

# Instructor Guide for Teacher Sensitization Sessions



**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 sensitization, or awareness generation, sessions for teachers. The training materials include a presentation in Microsoft Powerpoint™ and this instructor guide. This instructor guide will take you through the presentation slide by slide and will identify important aspects you should highlight.

### Audience

The main audience will be schoolteachers who teach students at both primary and secondary levels. Other audience members will include the headmaster and other administrators. When you make the arrangements for your presentation, always discuss the makeup of the audience so you can prepare appropriately.

### Training Objectives

This instructor guide will help you effectively communicate information about earthquake basics, safety and preparedness. During the session, you should help the audience:

1. Understand the project and why it is important
  - a. Know the basic elements of the project
  - b. Understand the basics of earthquake hazard in the Delhi region (i.e., what causes earthquakes, earthquakes can affect Gurgaon)
  - c. Understand what might happen to the school building and to its furnishings, equipment, and systems if a strong earthquake occurred
2. Understand how to reduce the damage and consequences caused by an earthquake

- a. Recognize and understand, conceptually, how to anchor or relocate items than can fall, slide, or topple and cause injury or block exits
  - b. Understand why the school will need to develop a school emergency preparedness plan and practice it with drills
  - c. Know the basic elements of a school emergency preparedness plan
  - d. Know what to do before, during, and after an earthquake
- 3. Understand how they can participate in the project
  - a. Think about their role in the school's emergency preparedness plan
  - b. Develop a family preparedness plan
  - c. Develop ideas for how to incorporate earthquake safety lessons into their classroom activities

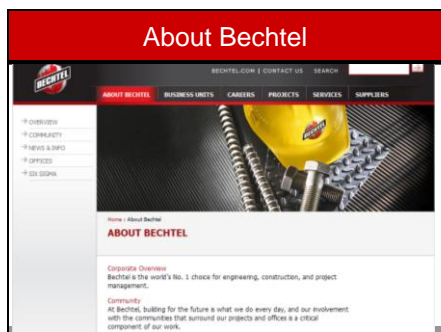
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3 partners:

- Bechtel/organisation
- GHI
- School



## Questions

Is Gurgaon likely to be affected by an earthquake?

- YES
- NO
- Maybe

“I will ask a few questions to get you all to think. Please remember your answers until the end of the session when we will ask the questions again.”

What will you do if an earthquake happened now?

- Run Out
- Stand in a corner
- Hide under sturdy furniture

In an earthquake, are people injured or killed only by building collapses?

- YES
- NO
- Maybe

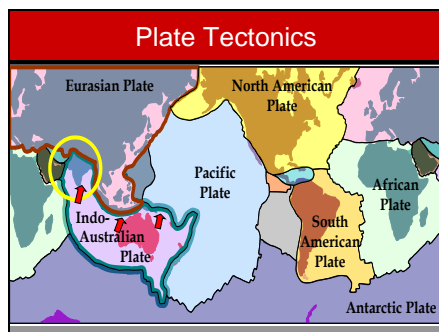
What will you do if an earthquake happened when you are in class with the students?

- Run Out
- Stand in a corner
- Hide under sturdy furniture

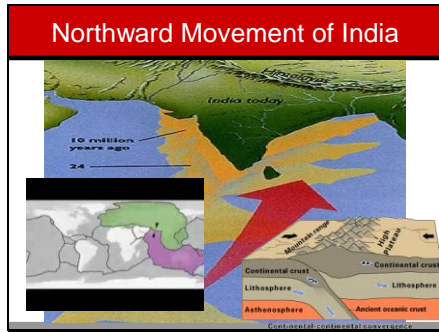


## What's Covered in this Session

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



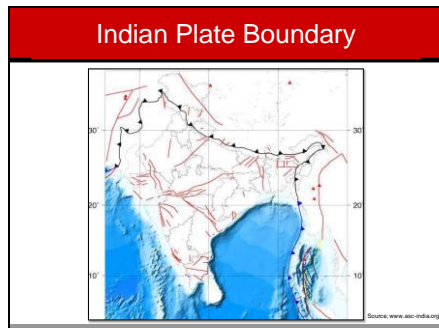
Explain that the earth is like an egg with a cracked shell with its outer crust made up of several pieces known as plates. There are 7 major plates and several minor ones. (Point out the Indian Plate here and show them that it is bordering the large Eurasian Plate.) These plates are constantly interacting 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. Let us watch a video of what happens at a plate boundary in the next slide.



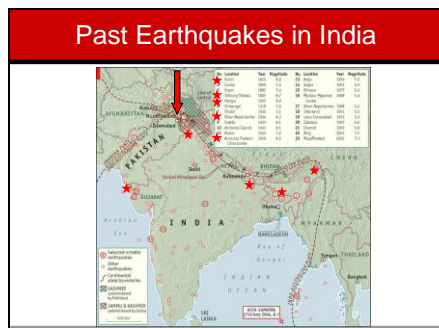
When the video runs explain the movement of the Indian Plate and how there was the TETHYS SEA between Indian plate and the Eurasian plate and NO Himalayas, which were formed as a result of the collision.

The video shows the ‘action’ happening at the Indian Plate boundary. 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 rising up the land on the other plate. 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. The Indian Plate continues to move and pressure continues to build up along the plate boundaries. When a large earthquake occurs some of this pressure is released. If not, the pressure builds up and the longer we have to wait, the stronger the earthquake will be. Have any of you felt a strong earthquake in Delhi? Is that a good thing?





Explain how the country is actually in two plates. Ask which States are on the Eurasian Plate and which are **at** the boundary. Explain how the interaction between the plates causes a lot of stress in the rocks and when it becomes too much for the rocks, it breaks and this is what we feel as an earthquake. **IMPORTANT:** Mention here that when a big enough earthquake happens some pressure is released. So if we have not felt a **LARGE** earthquake in this plate boundary, the pressure is building up and an earthquake can be expected.



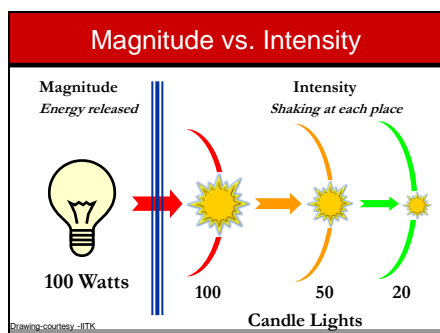
Explain that India has had a number of very large earthquakes in the past century. These are the earthquakes that we mentioned in the introduction. The next slides will explain why...

Indian Earthquakes					
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
8 Feb. 1900	Coimbatore	03:11	6.0	VII	Nil
4 Apr. 1905	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	115
10 Dec 1967	Korwa	04:30	6.5	VIII	200
23 Mar. 1970	Bharuch	20:36	5.2	VII	30
21 Aug. 1968	Bihar-Nepal	04:39	6.6	IX	1,004
20 Oct. 1991	Uttarkashi	02:53	6.4	IX	768
30 Sep. 1993	Killari (Latur)	03:53	6.2	VIII	7,928
22 May 1997	Jabalpur	04:22	6.0	VIII	38
29 Mar. 1999	Chamoli	00:35	6.6	VIII	63
26 Jan. 2001	Bhuj	08:46	7.7	X	13,805

Even though this gives a list of earthquakes – use this slide to ask whether the time of occurrence of an earthquake matters. When they all say that nighttime earthquakes are deadly, tell them about the percentage of children dying in daytime earthquakes is greater. Tell them about the 16,000 children who died out of a total of 75,000 people who died in the Muzaffarabad earthquake. India was lucky that schools were not in session on our side of the border at the time of the quake. Our schools collapsed, but we were lucky that the children and teachers were not in them.

Also, use this to ask about the two terms mentioned here – Magnitude and Intensity...and move on to next slide.

Explain magnitude by comparing an earthquake to a 100W light bulb. Whether you are 5m away from the bulb or 500m away, the bulb remains a 100 W bulb. That is what magnitude is – the energy released by the earthquake. But the intensity of light you get from the bulb varies if you are at 5m or 500m from the bulb. This is similar to the intensity of an earthquake which is a measure of how an earthquake is felt at a place.

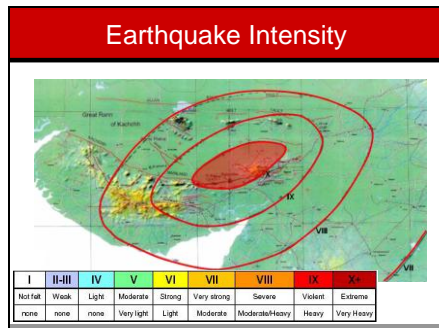


## Why does magnitude matter?

- With every increase in magnitude by 1.0, energy released increases by 31 times.
- Energy released by M 8.0 earthquake is 1000 times that by M 6.0 earthquake.
- Larger earthquake implies stronger shaking in larger area
- The M 9.0 Sumatra quake released the equivalent of 31670 Hiroshima bombs (476 879 138 tons of TNT)

What does magnitude tell you? 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. (Just for info> the 9.1 M Sumatra earthquake released the equivalent of 31,670 Hiroshima bombs!)



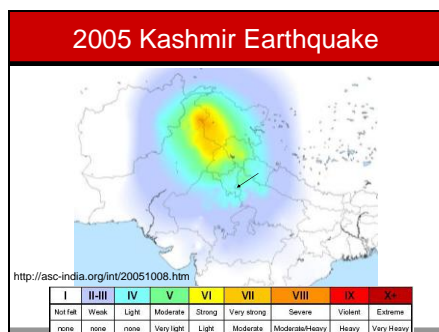
Intensity decreases as we move further and further away from the epicenter where the maximum intensity is felt. In some places where the soil is sandy, as in or close to river beds, more shaking may be felt compared to where the soil is hard or rocky.

This map shows the intensity for the 2001 Gujarat earthquake. Talk briefly about the MM scale in simple terms (higher Roman numerals mean stronger shaking, the top row below the numerals describes the level of shaking, and the next row the level of damage) and how in Bhuj, the maximum intensity was X and as we went further and further away, the Intensity reduced to IX, VIII, etc.

“What was the intensity felt at the epicenter?” [Looks like an VIII intensity shaking]

“How was it felt in Gurgaon?” [Looks like a IV]

“Did you feel it?” Ask audience where they were, how it felt, etc.



The further you are away from the last earthquake ...

the closer you are to the next one

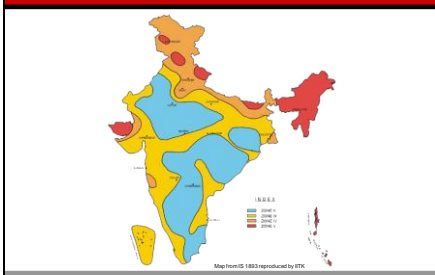
Use your hands here to show that we are always between two earthquakes. The further away one is from the last one, the closer one is to the next.

## 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 and the five zone seismic map of 1970 was revised to a four zone map in 2002. The current map is in the next slide.

## Seismic Hazard Map for India



Explain the Seismic zoning map of India. It has four zones from Zone II to Zone V. The zones are Low Risk (Zone II), Moderate Risk (Zone III), High Risk (Zone IV) and Maximum Risk (Zone V). You may also mention that these maps are based on the information we have as of now and this map could be revised. In fact the first zoning map was made in 1962, revised in 1966 and again in 1970. The 1970 map had 5 zones with a No Risk (Zone I) in addition to the other four zones as in the current version. Since the Latur earthquake happened in a place that was in the no risk zone, the map was revised and the No risk zone was merged with the low risk zone. Hence the current Seismic Zoning map

(IS 1893:2002) divides the country in to four zones between Zone II and Zone V as mentioned above.



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.



What causes most deaths and injuries in an earthquake? It is poorly built buildings and structures.

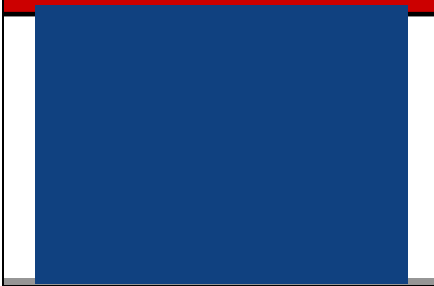


## Consequences of Earthquakes



This slide shows the damage to a school building in the Gujarat earthquake of 2001. This is what can happen outside a building. But what happens inside a building? Let us see a short video.

## Falling Hazards?



This is a short video from a television studio in Kobe during an earthquake in 1995. Most of the furniture here is on wheels, which may not be the case in our classrooms or homes. What can happen there if a similar shaking happens in our rooms?

## Examples of Damage



Someone could be trapped. Records/Books can be difficult to retrieve.

## Consequences

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



People can be injured or trapped by falling objects. In the picture, the shelves are fixed to the ground, but the books have still fallen out.



## Examples of Damage Inside Schools



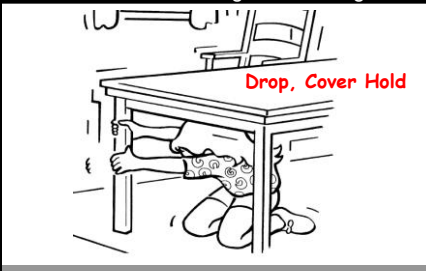
The whole tube light set of frames have come crashing down on the teacher's desk. In the other photo also a cupboard has crashed on to a teacher's desk. Relocation would be a solution. Duck Cover Hold would have worked. We will use this slide to explain Duck Cover Hold and why it is important.

## What will you do if you are in a room and things start falling?

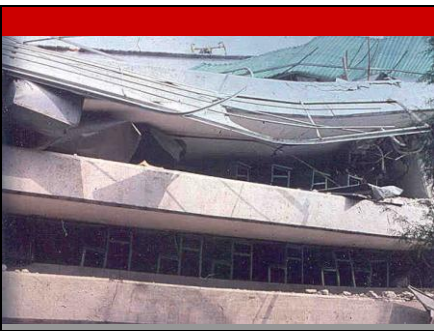


"If the earth starts shaking and objects start falling down, what will you do?" 'Duck Cover Hold' or 'Drop Cover Hold' is what you have to do during the shaking.

## What will you do if you are in a room and things start falling?



'Duck cover Hold' or 'Drop Cover Hold' is what you have to do during the shaking. Explain why this is important and what can fall on children. Explain why you shouldn't try to run out (too many children, things can fall from ceiling, you can't walk or run during strong shaking without falling down).



Anyone doing Duck Cover Hold may have been saved here...



DON'T RUN OUT! Things are falling all around.

## Summary

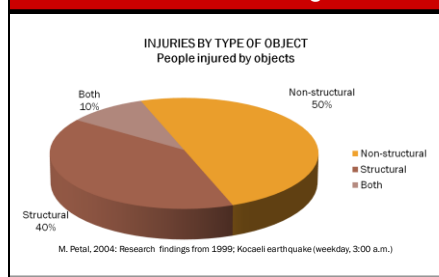
- India is pushing into China, which causes earthquakes
- Damaging earthquakes will continue to happen in India
- Earthquakes happen when faults break
- Gurgaon is located in the "High Damage Risk Zone" (Zone IV) on India's Seismic Hazard Map
- Damage to a building's contents can cause injuries and even deaths
- Duck Cover Hold
- You can prepare

This is a summary slide and after reading through the bullets, you come to the term Duck, Cover, Hold. This has not been used before. "What is that?"

## Falling Hazards Mitigation



## Research Findings



In most urban earthquakes, it has been noticed that falling hazards or non-structural hazards account for 50% of the injuries and losses, and 10% is caused by both structural and non-structural hazards. This means that in 60% of the injuries and losses, falling hazards plays a role. It is time we considered taking steps to minimise losses due to this type of hazard.



## Why is this important?

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

Ask:

- Do any of you sit near a tall cupboard in class?
- Does anyone in your house sleep right next to a large steel cupboard?
- What can happen if there is an earthquake?

Falling hazards can be prevented by simple inexpensive methods.

## What might be a hazard here?

- Look around this room and identify objects that could fall, slide, or topple over in an earthquake.
- Are there any?
- Are there many objects that can fall in other rooms?
- What could happen if these things fell, slid, or toppled over?
- Are there many such objects in your home?

“What can happen in this room? How many doors are there in this room? What if a cupboard falls against this door and traps us all inside here? Look around you with ‘earthquake eyes’! Do all of you have earthquake eyes?”

## What might be a hazard here?



What are the hazards here?  
Nothing much...except for the podium and chairs. Talk about exits here. Is there something outside the exits that can block it?

Note to presenter: For the next slides, you can add photographs from the target school itself. Take them through the hunt and say, “You have earthquake eyes after all!! Will you use them at your homes as well? Please do.”

What are the hazards here? Responses should include:

- Things that could fall down and injure children.
- Equipment that could get damaged and will be difficult to replace.
- Glass.

## What are the hazards here?



## What are the hazards here?



What are the hazards here? Responses should include:

- Thin concrete jallies that can break and fall.
- Rack can fall and cause injuries.
- Rack can fall and block way to exit.

## Now, what might be a hazard here?



## What we just did is called a hazard hunt

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 someone?"

Say that this is how you start mitigating falling hazards. You need to know what is wrong before you can fix it.

## Items in Schools that Can be Hazards



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

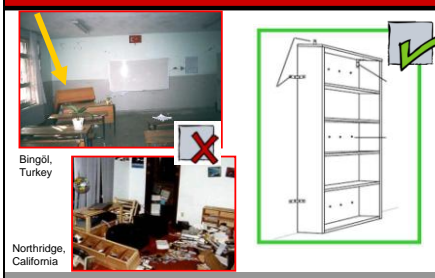
This is a list of items that could be hazards in a school. "Are we missing something that could be a danger in your school?"

## Three ways to mitigate falling hazards

- Relocate objects that can injure
- If relocation is not possible, secure these objects.
- For securing large or heavy objects, get help

Relocate. For example, you can move that cupboard away from your bed. If you can't move it, then fix it to a wall using L clamps so that it doesn't slide, topple or fall.

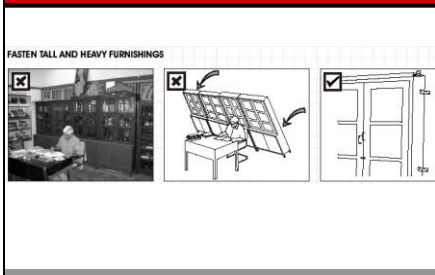
## Tall and Heavy Furniture



“See how the teacher’s cupboard has fallen on to her desk in an earthquake in Turkey? Could this have been avoided? Was relocation the solution?”

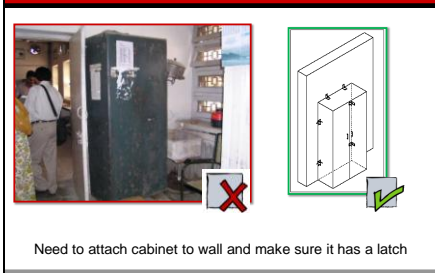
Pass around L clamps, etc.

## More Tall and Heavy Furniture



In most schools, principals sit with a lot of hazards behind them. These have to be fixed.

## Storage Cabinets



Need to attach cabinet to wall and make sure it has a latch

Tall cupboards can fall and injure someone. They can also slide and block our exit.

## Shelves and Their Contents



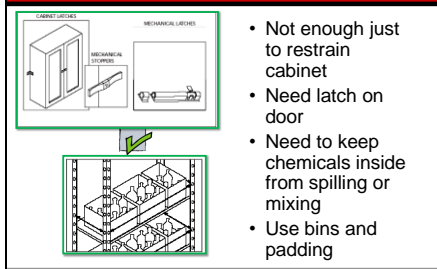
These are pictures of a library, a janitor's closet with cleaning supplies, and a records storage room. If these records contain examination results, mark sheets and other educational records, these fallen papers will be difficult to get in order. Hazardous materials must be secured from damage.

## Ways to Secure Shelf Contents



Shelves should be fastened, and the contents of these shelves should be kept from falling. Simple materials can be used to secure shelf contents.

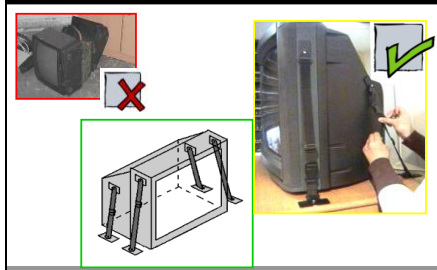
## Storing Chemicals in the Science Lab



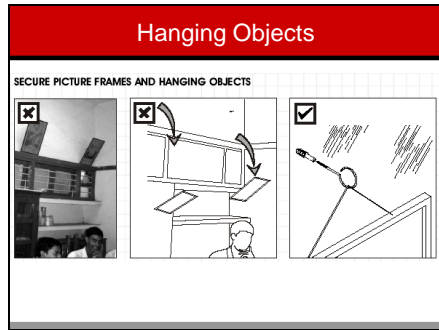
- Not enough just to restrain cabinet
- Need latch on door
- Need to keep chemicals inside from spilling or mixing
- Use bins and padding

The Chemistry Lab is one of the most dangerous rooms in schools. It has various elements such as glass, gas, chemicals, fire, etc. that can turn in to secondary hazards after earthquake shaking. This room has to be addressed with special care.

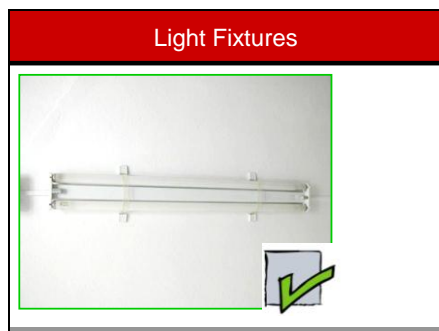
## Electronic Equipment



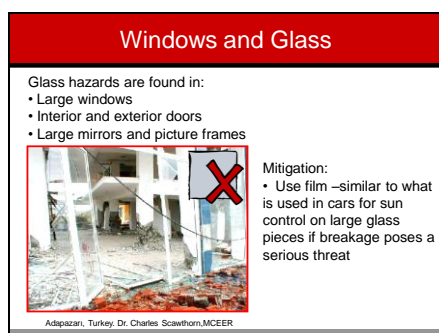
Here there is danger not only of injury, but also of economic losses.



Use hooks to hang pictures, rather than nails so that they do not slide off easily, cause injuries and scatter broken glass.

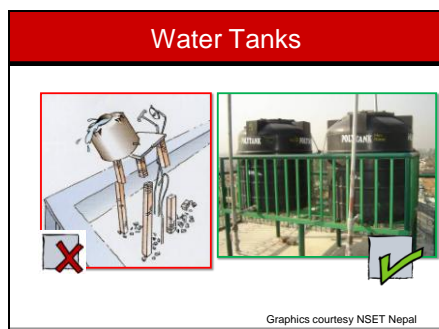


Tube lights can be secured to the ceiling with plastic clips. Screws should be used to secure the clips to the ceiling rather than self-adhesive pads.

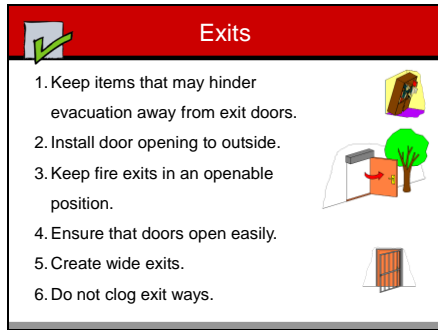


This can cause:

- 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



In the Gujarat earthquake many smaller houses were damaged by water tanks from higher buildings toppling over. Position water tanks away from the side with a high enough parapet or railings to prevent it from sliding off the roof. This will also ensure that there is enough water storage available in the tank.



Objects placed near exits fall in an earthquake and hinder evacuation. 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 (terminals, theatres, large shopping areas, and sports arenas)

**Important actions** (last ones are not indicated on slides, but should be mentioned):

- **Keep items that may hinder evacuation away from exit doors.** 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 opening doors.** 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.
- **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.

- **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. These types of doors can be sanded down or re-hung so that they swing freely.
- **Create wide exits.** 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.
- **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 sledge hammer that has been secured near the exit and is easily visible may be helpful when opening these doors during evacuation.
- **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.
- **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.





Many schools and offices have old cupboards lining up the corridors. This takes away precious corridor space (corridors are part of your emergency exits) and these can topple over in an earthquake blocking our exits.

**Securing Objects in Buildings is a Major Focus of Our Project**

- Inexpensive way to avoid injuries in earthquakes
- Anyone can learn to do this, including principals, teachers, parents and students

But fixing these hazards is not a complicated process, nor is it expensive. Anyone can come up with solutions using everyday items, which can in turn prevent harm to us during earthquake shaking.

**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



## What's Covered in this Session

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

Preparedness planning is a process to make those threatened aware of the earthquake risk and to learn what to do before, during and after earthquake 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 help your school 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.



What can happen in a school when the earthquake strikes? Show video.

## 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

What can happen in a school in an earthquake? Close your eyes and imagine...Remember the video.

How do schools respond?

Ask the following questions:

- 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. Lack of proper response can lead to unnecessary consequences that could have been prevented injuries and deaths.

## Prepared School

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



In a prepared school, there is very little panic as everyone is aware of what can happen and what everyone is supposed to do. This results in both 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 achieve this?

## Getting Started

- (1) Understand what can happen
- (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 safety 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.

## Responsibilities Should Include...

- 1) Ensuring overall school and student safety (Principal / Admin.head )
- 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)

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...

- Gathering and 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

## 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 designated safe areas and exit routes for each zone
- Create buddy system
- Develop alternative evacuation routes
- Plan for disabled students who might need help evacuating

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.

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. 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 depending on time of the year
- 5) Radio and emergency lights
- 6) Fire extinguisher, buckets 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**




- Sensitize all students & teachers about how to react to an earthquake
- Discuss with teachers, students and parents about the school emergency plan after it has been formulated.
- Practice earthquake drill & 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 do to 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
- Drop, Cover and Hold On
- Protect head and neck
- Remain calm, do not run



What would you do if there is an earthquake NOW? (Go round the room asking this question)

These actions need to be taken by students AND teachers during and earthquake and during preparedness drills.

## After an Earthquake



- The teacher surveys room and identifies injuries
- Student buddies help each other and injured or disabled students
- 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!"
- 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

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

## Summary

- Preparedness is a process that involves those affected, discusses expectations and plans the response
- Preparedness requires practice
- Earthquake preparedness is useful for other hazards such as fires

## Family Preparedness



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## Family Preparedness

- Do a Home Hazard Hunt
- Make Family Preparedness Plan
- Put together a Family Emergency Kit

## Home Hazard Hunt

- Look at each room in your home with "Earthquake Eyes" from the level of the shortest member of your family.
- Take some time and sit in each room and think "if a major earthquake hit right now, what would injure us". Then fix the hazard.
- To prevent injury and reduce damage, each room of your home should be carefully examined.
- This will be the starting point in the preparing your home

Take them through some rooms of the house.

•**Living rooms.** Ask them what hazards one normally finds in living rooms. (Tell them how dangerous TVs can be for little children).

•**Bedrooms.** We spend a lot of time in bedrooms, but this would be the place we will be caught in when there is a night time earthquake. So take special care for things that can fall on us and

## What can happen?

- You will be at school, but where your family members be?
- Will they be able to communicate /meet with each other and you?
- Will you have any services?
- Will they be able to get home?
- Will they be able to stay home?
- Will you have any services?
- What can the Govt. do for you?
- **What will you do?**

## Teach Your Family What to Do



those that can block our exit.

•**Kitchens.** Kitchens are among the most hazardous rooms in the house – they contain a lot of glass, fire, cooking gas, etc. One needs to ensure safety here. Install mechanical latches on cupboards. Tie gas cylinders so that they don't fall down and start a gas leak. Make it a habit to turn off the gas cylinder at night.

What if an earthquake happens on a working day? Remind them that the last few earthquakes (the Gujarat earthquake on Republic Day, the tsunami-generating earthquake on a Sunday morning after Christmas, the Kashmir earthquake on a Saturday) have not occurred on working days. Ask them what will happen if there is an earthquake during the afternoon of a working day. Where will their family members be? What will they feel?

Why should you hold on to the table?  
Because the table may be going places – it may move!  
Fun: Don't Duck Cover Hold under a glass table!

### Family Earthquake Preparedness Planning

- **KNOW YOUR ENVIRONMENT**
  - The  **dangers**  in and out of the house
  - Switching/shutting off supplies
  - Identify safe locations
- **KNOW YOUR COMMUNITY**
  - Nearest police, fire stations with tel. no's
  - Know community plans
- **FAMILY EMERGENCY KIT**
  - Emergency supplies (Water, dry food, First aid)
  - Wills, Important documents
- **PLAN TO MEET**
  - Where and how
  - Plan responsibilities
  - External contact point



Family preparedness planning should involve all members of the family sitting together and discussing the scenario of an earthquake. If a damaging earthquake happens during the daytime, family members will be in different parts of the city. It is important that each person in the family discuss and decide on their roles and responsibilities in getting the family back together after such an event.

### Family preparedness planning..

- Take a few minutes with your family to discuss a home evacuation plan. Sketch a floor plan; walk through each room and discuss evacuation.
- Plan a second way to exit from each room or area, if possible.
- Prepare the Family Emergency Kit to sustain your family for 72 hours. Refurbish every 3 to 4 months.
- Make sure your neighbours do so too! (or else be prepared to share your kit with them)
- Know where your emergency kits are located.

Family preparedness planning should involve all members of the family sitting together and discussing the scenario of an earthquake. If a damaging earthquake happens during the daytime, family members will be in different parts of the city. It is important that each person in the family discuss and decide on their roles and responsibilities in getting the family back together after such an event.

### Family preparedness planning..

- Mark where the "Main" switches or valves are located so that they can be turned off. Indicate the location of your family's emergency outdoor meeting place.
- **Get trained in First Aid**
- Do a preparedness drill (**everyone!**)

Main switches: electric to prevent sparks that could cause an explosion if there is a gas leak, water to prevent flooding from broken pipes, gas (if you have piped in gas) to prevent fires and explosions. Basic first aid is important because you can help yourselves and your neighbours if anyone has minor injuries. You can help ease the pressure on the hospitals and doctors by treating minor injuries yourself. Emphasize that everyone should participate in preparedness drills, especially the very old, very young, and disabled. These people will be the most vulnerable during and after a disaster.

## Family Emergency Kit

- Non-perishable food to last 72 hours
- Water (10 lit/ day/person)
- First aid kit + prescription medicine+ sanitary items
- Torch +spare batteries
- Radio + batteries
- Emergency cash
- List of emergency telephones
- Copies of valuable documents
- Spare eye glasses etc..

Ask the questions:

- Can you imagine you or your family members queuing for relief?
- What is the earliest that you feel that relief will be distributed to everyone?

The most optimistic estimates are that it will take 72 hours. For your family to survive these 72 hours, it is important that you prepare a family emergency preparedness kit. A sample list of contents is given in the slide.

## The Project



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## The Project

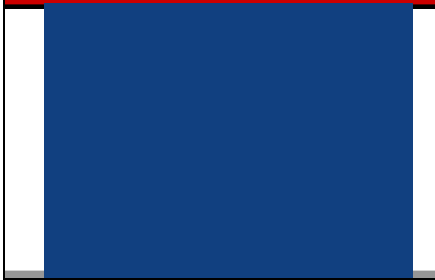
- Sensitisation
  - Teachers & school Safety Committee
  - Students (3 batches)
  - Parents
- Hazard hunt
- Fixing of falling hazards
- Preparedness planning
- Preparedness drills

## Your role

- What will be your role in the project?
  - Your participation will be important in each of the above activities
  - You should develop your Family Preparedness Plan
    - Make your family members aware of your responsibilities in a post earthquake scenario
  - You may think about how to incorporate earthquake safety into classroom activities
  - Answer questions from students and parents
  - Lead the same activities in other Gyan Devi institutions

You should take part whole-heartedly in all activities in the school. You should also encourage your family members to develop a family preparedness plan in which you may not have a key role as you will have emergency duties at the school. Inform them about the school preparedness plan.

## A Prepared school is a Safe school



Questions?

Thank You



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