students and parents |
|--|---|

Today's Schedule

- | | |
|-------|-------------------------------|
| 14:30 | Introduction |
| 14:45 | Earthquake Basics |
| 15:15 | Break |
| 15:25 | Earthquake Preparedness |
| 16:00 | Making Your Environment Safer |
| 16:30 | Wrap Up |

Questions?



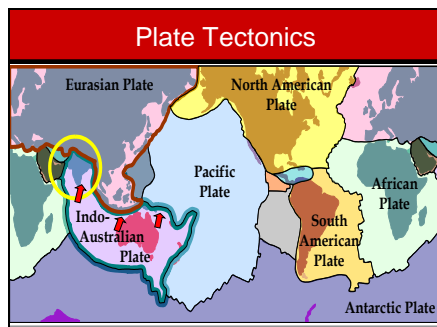
What's Covered in this Session

- What causes earthquakes in India?
- How you measure an earthquake's strength?
- How likely it is that an earthquake will occur in Gurgaon?
- What might happen in to schools in Gurgaon if an earthquake happened tomorrow?

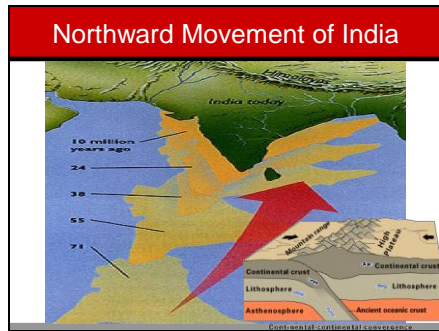
Why You Need to Know This

- School administrators, teachers, students and parents will ask you questions
- You need to understand the basics of how earthquakes cause damage and injuries
so you can help prevent them

Primary issue is of confidence and credibility – you need to know what you're talking about. You can't help prevent damage and injuries if you don't understand, at a basic level, what causes them.

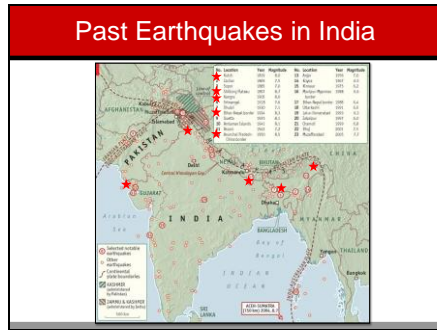


Tell the audience that in order to explain earthquakes we need to review a few things from your earth science classes. The first of these is the theory of plate tectonics. Explain that the earth is like an egg with a cracked shell with it's outer crust made up of several pieces known as Plates. there are 7 major plates and several minor ones. (Point out the Indian Plate here and show them that it is bordering the large Eurasian Plate.) These plates are constantly interacting with each other – some are sliding



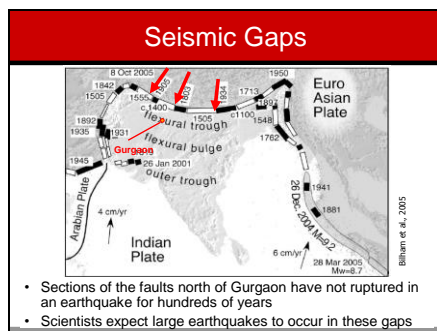
against each other, some are moving away from each other while others are colliding/pushing against each other. Use your hands to demonstrate this movement. Also mention that the Indian Plate is pushing against the Eurasian Plate.

Explain how India was part of a large continent along with Australia, Africa, etc. near the South Pole and split away from it approximately 180 million years back and started moving North-North East. It collided with the large Eurasian Plate approximately 15 to 10 million years back. This push from the Indian Plate resulted in the formation of the Himalayas, which is among the youngest and the fastest growing mountain ranges in the world. This happened because the Indian Plate could not push away the large Eurasian Plate and went under this Plate in a process called subduction, causing the Tibetan plateau to rise up. You can use the example of a Maruti car (Indian plate) hitting a Tata truck (Eurasian plate). Is the Tata truck pushed back? No, the Maruti is crumpled up and goes underneath. This movement creates a lot of stress and when the rocks cannot withstand this pressure any longer, it gives way and this sudden movement is what we feel as an earthquake. When a large enough earthquake happens, pressure is released and it will take some time before stresses can build up again to cause the next earthquake. Emphasize that this is an ongoing process that has been occurring for millions of years, and will continue for millions more. The Indian Plate continues to move and pressure continues to build up along the Plate Boundaries, which will continue to cause earthquakes.



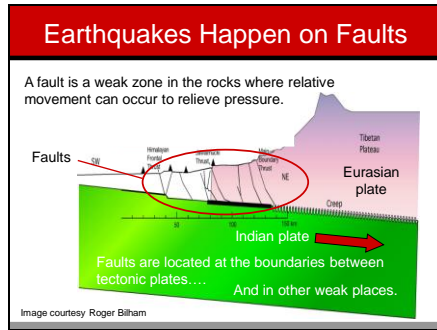
As a result of the ongoing tectonic processes, India has had a number of very large earthquakes in the past century. These are the earthquakes that we mentioned in the introduction. The stars in the slide represent the 'Very Great' earthquakes- earthquakes with a magnitude of 8.0 or more.

1819 Kutch earthquake in Gujarat; 1897 Assam (Shillong) earthquake; 1905 Kangra Earthquake in Himachal; 1934 Bihar-Nepal earthquake; and 1950 Assam (Arunachal-China border). Both the 1897 and 1950 earthquakes were called Assam earthquakes because in those days the entire Northeast of India was known as Assam.



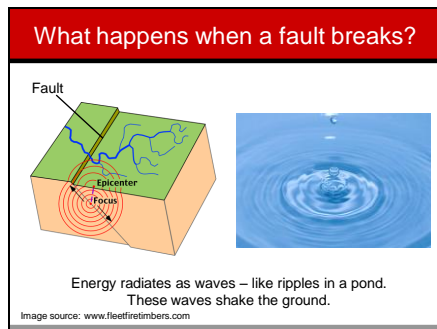
Remind them about the pressure building up in Plate boundaries where there have been no major earthquakes and point out the large gap between the Kangra event and the Bihar-Nepal event called the Central Himalayan gap. Mention that scientists expect the next big earthquake to happen in this gap.

A possible question will be about the two earthquakes that have happened in the 1990s at Uttarkashi (1991, 6.6M) and Chamoli (1999, 6.8M) which occurred in between these two events. Explain that these two earthquakes were much smaller events that didn't release much pressure.



When the rock breaks due to the buildup of pressure, it creates a weak place. The rock tends to break in the same place again, on what is called a fault. Faults are located at the boundaries between tectonic plates and in other weak places.

The graphic shows all the different faults located at the boundary between the Indian and Eurasian plate under the Himalayas. The movement of the plates cracks up the edge of the Eurasian plate – that's why there are so many faults.



The focus is the point where the fault starts to break. The epicenter is the point on the surface directly above the focus.

The breaking of the fault releases energy – lots of energy - that radiates outward in waves, like when a stone is dropped in a pond. These waves make the ground move, kind of like waves on the ocean. These waves shake the ground and cause the motion you feel during an earthquake.

Does it Matter When an Earthquake Strikes?

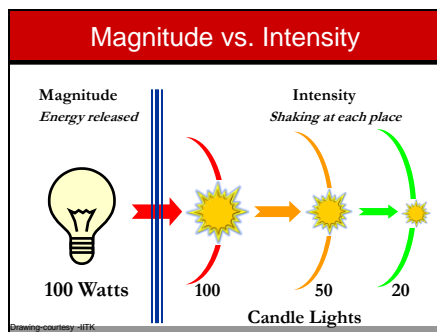
Date	Event	Time	Magnitude	Max. Intensity	Deaths
16 June 1819	Cutch	11:00	8.3	IX	1,500
12 June 1897	Assam	16:25	8.7	XII	1,500
5 Feb. 1900	Coimbatore	03:11	6.0	VII	Nil
4 Apr. 1903	Kangra	06:10	8.0	X	19,000
15 Jan. 1934	Bihar-Nepal	14:13	8.3	X	11,000
15 Aug. 1950	Assam	19:39	8.6	X	1,530
21 Jul. 1956	Anjar	21:02	6.1	IX	113
10 Dec. 1967	Koroma	04:30	6.5	VIII	200
25 Mar. 1970	Bharuch	20:56	5.2	VII	30
21 Aug. 1968	Bihar-Nepal	04:39	6.6	IX	1,004
20 Oct. 1991	Uttarakashi	02:53	6.4	IX	768
30 Sep. 1993	Killari (Latur)	03:33	6.2	VIII	7,928
22 May 1997	Jabalpur	04:22	6.0	VIII	38
29 Mar. 1999	Channoli	00:35	6.6	VIII	63
26 Jan. 2001	Bhuj	05:46	7.7	X	13,805

This is a list of earthquakes which shows 'time of event', magnitude and maximum intensity of many Indian earthquakes. Ask them if 'time' matters in an earthquake? They will all say that night time earthquakes are bad as everyone will be indoors, response will be difficult etc. Introduce the fact that in a daytime earthquake, the percentage of children is much higher because of unsafe and unprepared schools. Also ask about the two columns shown in the table- Magnitude and Intensity. Ask them if they feel there is a difference between the two. Discuss and move on to the IITK

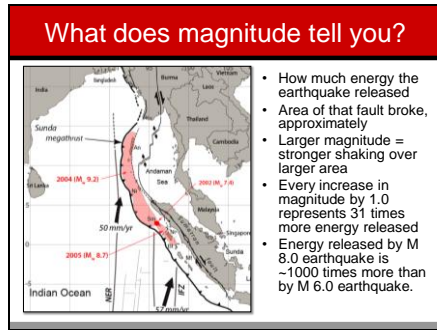
slide with the light bulb.

How strong was that earthquake?

- *Magnitude* tells you how **big** the earthquake was
- *Intensity* tells you how **strongly the ground shook** at your location

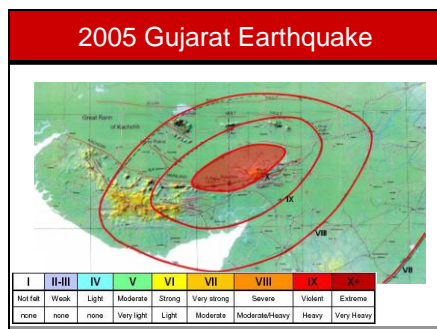


This drawing by IIT Kanpur compares the earthquake to a light bulb. Imagine there is a 100W light bulb here. Whether one is 5m from the bulb or 500m, the bulb is going to remain a 100W bulb. It is not going to change to a 25W bulb just because one is far away. But the light we get from this bulb depends on how close or far we are from the bulb. Similarly the magnitude of the earthquake is a measure of the energy released by the earthquake and does not change with distance. But Intensity denotes how we feel the earthquake and depends on how close or far we are from the epicentre of the earthquake.

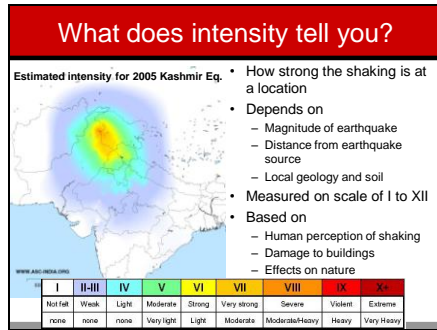


Magnitude is measured in the Richter Scale, which is a logarithmic scale where each division represents an increase of energy released by about 31 times. A magnitude 6 earthquake releases 31 times more energy than a magnitude 5 earthquake and a magnitude 7 earthquake releases 31 times 31, or nearly 1,000 times more energy than a magnitude 5 earthquake. In a higher magnitude earthquake, the shaking is felt over a wider area. Difference in the amount of the fault that broke (the rupture area) shows how much bigger earthquakes get as magnitude increases. Ask how much difference do you think there is in a magnitude 8.7 earthquake and a magnitude 9.2 earthquake? Show the size of the rupture for the 2005 M 8.7 earthquake and how much bigger the rupture was for the 2004 M 9.2 quake. Explain that the toothed line is where the subduction zone fault comes to the ocean floor and that it goes down underneath in the direction indicated by the arrows

The M9.2 Sumatra quake released the equivalent of 31,670 Hiroshima bombs (476,879,138 tons of TNT)!



Intensity can be shown using the shaking map for the Gujarat event shown on the slide. Talk about the MM scale and how in Bhuj, the maximum intensity was X and as we went further and further away, the Intensity reduced to IX, VIII, etc.



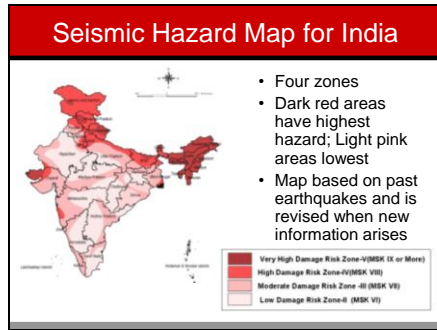
Similarly for the Kashmir earthquake, the maximum intensity in the map seems to be in orange colour and hence Intensity VIII and as we come further and further away, we see that the intensity decreases. In Delhi the map is blue which corresponds to Intensity IV. Point out Gurgaon and ask if anyone felt the earthquake at 9:20 am on Saturday October 8, 2005? Where were you? Discuss. Mention the schools that collapsed and the fact that among the 75,000 odd deaths in this quake, 17,000 were children. And this is in spite of the fact that the schools were not in session on the Indian side of the border.

How strong might the shaking be?

A Seismic Hazard Map shows the level of shaking expected in various locations:

- Developed by analyzing shaking caused by all possible earthquakes on area faults
- Results combined and presented on a map

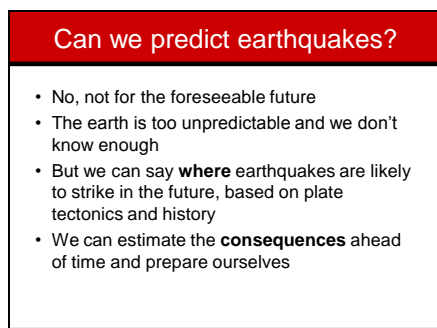
A seismic hazard map shows the level of shaking expected in future earthquakes at various places. This is based on records of past earthquakes and known earthquake faults. India developed its first official seismic zoning map in 1962. This has been revised many times and is based on the best knowledge available at that point of time. The last revision was in 2002 in which the 1975 five zone seismic map was revised to a four zone map. The current map is in the next slide.



This map has four zones Zone II (low risk zone), Zone III (moderate risk), Zone IV (high risk) and Zone V (maximum or severe risk). Ask if anyone knows why there are four zones, but that they are numbered II to V. There used to be a Zone I (no risk) in the earlier edition of the map which has been removed and merged with Zone II. This was done because the 1993 Latur earthquake occurred in part of Zone I. This map comes from the Bureau of Indian Standards code for earthquake resistant design> I.S:1893:2002



Gurgaon as can be seen from this map is in Zone IV which means that it can be affected by earthquakes with Intensity up to VIII.



Earthquakes cannot be predicted. However, the Seismic Zoning map can tell us where earthquakes can occur and what the level of shaking is likely to be. A date and time cannot be predicted! So this is a forecast, not a prediction. A good example is that of Bhuj, which was in the highest risk zone right from the first seismic zoning map of India in 1962. Wasn't that a forecast of the 2001 earthquake?

If asked you can say that a meaningful prediction would require a specific date, location, magnitude, and be based on science. If you don't have the first three ingredients, it isn't a prediction. If you don't have the last it isn't scientifically

credible.

Note if asked: There has been one successful earthquake prediction: Chinese scientists predicted the 1975 M 7.3 Haicheng earthquake and evacuated people before it happened. There were many foreshocks and other unusual precursors. HOWEVER, the next year the 1976 M7.8 Tangshan earthquake occurred with no warning and no prediction and killed between 250,000 (the official estimate) and 600,000 people. It was the deadliest earthquake of the twentieth century.

Consequences of Earthquakes

Damaged Buildings

Poorly designed or built structures can collapse

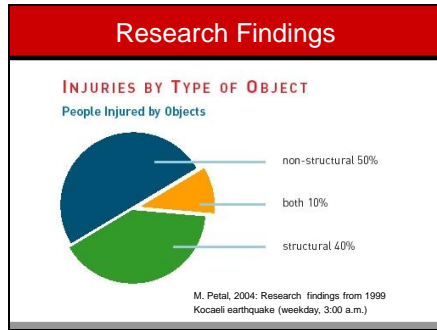


Photos from National Information Service for Earthquake Engineering, UC Berkeley

Consequences of Earthquakes

People Killed, Injured and Disabled





It has been found that in urban earthquakes, over 50% of the damage is caused by falling hazards or non-structural aspects. This is a hazard that has not been considered at all in most of our mitigation programmes.

Consequences of Earthquakes

Objects Inside Buildings Fall, Slide, or Topple

- People can be injured
- Valuable objects can be destroyed
- Records can be lost
- Undamaged buildings are not usable



Explain how falling hazards can injure people by falling on to them or can trap people by blocking their exits and trapping people.



Ask participants on what they perceive are the falling hazards in schools. Which do they think is the most dangerous room in a school? (Chemistry lab will be a good answer)

Securing Objects in Buildings is a Major Focus of Our Project

- Inexpensive way to avoid injuries in earthquakes (unlike improving buildings, which requires money and special expertise)
- Anyone can learn to do this, including principals, teachers, parents and students

We will talk more about how we can mitigate the effects of falling hazards.

Exercise

Class participation exercise: Ask class to come up with 5 questions school administrators would ask about earthquakes, 5 that teachers would ask, and 5 that students would ask. Have trainees raise hands and answer. Use a white board or large sheet of paper to write answers.

Summary

- India is pushing into China, which causes earthquakes
- Damaging earthquakes will continue to happen in India
- Earthquakes happen when faults break
- Gurgaon is located in the "High Damage Risk Zone" on India's Seismic Hazard Map
- Earthquakes cannot be predicted, but their consequences can be.
- Damage to a building's contents can cause injuries and even deaths
- You can prepare

Questions?



What's Covered in this Session

- What happens during an earthquake
- Preparedness planning
- What to do during and after an earthquake

Preparedness planning: a process to make those threatened aware of the earthquake risk and to learn what to do before, during and after the shaking. We will explain how to prepare a preparedness plan that involves training students on what to do during and after an earthquake.

The products will be:

- Instructions on what to do when the ground shakes
- How to prepare an evacuation plan
- A student release policy

Why is this important?

- Being prepared can save lives
- You will lead the school committees to create a preparedness plan



Being prepared will save lives in schools and also a lot of mental stress and trauma. Administrators, staff and students in schools will know what to do before, during and after an earthquake event.

What happens in a school during a large earthquake?

- Violent shaking
- Falling items
- Very hazardous locations, such as near windows or in chemistry lab
- Injuries
- Power outage
- No telephone service
- Fires might develop
- Blocked doors and exits
- Damaged and cluttered hallways or stairways
- Students are frightened and separated from their families
- Dangerous routes home

Get the participants to imagine a violent earthquake shaking happening in a school. What all can happen? Ask the students to close their eyes and imagine...

What are the consequences?

Interactive exercise with the class – ask them what might happen and list on whiteboard or large piece of paper:
 Are any children, teachers or staff hurt?
 Are any killed?
 Are any missing?
 Is the building safe?
 Where does everyone go?
 Should the children go home? Should they wait for their parents to come pick them up?
 All of the teachers leave to find their families. Who stays with the children...

What are the consequences of each of the items they mention?

How do schools respond?

Do they keep the children at school after an earthquake event? Does the staff stay? How do they involve parents?

Unprepared School

Fear
Panic
Disorder
Confusion
Lack of proper response
Unnecessary consequences



Speaker discusses that unprepared schools and students will:

- not know how to react
- not know where to go during and after an earthquake

Teachers will not know what to do with their students. Lack of proper response can lead to unnecessary consequences that could have been prevented, such as injuries and deaths.

Prepared School

Less fear
Lives saved
Fewer losses
Injuries prevented
Organized evacuations
Devastating consequences reduced



There is very little panic as everyone is aware of what can happen and what everyone is supposed to do. This results in lesser losses and devastating consequences.

How should schools prepare?

Develop a school preparedness plan
Educate, train and drill



Schools can take a few steps towards earthquake safety. These include:

- The first and most important step is to spread awareness amongst the occupants.
- Carrying out a hazard hunt and addressing the findings of these hunts would be a good second step.
- Developing a preparedness plan for the school would be another step.
- Getting engineering expertise to assess and retrofit the building if necessary would be another important step.

How do we help schools achieve this?

We will help them understand the earthquake hazard, what can happen in the schools as a result and what they can do to prepare and minimise the damage.

Getting Started

- (1) Discuss everything with Principal
- (2) Form a committee to organize the preparedness plan
- (3) Assign responsibilities to teachers and students
- (4) Plan evacuations
- (5) Prepare an evacuation map
- (6) Adopt a student release policy
- (7) Prepare response kits

The participants should be encouraged to ask for a long enough meeting with the school principal. During this meeting participants should describe the activities that are to be undertaken at the school with an explanation of why we are planning to do each activity.

Keep in mind that some principals may need to be convinced that earthquakes are a problem and that her/his school should do something about the risk. This may require a “sensitizing” session before any of the planning takes place.

Discussions Should Cover...

- ✓ Lessons, policies, approach
- ✓ Activities and plans
- ✓ Earthquake effects in the context of the actual school
 - age and number of students
 - building size and layout
 - falling hazards
- ✓ Consequent issues

This will also include explaining the need to form a School Safety Committee which will include the Principal, Staff members, Parent member from the Parent- Teacher Association, a boy and a girl student representative, etc. The other activities to be taken up will include carrying out a hazard hunt, planning and carrying out mitigation of falling hazards, developing a school evacuation map, developing a child release policy and practising evacuation through drills.

Responsibilities Should Include...

- 1) Ensuring overall school and student safety (Principal)
- 2) Preparing and planning the emergency and evacuation plans (Principal or teacher)
- 3) Assisting students in each classroom (teachers)
- 4) Searching for missing students and teachers
- 5) Conducting first aid (all teachers)
- 6) Checking the building for safety (an engineer)
- 7) Gathering and disseminating reliable information (communications coordinator)

Discuss responsibilities of principal, staff or committee member. These include:

- Ensuring overall school and student safety (Principal)
- Preparing and planning the emergency and evacuation plans (Principal or teacher)
- Assisting students in each classroom (teachers)
 - Keep list of children in their care
 - Identify missing students
 - Finding food, water, necessities of students until parents come
- Searching for missing students and teachers
- Conducting first aid
- Checking the building for safety (an engineer)
- Gathering and disseminating reliable information (communications coordinator)

Other Responsibilities...

- Communicating good information
- Assistance to emergency responders
- Collaboration between everyone, including students



Communication is very important following any disastrous event. There should be a single point of communication for parents to avoid confusions and rumours. Liaison with emergency responders should be assigned to a separate teacher. Everyone, including the students should have clarity about their role in such an event. There should be plans on how to get information from officials, the radio, etc. Also, there should be a plan for what to do with children who are not picked up by their family soon after the event.

Planning Evacuations

- Get plans of all the buildings on the campus
- Identify outside safe areas
 - Away from electric wires, buildings and traffic
 - Estimate the number of students each area can hold
- Divide classrooms into zones
- Identify exit routes for each zone

This should be planned after observing the way students leave the classrooms at the end of school everyday. If this is an orderly exercise, the evacuation plan can follow the same routes with minor modifications. If the daily egress is chaotic or in batches, an evacuation plan has to be worked out with careful planning anticipating the number of students that can use a corridor or staircase. Divide the classrooms into zones and identify exits for each zone. “Planning Evacuations” continued on next slide...

Planning Evacuations

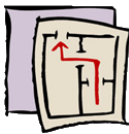
- Create buddy system
- Develop alternative evacuation routes
- Plan for disabled students who might need help evacuating

Continued from last slide...

Introduce the buddy system to the teachers and the students. Include the disabled children and others who might need assistance to evacuate in the plan.

Developing Evacuation Maps

- Mark evacuation routes for each zone
- Mark locations of first-aid kits and fire extinguishers
- Mark area to treat injured students or teachers
- Print maps and place one in each classroom



Mark evacuation routes for each zone and the designated assembly area. Also mark locations of emergency equipment, such as fire extinguishers, first aid boxes, etc.

Student Release Policy



- Create list of people authorized to collect each student
- Have emergency contact information for every student
- Keep records: Record when each student leaves, to whom the student was released, where they intend to go.
- Allow for students to return to school if necessary
- Discuss the policy with teachers and parents AND have their instructions and forms in a safe place and available for use after an earthquake

Schools are not expected to release all children immediately after an earthquake event and should be encouraged to formulate a child release policy after discussions with parents. A list of three authorised people (parents, older siblings, relatives) to whom each child can be released to should be prepared by the school. This information and forms should be available for use following a disastrous event.

Discuss why is this important.

- The route home might be unsafe
- Student's home might be unsafe
- Parents might not be home

Safety Kit



- 1) First aid kit
- 2) Flashlight, work gloves
- 3) Water (4 liters/person for 3 days), high energy food (3-5 day supply)
- 4) Blankets, tents
- 5) Radio and emergency lights
- 6) Fire extinguisher, bucket of sand, fire blanket

Safety kits can be stored at multiple locations in the school and should contain supplies of first aid, water, high energy food, emergency equipment, etc. These locations should be marked in each evacuation plan.

Discuss why this is important > It can save lives.

Educate, Train and Drill



- Educate all students and teachers about how to react to an earthquake
- Hold discussions with teachers, students and parents about the school emergency plan
- Practice earthquake drill and evacuations
- Revise plan accordingly

Teach staff and students of the school on what they have to do before, during and after an earthquake. Disseminate the school emergency plan to the staff and students. Parents should also be made aware of these plans. Develop a system by which the school carries out an emergency preparedness drill at regular intervals. Evacuation plans may need revisions based on observations in these drills.

Lessons for Parents, Teachers, Students

These should cover:

- What to do during an earthquake
- What to do after an earthquake
- Fire safety
- Evacuation plan
- Student release policy



All aspects mentioned in the preceding slides need to be explained to students, teachers and parents.

Mention why it's important to evacuate.

- Buildings can become dangerous because of damage
- There will be aftershocks
- People want to get out

During an Earthquake

- Students and teachers shout "earthquake"
- Move away from:
 - Cabinets, bookshelves
 - Windows, glass
- Duck, Cover and Hold On
- Protect head and neck
- Cover nose and mouth with a cloth
- Remain calm, do not run



These actions need to be taken by students AND teachers during and earthquake and during preparedness drills. Explain why each is important. For example, the "cover nose and mouth with a cloth" advice is given to avoid inhaling dust, which has proven deadly in some circumstances.

After an Earthquake



- The teacher surveys room and identifies injuries
- Student buddies help each other and injured or disabled students
- Do NOT light flames
- Teachers take roll and identify missing students

The responsibilities of the teacher are mentioned here. The teacher may also designate a student to assist him/her in these activities as long as it does not compromise the child's safety.

After an Earthquake



- Do not move seriously injured students unless there is additional danger
- Send medical care for those seriously injured
- Students leave the room together and follow the evacuation route to the designated safe area walking quickly, but safely

Children and teachers make a quick, but orderly exit through the evacuation route to the designated assembly area.

After Evacuation

- Provide first aid for injured students
- Students remain in designated safe area
- Teacher locates missing students
- Students kept together until
 - Instructions are received that it is safe to return to the classroom, or
 - Students are released to a parent or guardian

First aid is provided for any injured students. A headcount is done at the designated assembly area and missing students are accounted for. Here, the buddy system becomes important as buddies will be able to inform the teacher if the other student is missing, or in fact, had been absent that day.

Fire Safety



- Stop, Drop and Roll
- Stay low and cover mouth to avoid inhaling smoke
- How to use fire extinguishers
- Reduce ignition sources: frayed cords, flammable or combustible liquids near heat sources

What to do in a fire is very different from what one needs to do in an earthquake. In a fire you must, Stop, Drop and Roll. Staying low is important as cleaner air will be available close to the floor when the smoke rises up. (Interesting fact- Due to this aspect, there was a suggestion put up for the movie theatres to have exit signs above doors and also at the floor level. This was never approved.) The local Fire Service will carry out training programmes on handling various types of fire extinguishers, etc. on request.

Practice Evacuations

- Hold practice drills at least twice a year
- Ensure it is at a time when everyone is at school
- Sound an alarm and instruct the teachers to shout: "Earthquake!"

Hold Practice drills. Drills should be conducted on three pre-designated dates every year with the entire school occupants taking part. The local fire service, the PTA members and Civil defence personnel should be present as observers. The emergency kits should be checked and refurbished as necessary on these days. "Practice Evacuations" continued on next slide...

Practice Evacuations

- Students and teachers should Drop, Cover and Hold On until a second alarm announces that it is over (after about 45 seconds)
- Students should evacuate to safe areas
- Upon return, discuss the experience and report suggestions to the earthquake committee

Continued from previous slide...

Unannounced drills should also be conducted. Evacuation plans should be revised after every drill.

Safety at Home

- Students spend more time at home than at school
- Families should:
 - Fix falling hazards
 - Develop an evacuation plan
 - Practice Drop, Cover and Hold and evacuation
 - Have emergency contact information
 - Store emergency supplies
- Students should share family emergency plans at school



A small form titled 'Family Disaster Plan' with fields for Emergency Meeting Place, Emergency Phone, Address, Emergency Contact, and Petal.

Children spend more time at home than they do at school and it is important that the families are encouraged to get prepared. Students should be required to share their family preparedness plans at school.

Summary

- Preparedness is a process that involves those affected, discusses expectations and plans the response
- Preparedness requires practice
- Handouts
 - A checklist for how to make a school emergency plan
 - Guidance for a home earthquake plan
- Earthquake preparedness is useful for other hazards such as fires

Emphasize the main points from the session, listed on the slide.

Questions?



What's Covered in this Session

- Which objects could fall, slide, or topple?
- What might happen if these objects fall, slide, or topple?
- What can be done to prevent this?

Why is this important?

- Objects can fall or topple, injuring or even killing schoolchildren
- Objects can slide or topple, blocking exits and impeding a safe, quick evacuation
- We can easily prevent these consequences with simple, inexpensive measures

These are the important messages that we want the trainees to understand.

What might be a hazard here?

- Look around the room and identify objects that could fall, slide, or topple over in an earthquake.
- What could happen if these things fell, slid, or toppled over?

Get everyone to look around the room with 'earthquake eyes' and identify what can slide, topple or fall. Ask about what might injure people and what might block exits.

What we just did is called a hazard hunt

- You will lead the school safety committee through this exercise. Here are some tips:
- Look at each room in the school with "Earthquake Eyes"
 - Take some time and sit in each room, at child level
 - Ask yourself "if a major earthquake hit right now, what could injure me?"
 - Mark the hazards on the form we'll give you, using one form per room.

Explain that we are calling this a 'hunt' because it will be exciting for children to join in identifying hazards in various rooms of the school. This is one of the first steps in making our schools safer. You need to know what is wrong before you can fix it.

What can happen if an object falls, slides, or topples?

- It could injure or even kill a child
 - It could block an exit
 - It could break and have to be replaced
- Also, for some items:
- Hazardous chemicals could spill
 - Gas could leak and start a fire or explode
 - Records could get mixed up

When doing a hazard hunt, it is important to think about the consequences of an item falling. Knowing the consequences can help motivate people to take action. They need to understand how it can affect them or those they are responsible for.

Items in Schools that Can be Hazards



- Storage Cabinets
- Display Cabinets
- Library Shelves
- Laboratory and Office Equipment
- Hazardous Materials and Chemicals
- Light Fixtures
- Large Windows
- Coolers and Air Conditioners
- Water Tanks

Ask everyone to think of the possible hazards in schools. The bullets are animated to come one by one on click.

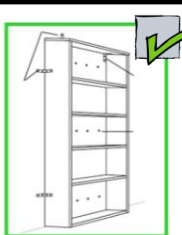
Tall and Heavy Furniture



Bingöl, Turkey



Northridge, California

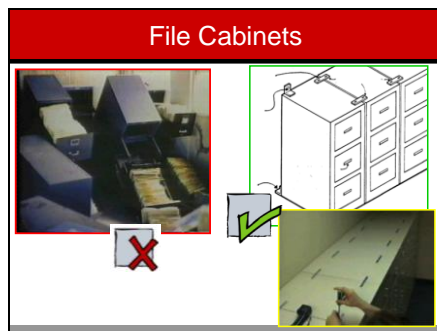


Tall cupboards, etc. can fall, especially if there are items stored above these objects. These could injure people. Ask if anyone sleeps with a large steel cupboard next to their bed. What can happen? Also, in many schools and offices, old steel cupboards are lined up along the corridor. Ask participants about what danger this poses in an earthquake? (Corridors are your emergency exits and by storing cupboards, we are reducing the width of

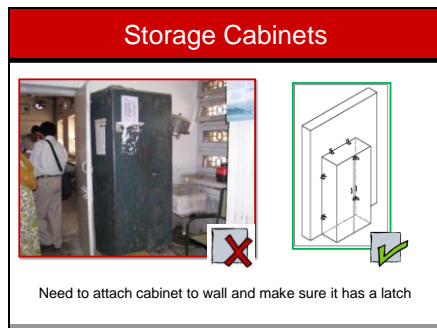
these exits. These cupboards can fall and block everyone's exit.)



The picture on the right shows how these cupboards can be fixed to the walls using small L clamps which are available very cheaply in almost all hardware stores.



File Cabinets can be fixed to each other and then to the walls using L Clamps



The steel cupboard in the picture is not only a falling hazard, but also can slide and block the exit in an earthquake. This can be relocated, fixed, or both.



The pictures show shelves that can fall down injuring or trapping someone and also spilling its contents. In particular, these pictures show a library, a janitor's closet with cleaning supplies, and a records storage room. If these records contain your examination results, grades, and other educational records, these fallen papers is no small matter.

Hazardous materials are especially dangerous and should be secured from damage. Hence in this case, not only are the shelves to be fixed, but the contents of these shelves are also to be restrained from falling out.

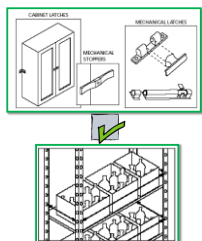


The contents of shelves can be restrained by keeping them in a recessed shelf as in the pictures on the left or physical restraint as in the pictures on the right. For library shelves and shelves in laboratories, a flexible cord (bungee cord, curtain spring) can be used to restrain contents while maintaining the ease with which materials can be taken out from the shelf.



This slide shows storage of artefacts, etc. in museums that can also be used for storing the models used in Science labs. This type of restraint is best for things you don't access often.

Storing Chemicals in the Science Lab



- Not enough just to restrain cabinet
- Need latch on door
- Need to keep chemicals inside from spilling or mixing
- Use bins and padding

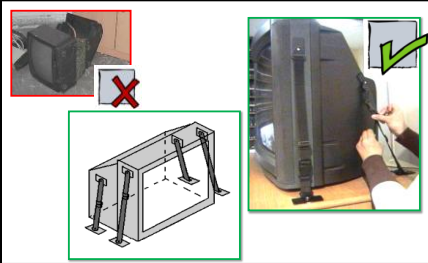
Bins such as those used to transport/store soft drink bottles can be used to store bottles and glass jars so that these do not hit each other and break. Chemicals are to be prevented from mixing. The bins should be prevented from sliding off shelves by restraints. Here the hazard we are preventing is not only in terms of injuries, we are also preventing secondary hazards like fire which be the result of two chemicals mixing together when bottles break, etc. Broken glass is also a major source of injuries in schools following an earthquake.

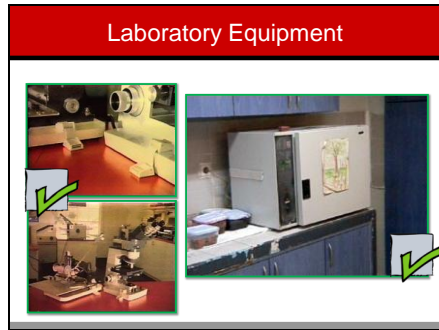
Classroom and Office Equipment



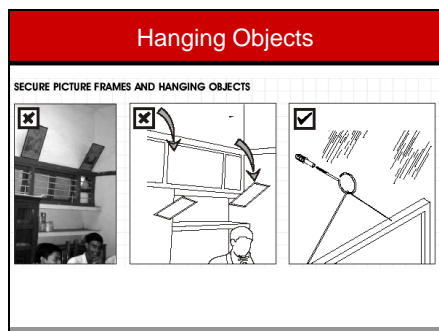
Computers and other office equipment have to be restrained from sliding or toppling over as these are very expensive equipment. Computers can be fixed using straps and can be prevented from sliding using non-slip mats. These pictures show an office monitor and CPU secured with self-adhesive plastic clips and strap fasteners. The straps can be sourced from luggage manufacturers.

Electronic Equipment

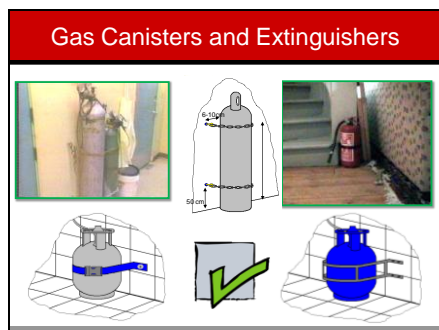




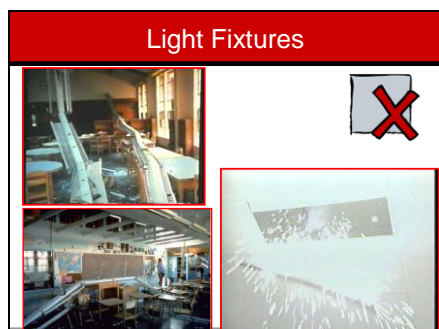
Pictures show laboratory equipment attached with nylon straps.



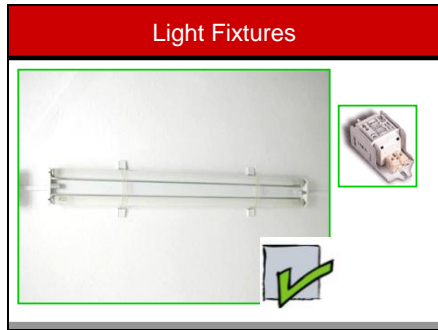
Normally we hang pictures, mirrors, etc. using a nail in the wall. In an earthquake shaking these objects could slide off the nail and hence it is advised that a hook should be used instead of a nail.



Gas cylinders should be prevented from falling down to prevent the tubing connecting it to the oven from pulling free and starting a gas leak. Fire extinguishers should be prevented from falling down with proper clamps.



Light fixtures are to be checked. Any fixture which comes loose in an earthquake is very dangerous since they will swing down on their electrical wires. These should be fixed using plastic straps or insulated wires.



Light bulbs are secured to the ceiling with plastic clips. Screws were used to secure the clips to the ceiling rather than self-adhesive pads.



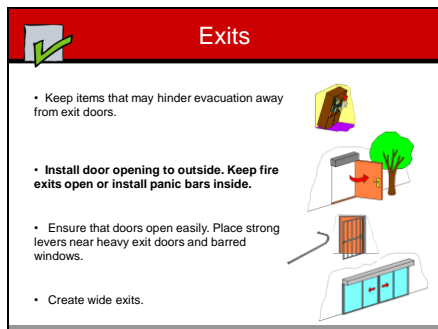
Shattered glass can cause:

Serious injury if people cut themselves on flying shards or other jagged pieces

Hindered access to exits if broken glass is scattered on exits paths

Burglary and vandalism if buildings are left unsecured because of broken windows and glass doors

Adhesive polythene film (used in car window panes) should be pasted on glass to prevent it from shattering into pieces that could be dangerous for people nearby.



Since exits are an important part of emergency evacuation plans in a school, special care should be taken to ensure that exits are clear and will remain clear after an earthquake. Make sure to:

- **Secure/relocate Objects in Exit Paths.** It is important to secure and/or relocate objects that can block exits if they topple over. For example, hallway cabinets, standing rolled carpets, heavy items that can slide or topple, glass and ceramic objects, and shelf contents that may fall and hinder evacuation should be secured or removed from the vicinity of the exit.
- **Install Outward Door Openings.** Whenever

possible exit doors should be installed so that they open outward. When large crowds are trying to exit or there is debris in the room, an outward opening door is usually easier to open. When people move towards inward opening doors to escape, they are in the way of the door and the door itself blocks the exit path.

- **Ensure that Doors Open Easily.** Doors that are hard to open or close due to sticky door jams or tight frames may become even more difficult to open after an earthquake. Make sure that doors open easily. If they don't, the doors can be sanded down or re-hung so that they swing freely. Classroom doors may also be kept open using a door stopper so that it remains open at all times.
- **Create Wide Exit Paths.** Whenever possible, exit paths should be wide enough for people to evacuate without being overcrowded. When exit paths are narrow, evacuation is slowed and people can be injured from bumping into one another.

Having an unrestricted exit path is especially important in these locations:

- Main exits of schools
- Main exits in large buildings
- Doors in spaces where crowds congregate

Other points to note include:

- **Install service entrances adjacent to revolving doors.**

Service doors can be installed adjacent to revolving doors so that people can exit without overcrowding. These service doors should be wide, easily accessible, and remain unlocked during the hours that the building is occupied.

•Use a single secure door instead of an added security gate. Apartment door security systems that have one door that opens inward and another security gate that opens outward can be hard to open in an emergency evacuation. These two door systems will be hard to exit if things have shifted or fallen in front of the doors either inside or outside. They also require having two sets of keys and opening two doors that may be jammed. Security gate systems can be replaced with one secure door to make evacuation easier and simpler.

•Keep fire exits unlocked and install panic bars. Emergency exit doors or fire doors should be kept unlocked whenever a building is occupied. This will ensure that faster evacuation can occur. When it is necessary to keep these doors locked, panic bars can be installed. When pushed the panic bar opens the door from the inside, while remaining locked from the outside. Fire doors should also be regularly inspected and maintained.


•Place strong levers near

heavy exit doors and barred windows. Exit doors made from heavy metal may be difficult to open after an earthquake if the building has shifted. A crowbar or sledgehammer that has been secured near the exit and is easily visible may be helpful when opening these doors during evacuation.

•**Install backup systems for electric automatic doors and gates.** Because there may be power outages after an earthquake, electric automatic doors (photocell doors) or other doors that cannot be easily opened without electricity can be made safer by installing emergency battery operated door opening mechanisms. Alternatively, these doors can be installed with a mechanical manual override system for use during power outages. Manual override systems should be easily accessible and well marked.






Prioritize



As you tackle what needs to be done, think about how to prioritize:

1. Secure life threatening items first (eg. thing that can fall on people lying down or sitting, or things blocking exit)
2. Secure those things that have significant economic value (e.g., computer, a/v equipment) or that would prevent continuity of important functions
3. Secure those items that will let you live more comfortably (e.g., family heirlooms, breakables)

Graphics courtesy BU-KOERI, Turkey

When we carry out the hazard hunt, it is important also to categorise each item in terms of the threat it poses as under:

- Life Safety (this includes blocked exits)
- Economic loss
- Loss of function

Even if the school is unable to carry out the falling hazard mitigation measures all at once, the decision makers can prioritise as per the above categories and the felt-needs of the school.

When to ask for help

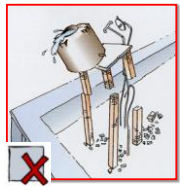

You need to make sure that the school safety committee knows when to ask for help:

- For permanent systems attached to the building:
 - Exterior Cladding
 - Plumbing and electrical systems
 - Interior walls
- For furniture or equipment heavier than 100 kg

Have a qualified engineer or architect (maybe you!) design how to brace these items

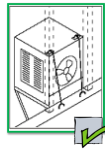
Though much of the falling hazards can be fixed without expert technical advice, it is important to know when such expertise should be sought. When the object to be fastened weighs more than 100kg, it is important to get expert advice. 100 kg is about what two maintenance people could lift when working together. If two people can't move it, you need help. You also need help for the items mentioned on the following slides.

Water Tanks

Graphics courtesy NSET Nepal

Coolers and Air Conditioners



Summary

- Objects can fall, topple or slide and injure children
- Things can break and need to be replaced
- Chemicals can spill
- Objects can block exits
- These things are easily preventable with simple methods
- Objects over 100 kg and tanks need to be braced with the help of an engineer

Questions?



Reminder: Program Objective and Activities

Objective:

- Improve earthquake safety in schools in Gurgaon

Activities:

- Two half-day training sessions
- Work with one school to improve their earthquake safety
- After working with us in this school, you can work in additional schools

Request the volunteers to take up all they have learned in the training programmes at their workplace and at home. We want the entire organisation (all employees) to benefit from this. Mention that they can begin training others in Bechtel to work in more schools.

So Far We've Covered:

- Earthquake Basics
- Earthquake Preparedness Planning
- Falling, Sliding and Toppling Hazards

Today we will:

- Practice anchoring falling hazards
- Practice making an evacuation plan
- Plan our activities at Gyan Devi Senior Secondary School

Today's schedule

9:00	Introduction
9:10	Practice: Hazard Hunt and Anchoring Falling Hazards
10:30	Practice: Evacuation Planning
11:00	Break
11:15	Planning Our Work in the School
12:45	Wrap Up

Questions?

End of Day 2 Intro.

Homework

Last time we gave you some homework:

- Family disaster plan
- Think about how you would anchor a refrigerator

Ask one volunteer to share their family plan. Then ask if anyone would do things differently. Then go around the room and get their ideas for anchoring the refrigerator.

Practice: Hazard Hunt and Anchoring Falling Hazards



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In this session we will:

- Conduct a hazard hunt using the "Hazard Hunt Checklist"
- Anchor some hazardous items



Depending on the number of trainers, divide group into teams which will go with various trainers and do a hazard hunt (HH) at different rooms in the office. Alternatively, we could split into two groups and both teams visit two places and fill up the HH form. They come back and each team presents what they saw and compare notes. Have they thought of solutions?

The checklist includes:

- Identifying falling, sliding and toppling hazards
- Deciding whether they need to be fastened or moved
- Identifying supplies and tools required



Review what sliding and toppling hazards are. If possible point to in-room examples. Bring in and show examples of supplies and tools, for example clamps for various types of objects.

Purpose

- To teach you how to secure objects properly.
You will need to:
 - know how to secure objects at the school so you can teach and supervise others to do it properly
 - identify materials to purchase for securing objects
 - identify the proper tools to use
- To get your hands dirty!



Explain why we need to do this exercise.

The way you secure objects depends on:

- The size, weight, and material of the object
- The surface that you secure the object to (e.g., material wall is made out of)
- The use of the object (does it need to be moved regularly?)



Point out examples in the room, if possible for all three bullets.

Examples from a local school



Show the fans in the room and mention that these are normally stable and just swing around if fixed properly. However, each item has to be checked. Tube lights have to be checked, as well.

Examples from a local school



Talk about the consequences of each picture.

Left picture. Cabinet can topple, hurt someone, and possibly block the doorway. Talk about why keeping exits unblocked is so important.

Right picture. Objects on top of cabinets can fall on people, the cabinets can topple, and the contents can break.

Examples from a classroom



These decorative architectural elements are called jallies. These jallies could break in an earthquake, hurt someone and block exits.

Examples from outdoors



You will need to locate assembly areas away from these hazards. The brick wall could have bricks falling in aftershocks. Tanks can be a falling hazard.

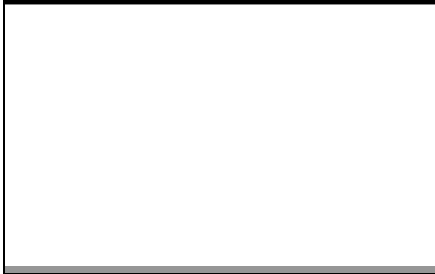
Examples of doors and gates



Doors that open inside should be kept open during class hours using a door stopper.

If doors must be kept closed, another possibility is to appoint a door monitor (a student who sits close to the door) whose job it is to open the door for everyone during an evacuation.

Now we'll go find some falling hazards



I would recommend having a separate area set up as a hazard hunt site, with items you expect them to encounter in the school, perhaps three items:

- A tall bookshelf
- A gas tank
- Laboratory equipment

This is the end of the presentation for this session. The class will return to the room for the wrap up.

Practice: Evacuation Planning



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Purpose

- To teach you how to prepare an evacuation plan
You will need to help the school committee to:
 - Assign responsibilities
 - Identify safe assembly areas
 - Plan the evacuation route
 - Account for everyone

In this session we will:

- Develop an evacuation plan for the ground floor of this building

Principles for Evacuation Plans

- Locate safe open areas for assembly after evacuation
- Assign each classroom a route and a safe assembly area
- Routes should be direct

Ask how many people have been trained in evacuating. Give example of airplane safety announcement that your nearest exit may be behind you. Principles for Evacuation Plans continued on next slide...

Principles for Evacuation Plans

- Younger children evacuate first
- Older children can take longer routes if necessary
- Prevent congestion in corridors and stairs

Continuation of last slide...


Planning Our Work in Gyan Devi Senior Secondary School



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**Overview of Activities at
Gyan Devi Senior Secondary School**

Step 1: Meet with school administrators
Step 2: Conduct sensitization program for teachers, staff and committee
Step 3: Conduct sensitization program for students
Step 4: Conduct hazard hunt
Step 5: Develop emergency preparedness plan
Step 6: Secure falling hazards at school
Step 7: Conduct evacuation drill
Step 8: Discuss emergency plan with parents
Step 9: Discuss earthquake safety at home
Step 10: Evaluate our work



Briefly summarize the activities we will do at the school, one by one. We will discuss each activity in more detail in a few minutes.

In this session we will:

- Discuss our overall approach
- Plan how to do each step
- Assign leaders for key tasks

Your Role Is

- To guide, inspire and help the school to prepare for earthquakes
- To lead from the side, not from the front

Your Role Is Not

- To do everything for them
- To be "experts"

Leading from the side is called 'lateral leadership.' It may be more difficult than actually leading them in the exercise.

Tips for Success

People learn best through activities	↔	People don't learn well through lectures
The plan will be most effective if the school makes it themselves	↔	The plan is useless if no one knows what's in it


Our aim should be to get the school authorities thinking about earthquake safety and all that they can do. The message should be: **WE CAN PREPARE.**

Tips for Success

We want to get people excited and thinking about earthquake safety	↔	This is more important than creating a "perfect" plan
We should teach people how to prepare for earthquakes	↔	We should avoid frightening people

Planning for Step 1

- **Step 1: Meet with school administrators**
- Step 2: Conduct sensitization program for teachers, staff and committee
- Step 3: Conduct sensitization program for students
- Step 4: Conduct hazard hunt
- Step 5: Develop emergency preparedness plan
- Step 6: Secure falling hazards at school
- Step 7: Conduct evacuation drill
- Step 8: Discuss emergency plan with parents
- Step 9: Discuss earthquake safety at home
- Step 10: Evaluate our work



The idea of this session is that the teacher introduces each step. Then teacher leads the group in a discussion of how they will do each step, what types of things might happen, what they need to know to do it well. There will be 7 intro statements and 7 short discussion periods. If the duration of this part of the training session is 1 hour, each intro should be less than 5 minutes, and discussion should be about 5 minutes. Some steps have more intro materials and issues to discuss than others. Hopefully, the group will get excited about participating and shaping the work with this school.

Begin by introducing Step 1. Goals for Step 1 are on the next slide. You will lead the group in a discussion using the questions on the slide after that, which is the last slide before the transition to the next step.

Goals of Step 1: Meet with School Administrators

- Form a school earthquake safety committee
 - Principal
 - Two teachers
 - Two students (one boy and one girl)
 - Maintenance person
 - Parent
- Plan future activities
- Listen to their priorities, ideas and concerns

The parent should be a functionary of the PTA (Parent Teacher Association) and NOT a teacher who is also a parent. The whole programme has to be carried out as per the convenience of the school within the larger framework of our project.

Discussion of Step 1

- What issues do you think will come up in this meeting?
- What materials should we bring?
- Should we work in teams?

Explain that volunteers should work in teams of two when they visit the school for the first time.

Planning for Step 2

- Step 1: Meet with school administrators
- **Step 2: Conduct sensitization program for teachers, staff and committee**
- Step 3: Conduct sensitization program for students
- Step 4: Conduct hazard hunt
- Step 5: Develop emergency preparedness plan
- Step 6: Secure falling hazards at school
- Step 7: Conduct evacuation drill
- Step 8: Discuss emergency plan with parents
- Step 9: Discuss earthquake safety at home
- Step 10: Evaluate our work



Introduce Step 2. Goals are on the next slide. You will lead the group in a discussion using the questions on the slide after that, which is the last slide before the transition to the next step.

Goals of Step 2: Conduct sensitization program for teachers, staff and committee

- Meet with the school safety committee to explain the project
- Hold a sensitization session for teachers, staff and committee
- Present information on:
 - The project
 - Earthquake basics
 - How to prepare a school emergency plan
 - How to mitigate falling hazards
- Encourage them to participate

This is an important time to motivate people at the school to really want to do this. The principal will introduce the school safety committee in the sensitization meeting. Make sure to make the school safety committee feel like they own the project and not feel like people are just coming in and telling them what to do.

Discussion of Step 2

- How can we make this program interesting for teachers and committee?
- What types of questions might the teachers and committee ask?
- How should we organize this event?
- How long should the sensitization program be?
- Who will give the sensitization presentations?

The principal should set up the following meetings:

- School safety committee half hour before full sensitization
- Sensitization session for teachers and staff. Principal will introduce school safety committee in this meeting. If teachers want to do part of the sensitization program that would be great.

Planning for Step 3

- Step 1: Meet with school administrators
- Step 2: Conduct sensitization program for teachers, staff and committee
- **Step 3: Conduct sensitization program for students**
- Step 4: Conduct hazard hunt
- Step 5: Develop emergency preparedness plan
- Step 6: Secure falling hazards at school
- Step 7: Conduct evacuation drill
- Step 8: Discuss emergency plan with parents
- Step 9: Discuss earthquake safety at home
- Step 10: Evaluate our work



Introduce Step 3. Goals are on the next slide. You will lead the group in a discussion using the questions on the slide after that, which is the last slide before the transition to the next step.

Goals of Step 3: Conduct sensitization program for students

- To teach children positive steps they can take to prepare for earthquakes
- To inform children what to do during an earthquake
- Not to frighten children

Discussion of Step 3

- How can we make this program fun and interesting for children?
- How can we avoid scaring the children?
- What types of questions might the children ask?
- How should we organize this event?
- How do we address children of different ages?

When communicating with children, we should use simple language. For older classes we can refer to what they are learning. For KG students, it has to be in the form of stories and demonstrations only.

Planning for Step 4

- Step 1: Meet with school administrators
- Step 2: Conduct sensitization program for teachers, staff and committee
- Step 3: Conduct sensitization program for students
- **Step 4: Conduct hazard hunt**
- Step 5: Develop emergency preparedness plan
- Step 6: Secure falling hazards at school
- Step 7: Conduct evacuation drill
- Step 8: Discuss emergency plan with parents
- Step 9: Discuss earthquake safety at home
- Step 10: Evaluate our work



Introduce Step 4. Goals are on the next slide. The slide after that contains a discussion of setting priorities. You will lead the group in a discussion using the questions on the slide after that, which is the last slide before the transition to the next step.

Goals of Step 4: Conduct Hazard Hunt

- Explain how to identify falling hazards to the school earthquake safety committee
- Explain how to set priorities for securing hazards

Children will be more excited to find ('hunt') hazards. Always remember to commend children who find the hazards. Keep those 'earthquake eyes' open and sharp!

Setting Priorities

- Divide hazards into three categories
 - Life threatening
 - Impedes evacuation
 - Cost to replace
- Assign priorities
 - High for life threatening hazards
 - Medium for hazards impeding evacuation
 - Low for items that are costly to replace
- Final priorities determined by administration
 - Consider fixing easier items first

The priorities we set may be different from that of the school. The final decision will be that of the school.


Discussion of Step 4

- In which areas of the school do we conduct the hazard hunt?
- Who should participate in the hazard hunt?
- What will we need to bring?
- How will we convey the information to the principal?

We should look at everything, but be sure to pay particular attention to science labs, outdoor assembly areas, the principal's room, and the library. Bring a camera for before and after. GHI will provide an excel spreadsheet for them to summarize information.

Planning for Step 5

- Step 1: Meet with school administrators
- Step 2: Conduct sensitization program for teachers, staff and committee
- Step 3: Conduct sensitization program for students
- Step 4: Conduct hazard hunt
- Step 5: Develop emergency preparedness plan**
- Step 6: Secure falling hazards at school
- Step 7: Conduct evacuation drill
- Step 8: Discuss emergency plan with parents
- Step 9: Discuss earthquake safety at home
- Step 10: Evaluate our work



Introduce Step 5. This section has more material and will take longer. Goals are on the next slide. You will show the group some sample plans made by other schools, explain teacher responsibilities and why a student release plan is important, and discussion should occur throughout, so be familiar with the questions on the last slide before the transition to the next step.

Goals of Step 5: Develop Emergency Preparedness Plan

- Describe the contents of a school emergency preparedness plan
- Complete "Checklist to Create a School Emergency Preparedness Plan" with committee
- Create a written plan for the school based on discussions with the committee

Include in plan responsibility for updating the plan. How often? Update after the first drill and yearly?

We could suggest that they review the plan on the first Saturday after the school reopens for the new academic year. The principal and the School Safety Committee will be instrumental in reviewing and correcting it.

Some Step 5 activities happen early, others happen later

- Some parts of checklist must happen before other steps start, such as
 - Assigning emergency roles
 - Developing release policy
 - Creating an evacuation plan
- Other parts of checklist are part of our steps:
 - Hazard hunt and securing hazards (steps 4 and 6)
 - Evacuation drill (step 7)
 - Discussions with parents (steps 8 and 9)
- The committee should present the plan to the school

Please keep the checklist handy for the next few slides. There are seven main items in it. Some of these items are done before the others.

Sample Plans

Hand out example plans and template.
Go over the examples with the class.

Teacher Responsibilities

- Will teachers stay on duty or go home?
- Need to decide which teachers stay and which go home
- Teachers need to prepare at home so they can do their jobs

Teachers will have a major role in the school after an earthquake. They may be requested to stay back until all students are safely sent home. Some teachers will be able to stay, while other teachers may not be able to stay as long. The plan has to identify the teachers who can and know this role clearly.

Student Release Policy

- Disaster dangers
 - Physical dangers
 - Social dangers
- Hold and care for students as long as necessary
- Release only to pre-approved persons
- Keep records
 - Student name and class
 - Person taking custody
 - Time and date of release
 - Destination

Give explanations on why each of these parts of the policy is important.

Discussion of Step 5

- How many meetings with the School Earthquake Safety Committee will this require?
- What issues do you think will be most difficult for them to understand or agree on?
- Is there ever a perfect plan?
- Is a plan a living document?

How many meetings will it take? Four.

Do not strive for the perfect plan. The plans are dynamic and can be perfected over a few preparedness drills.

Planning for Step 6

- Step 1: Meet with school administrators
- Step 2: Conduct sensitization program for teachers, staff and committee
- Step 3: Conduct sensitization program for students
- Step 4: Conduct hazard hunt
- Step 5: Develop emergency preparedness plan
- **Step 6: Secure falling hazards at school**
- Step 7: Conduct evacuation drill
- Step 8: Discuss emergency plan with parents
- Step 9: Discuss earthquake safety at home
- Step 10: Evaluate our work



Introduce Step 6. Goals are on the next slide. You will lead the group in a discussion using the questions on the slide after that, which is the last slide before the transition to the next step.

Goals of Step 6: Secure Falling Hazards at School

- Secure the falling, sliding and toppling hazards in the school
- Teach members of the School Earthquake Safety Committee what they need to know to do this in all other rooms and to secure new or moved furniture

Involve the School Safety Committee in all these activities. Work out a time of the week when all of them will be able to give time for these meetings.

Discussion of Step 6

- Who will do the physical labor?
- Who will bring supplies and tools?
- What problems might we encounter?

The volunteers and teachers may be involved in the fixing of the falling hazards. Each object is unique and there may be a need to form on-site solutions for certain objects.

Planning for Step 7

- Step 1: Meet with school administrators
- Step 2: Conduct sensitization program for teachers, staff and committee
- Step 3: Conduct sensitization program for students
- Step 4: Conduct hazard hunt
- Step 5: Develop emergency preparedness plan
- Step 6: Secure falling hazards at school
- **Step 7: Conduct evacuation drill**
- Step 8: Discuss emergency plan with parents
- Step 9: Discuss earthquake safety at home
- Step 10: Evaluate our work



Introduce Step 7. Goals are on the next slide. You will cover safe evacuation procedures and then lead the group in a discussion using the questions on the last slide before the transition to the next step.

Goals of Step 7: Conduct Evacuation Drill

- Let administrators, teachers and students practice evacuating so they will know what to do during an emergency
- Identify problems with evacuation plans so they can be remedied
- Be sure students know how to evacuate safely

Observe drills carefully. Make revisions in the plans. Announce these revisions in the school.

Safe Evacuation Procedures

- Everyone drop, cover and hold
- Teacher assesses injuries
- Teacher or door monitor gives instruction to evacuate
- Door monitor opens door

What to do before, during and after an earthquake event. Evacuate only after the shaking is over. Procedures continued on next slide...

Safe Evacuation Procedures

- Students walk briskly in a line but do not run
- Use the buddy system
- Teacher makes sure all students are out and leaves last
- Teacher takes roll at assembly area
- Students remain until released

What to do before, during and after an earthquake event continued. The buddy system is particularly important.

Discussion of Step 7

- How can we best prepare to make this drill run smoothly?
- What do we need to make sure teachers and administrators know before this drill?
- What do students need to know before this drill?
- How do we evaluate the success of this drill?
- Do we involve local fire service personnel?

Prepare an evacuation plan. Evacuation routes need to be clear for each zone. No chaos. Orderly evacuation. Discuss with school before calling fire service personnel. Evaluation should lead to revision of the plan if necessary.

Planning for Step 8

- Step 1: Meet with school administrators
- Step 2: Conduct sensitization program for teachers, staff and committee
- Step 3: Conduct sensitization program for students
- Step 4: Conduct hazard hunt
- Step 5: Develop emergency preparedness plan
- Step 6: Secure falling hazards at school
- Step 7: Conduct evacuation drill
- **Step 8: Discuss emergency plan with parents**
- Step 9: Discuss earthquake safety at home
- Step 10: Evaluate our work



Introduce Step 8. Goals are on the next slide. You will lead the group in a discussion using the questions on the slide after that, which is the last slide before the transition to the next step.

Goals of Step 8: Discuss Emergency Plan with Parents

- Make sure parents know their responsibilities after an earthquake
- Give parents confidence that the school is planning for emergencies
- Inform parents of student release policy
- Get names of persons authorized to collect students

Getting an audience with the parents will depend on the principal and the PTA members. Discuss the child release policy and work out a form for this with the school.

Discussion of Step 8

- What questions do you think parents will have?
- What is the best way to prepare for this activity?
- Who should set up the meeting with the parents?

Principal should set up the meeting.

Principal Sharma of Govt Ludlow Castle School announced that parents will have to sit through a sensitization before they will get report cards of their wards. This helped us reach all parents.

Planning for Step 9

- Step 1: Meet with school administrators
- Step 2: Conduct sensitization program for teachers, staff and committee
- Step 3: Conduct sensitization program for students
- Step 4: Conduct hazard hunt
- Step 5: Develop emergency preparedness plan
- Step 6: Secure falling hazards at school
- Step 7: Conduct evacuation drill
- Step 8: Discuss emergency plan with parents
- **Step 9: Discuss earthquake safety at home**
- Step 10: Evaluate our work



Introduce Step 9. Goals are on the next slide. You will lead the group in a discussion using the questions on the slide after that, which is the last slide before the transition to the next step.

Goals of Step 9: Discuss Earthquake Safety at Home

- Encourage families to prepare their homes for earthquakes
 - Home hazard hunt
 - Fix falling hazards
 - Prepare emergency supplies
- Encourage families to prepare family emergency plans

Raise this in the parents meeting. Lead them through a family preparedness plan.

Discussion of Step 9

- What questions do you think parents will have?
- What will be the most effective ways to encourage families to prepare at home?
- What is the best way to prepare for this activity?

Tell them about the earthquake hazard in Gurgaon and how the school has prepared. Take them through the scenario of a daytime earthquake. How do they expect to react? How do they expect the school to react? Tell them the importance of dovetailing their family preparedness plan with the school's plan.

Planning for Step 10

- Step 1: Meet with school administrators
- Step 2: Conduct sensitization program for teachers, staff and committee
- Step 3: Conduct sensitization program for students
- Step 4: Conduct hazard hunt
- Step 5: Develop emergency preparedness plan
- Step 6: Secure falling hazards at school
- Step 7: Conduct evacuation drill
- Step 8: Discuss emergency plan with parents
- Step 9: Discuss earthquake safety at home
- **Step 10: Evaluate our work**



Introduce Step 10. Goals are on the next slide. You will lead the group in a discussion using the questions on the slide after that, which is the last slide before the transition to the next step.

Goals of Step 10: Evaluate Our Work

- Develop ideas to improve these activities
- Make our next school project in Gurgaon more successful

An independent evaluation of the impact of the activities carried out under our project by volunteers who have not been involved before.

Putting the Plan in Action

There are five main activities. Here we should ask each one of them which of the activities they would have a primary and secondary interest in.

We need five leaders

- Primary liaison with school
- Lead person for hazard hunt
- Lead person for emergency preparedness plan
- Lead person for evacuation drill
- Lead person for student, teacher and parent sensitization

Choose leaders from the group.

What each leader does...

- Primary liaison with school
 - Act as key point of contact
 - Organize meetings and events
 - Organize school safety committee
- Lead person for securing falling hazards
 - Lead hazard hunt
 - Identify supplies needed to secure hazards
 - Lead/supervise securing hazards

The hazard hunt group will spend the most time at the school and will coordinate members of other teams who want to be involved in the fixing, as well.

What each leader does...

- Lead person for emergency preparedness plan
 - Guide committee through checklist
 - Create the emergency preparedness plan document
- Lead person for evacuation drill
 - Plan drill with committee
 - Be at school on day of drill to coordinate event

Liaise well with the school committee. Guide them through the development of the plan and also to carry out the drill.

What each leader does...

- Lead person for student, teacher and parent sensitization
 - Adapt materials for teachers about emergency plan, what to teach students and conducting the drill
 - Adapt materials for parents about school emergency plan and preparedness at home

All materials and all help from GHI/GHS.

Let's identify these leaders now

- Primary liaison with school
- Lead person for hazard hunt
- Lead person for emergency preparedness plan
- Lead person for evacuation drill
- Lead person for student, teacher and parent sensitization

Have a group discussion to select these five leaders from within the group.

Questions?

End of session titled “Planning Activities for Gyan Devi Senior Secondary School”

Wrap Up



GEOHAZARDS INTERNATIONAL
A Nonprofit Working Toward Global Earthquake Safety

What We Did Today

- Practiced anchoring falling hazards
- Practiced making an evacuation plan
- Reviewed example school emergency plans
- Planned our activities at Gyan Devi Senior Secondary School

Evaluating Our Training Program

- Do you feel comfortable with your knowledge?
- Should we cover additional topics?
- Should we cover any topics in greater depth?

Making the Project Sustainable

- Encourage the school earthquake safety committee to assist another Gyan Devi group school
- Continue to support the school if they need further assistance or have questions
- Adopt additional schools
- GHI can help

Discuss some ideas for how to make the project sustainable, and how our activities can continue to have an impact after the project ends.

Thank You



www.geohaz.org

For any assistance please contact Hari Kumar
hari@geohaz.org Mobile: 9810600821

Hazard Hunt Checklist for Schools

School Name:	Date of Hazard Hunt:
Building Name:	Hazard Hunt Conducted By:
Room Name/Number:	

Potential Hazards	Check if item is present	Does item need to be moved? anchored?	Supplies needed	Tools needed
Furniture and Equipment:				
Bookshelves	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>		
Storage cabinets	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>		
Display cupboards	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>		
Filing cabinets	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>		
Countertop equipment	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>		
Computer equipment	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>		
Photocopy machines	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>		
Gas cylinders or tanks	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>		
Fire extinguishers	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>		
Storage racks	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>		
Refrigerators	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>		
Water heaters and pipes	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>		
Kitchen equipment	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>		
Ceiling and Overhead:				
Light fixtures	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>		
Suspended ceiling	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>		
Coolers or AC units	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>		
Exterior:				
Sunshades & canopies	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>		
Masonry parapets	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>		
Items sitting on parapets & railings	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>		
Overhead electrical wires	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>		
Water tanks	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>		
Wall Mounted Items:				
Shelving	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>		
Framed pictures	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>		
Wall-mounted cabinets	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>		
Wall-mounted equipment	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>		
Jallies	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>		
Windows	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>		
Others:				
Doors don't swing out	<input type="checkbox"/>			
No fire extinguishers	<input type="checkbox"/>			
	<input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>		
Notes:				

Prioritization and Cost Estimate Form for Mitigating Falling Hazards in Schools

School Name:	Date:
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Item Description	Device Type	Rate (Rs.)	Quantity	Priority			Amount (Rs.) for High Priority	Amount (Rs.) for Medium and Low Priority
				High	Med	Low		
				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
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				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>		
Total Amounts (Rs.)								

Notes: