



Earthquake Safety for Schools

Instructor Guide

May 2011



FEMA

Earthquake Safety for Schools

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Instructor Preparation Materials

COURSE OVERVIEW

Course Purpose

The purpose of this course is to prepare school staff and administrators for an earthquake at their school location. The course is designed to describe the effects of an earthquake; explain how to mitigate those effects; state the key elements of an earthquake plan for preparedness, response, and recovery; and outline the procedures for training and exercises related to that emergency plan.

Course Design

To maximize flexibility for schools, this course is designed to be modular. The units may be presented all at once, or separately, as time permits. Schools may select the units that best match the earthquake knowledge of the intended participants. If all six units are presented at once, the recommended order is shown in the table below.

Unit Title	Length	Objective(s)
Course Introduction	15 minutes	At the end of this unit, the participants will be able to describe the course goal, objectives, and expectations.
Earthquake Basics	1 hour	At the end of this unit, the participants will be able to: <ul style="list-style-type: none">• Describe how an earthquake occurs.• Describe possible consequences of an earthquake at their school.• Identify the actions that are included in an earthquake safety program.
Earthquake Mitigation	2 hours	At the end of this unit, the participants will be able to: <ul style="list-style-type: none">• Identify the earthquake hazards in and around their school.• Identify mitigation measures that can be taken.
Earthquake Planning	2 hours 30 minutes	At the end of this unit, the participants will be able to: <ul style="list-style-type: none">• Explain how earthquake preparedness fits within their school's multihazard plan.• Identify supplies and equipment needed to prepare students, classrooms, and the entire school.• Describe response priorities and procedures.• Describe recovery techniques.
Training and Exercises	3 hours 30 minutes	At the end of this unit, the participants will be able to: <ul style="list-style-type: none">• Explain the steps involved in exercise development.• List the types of exercises and the purposes of each.• Identify the exercises required for the earthquake portion of their school's Emergency Operations Plan (EOP).
Course Summary	15 minutes	At the end of this unit, the participants will be able to implement the course goal and objectives.
TOTAL	9.5 hours	

COURSE OVERVIEW (Continued)

Target Audience

The following audiences are appropriate for and will benefit from this training course:

- School board members
- District executives
- Principals and administrators
- Teachers
- Parents and Parent-Teacher Association (PTA) members
- Community Responders (fire, police, planners, local emergency response network)
- School support staff
- Transportation coordinators
- District risk managers

Course Prerequisites

There are no prerequisites for this course.

METHODOLOGY AND INSTRUCTORS

Training Methods

Training methods used in this course include:

- Instructor presentations.
- Participant-centered learning—participants learn from each others' experience.
- Group discussions.
- Analysis and discussion of scenarios and case studies.
- Exercises.

Instructor Qualifications

Instructors are recruited and selected to teach this course for their ability to understand the overall picture of emergency planning and response for schools. Although specific knowledge about earthquake preparedness is desirable, it is not necessary for all of the instructors. A person well-grounded in preparing a school for other types of emergencies would be suitable. The most important requirement is an understanding of how schools and the school system work.

A minimum of two instructors are needed to teach this course; three would be preferable. At least one of the instructors should understand the nature of earthquakes and be able to discuss the local earthquake threat. Another instructor should have a good background in planning, as much of this course is based on the need for a school earthquake plan.

Instructor Preparation Materials

METHODOLOGY AND INSTRUCTORS (Continued)

Additional Speakers

Other guest instructors may include subject-matter experts (SMEs) with extensive knowledge and experience in their field, such as:

- The local or county Emergency Manager.
- Local fire, police, or other emergency responders.
- Engineers or other structural experts.
- Geologists or other earthquake experts.

Encourage these speakers to tailor their presentations to the subject and the audience. It is important to understand where the participants are coming from and their needs. The key to success for these speakers is their “relationship” with the audience. It will be helpful for the guest speakers to review the purpose and objectives of the course, as well as the instructor materials for the specified topic.

Ask the speaker to address any questions or issues that have already been identified during the course.

COURSE MATERIALS

Instructor Guide

The Instructor Guide is intended for double-sided printing and includes:

- A copy of all visuals.
- Key points and detailed course content.
- Notes to the instructors.
- Suggested answers for discussion questions and exercises.
- Exercise worksheets and other references.

Student Manual

The Student Manual is intended for double-sided printing and includes:

- A copy of all visuals.
- Key points.
- Space to record answers to discussion questions.
- Exercise worksheets and other references.

Course Visuals

The course visuals have been developed in Microsoft PowerPoint 2007 and are compatible with Microsoft PowerPoint 97 and 2003. These visuals can be projected using PowerPoint software. These files also can be used to produce slides or transparencies for overheads.

FACILITATION AND PRESENTATION REMINDERS FOR INSTRUCTORS

- **Preparation Tips**

The following tips will help you prepare to instruct the course:

- Read and become very familiar with the Instructor Guide and Student Manual.
- Anticipate questions participants may ask and prepare your responses.
- Personalize the content by writing your own personal notes in the margins, adding personal experiences, and revising discussion questions.
- Complete the pretest/final exam to deepen your understanding of them.

- **General Presentation and Facilitation Tips**

The success of this course hinges on the instructor's ability to impart information through presentation, as well as to draw on the knowledge and expertise of the participants through facilitation. Following are some presentation and facilitation tips:

- Daily Summary Suggestions
 - Consider use of the easel chart to identify the main topics and list them. Recap each unit's instruction by using Q&A.
- Know When To Present and When To Facilitate
 - Presenting is best when you need to:
 - Present key points or new information.
 - Review course materials or job aids.
 - Provide instructions for activities.
 - Relate your own experiences to the course information.
 - Facilitating is best when you want to:
 - Draw on the knowledge and experience of the participants.
 - Maintain a climate conducive to participating, listening, understanding, learning, and creating.
 - Get a variety of new ideas and approaches to situations from the participants.
 - Keep the participants focused on the unit objectives.
 - Encourage dialog and interaction among the participants.
 - Protect participants' ideas from being ignored or attacked.
 - Summarize participants' input.

FACILITATION AND PRESENTATION REMINDERS FOR INSTRUCTORS (Continued)

- **General Presentation and Facilitation Tips (Continued)**
 - Use Effective Delivery Techniques
 - Be clear, direct, and precise in your presentations.
 - Use sensitive language that is adapted to the participants' culture and experiences (e.g., nonsexist, nonracist).
 - Use language that is inclusive of all participants' experiences and backgrounds.
 - Avoid the use of jargon and acronyms.
 - Demonstrate knowledge of the subject matter by relating it to your own experiences when appropriate.
 - Link relationships between various course activities.
 - Build upon previous units and presentations from other instructors.
 - Emphasize the relevance of exercises and activities to the participants' job situations.
 - Give clear instructions and answer questions for clarification.
 - Periodically ask the participants if they have any questions.
 - Repeat questions asked of participants to check for understanding and to allow other participants to hear the question.
 - Reinforce what participants are saying, and encourage others' input by asking them for their comments.
 - Use humor appropriately. Avoid telling jokes.

FACILITATION AND PRESENTATION REMINDERS FOR INSTRUCTORS (Continued)

- **General Presentation and Facilitation Tips (Continued)**
 - Use Body Language That Communicates Self-Confidence, Poise, and Openness
 - Voice:
 - Vary the tempo, inflection, and volume of your voice.
 - Use a clear, strong voice.
 - Speak slowly.
 - Pause at appropriate points and know when to be silent.
 - Eye contact and facial expression:
 - Establish eye contact with the participants.
 - Be aware of your personal blind spots.
 - Avoid darting your eyes around the room or fixing your eyes at the back of the room.
 - Do not read your notes, but do not be afraid to use them.
 - Movement:
 - Do not stand behind a lectern. This creates a barrier between you and the participants.
 - Position your body so you face the majority of people.
 - Avoid looking frozen in one place, but don't pace either.
 - Hand gestures:
 - Be natural. If you normally do not talk with your hands, now is not the time to start.
 - Avoid distractions such as having your hands in your pockets, wringing your hands, or jingling change.
 - Avoid appearing closed or defensive by remembering not to cross your arms in front of you, having your hands clasped behind your back, or placing your hands on your hips.
 - Energy:
 - Demonstrate energy and enthusiasm in your voice, facial expression, body language, and movement.
 - Be aware of the typical energy lows that occur in groups (e.g., following lunch, late in the afternoon, near the end of the training) and adjust your energy level appropriately.
 - Be aware of your own energy dips and develop methods for energizing yourself.

FACILITATION AND PRESENTATION REMINDERS FOR INSTRUCTORS (Continued)

- **General Presentation and Facilitation Tips (Continued)**
 - Use Effective Facilitation Techniques
 - Use active listening skills by:
 - Reflecting back what you heard in your own words.
 - Checking for understanding.
 - Summarizing participants' comments.
 - Listening for content and for meaning.
 - Showing patience and empathy.
 - Generate participation by:
 - Asking open-ended questions.
 - Helping the participants build on each other's ideas.
 - Showing enthusiasm and appreciation for participants' contributions and backgrounds.
 - Forming relationships between participants' ideas.
 - Focus discussions by:
 - Reminding the participants of time limits.
 - Referring the participants back to the learning objectives.
 - Asking closed questions.
 - Drawing out key points from contributions.
 - Setting ground rules.
 - Limiting time spent on "war stories."
 - Observe for:
 - Level of interest, boredom, fatigue, frustration, confusion, etc.
 - Clues on when to move to another topic, generate further discussion, or take a break.
 - Dynamics between the participants.
 - Manage group dynamics by:
 - Breaking up any cliques or side conversations.
 - Modeling sensitivity, empathy, and a willingness to help.
 - Protecting the participants from criticism or attacks.
 - Managing participants who dominate discussions.
 - Switching group assignments often.

FACILITATION AND PRESENTATION REMINDERS FOR INSTRUCTORS (Continued)

- **Tips for Using Visuals**
 - Overhead Transparencies or Computer Projection System
 - During the presentation, hold the image on the screen only until the participants grasp the meaning.
 - Control attention and avoid distractions by turning the projector off when it is not being used.
 - Talk to the participants, not to the projected image.
 - Leave the lights on or darken the lights in the front of the room where the screen is located.
 - Don't block the view of the screen.
 - Have an extra projector bulb on hand.
 - Chart Paper
 - Put a title on each chart that you generate.
 - Use colorful markers with broad-tipped points. Avoid colors that are hard to see, such as yellow, red, and orange.
 - Use two or three marker colors when charting responses.
 - Stand to the side of the easel when writing on chart paper so the participants can see.
 - Capture all participants' responses when recording them on chart paper.
 - Write the participants' actual responses rather than inserting your own meaning or interpretation.
 - Summarize participants' responses after a chart is generated.
 - Prepare lengthy charts ahead of time.
 - Hang a chart titled "Parking Lot" where you can list topics that come up at a moment when they can't be covered. At the end of the session, try to address them.
 - Participant Activities With Chart Paper
 - This course requires use of easel charts by the participants. It is okay if the penmanship is not good. Remember the power of using the pen! It is an active visual process that requires movement, decisions, and participation by the groups and individuals.
- **Tying It Together**
 - Spend a few minutes at the end of each unit "tying together" the topics covered so far that day.

Course Introduction

Course Introduction

Unit Objective

At the end of this unit, the participants should be able to describe the course goal, objectives, and expectations.

Scope

- Course Overview
 - Course Topics
 - Expectations
-

Methodology

The instructor will introduce the unit and present the course goal. Next, the instructor will describe the course units and objectives.

The instructor will then facilitate a brief discussion of the participants' expectations for the course.

Course Introduction

Time Plan

A suggested time plan for this unit is shown below. More or less time may be required, based on the experience level of the group.

Topic	Time
Course Overview	5 minutes
Course Topics	5 minutes
Expectations	5 minutes
Total Time	15 minutes

**Display
Visual 1**



Instructor Notes: Present the following key points.

Welcome to the Earthquake Safety for Schools course.

This unit introduces the course goal, topics, and expectations.

Be prepared to introduce yourself, describing your position at the school and your role in the school's earthquake planning efforts related to mitigation, preparedness, response, and/or recovery.

Topic Course Overview (Continued)

**Display
Visual 2**



Instructor Notes: Present the following key points.

The course goal is to prepare school staff and administrators for an earthquake at their school location.

The course is designed to describe the effects of an earthquake; explain how to mitigate those effects; state the key elements of an earthquake plan for preparedness, response, and recovery; and outline the procedures for training and exercises related to that emergency plan.

Topic

Course Topics

Display Visual 3



Instructor Notes: Present the following key points.

To maximize flexibility for schools, this course is designed to be modular. The units may be presented all at once, or separately, as time permits. If all units are presented at once, the recommended order is:

- **Course Introduction**, provides an overview of the course goal, objectives, and expectations.
- **Earthquake Basics**, defines key earthquake terms and concepts, reviews the consequences of earthquakes for schools, and provides a brief overview of an earthquake safety program. The objectives for this unit are to:
 - Describe how an earthquake occurs.
 - Describe possible consequences of an earthquake at the school.
 - Identify the actions that are included in an earthquake safety program.
- **Earthquake Mitigation**, introduces earthquake hazards and describes measures that can help reduce the risk of life and property should an earthquake occur at the school. The objectives for this unit are to:
 - Identify the earthquake hazards in and around the school.
 - Identify mitigation measures that can be taken.

Course Units (Continued)

- **Earthquake Planning**, describes the supplies and equipment that might be needed after an earthquake, procedures to carry out critical functions following an earthquake, and strategies to help the school community recover from an earthquake. The objectives for this unit are to:
 - Explain how earthquake preparedness fits within the school's multihazard plan.
 - Identify supplies and equipment needed to prepare students, classrooms, and the entire school.
 - Describe response priorities and procedures.
 - Describe recovery techniques.
- **Training and Exercises**, introduces concepts of training and exercises and describes the types of exercises that can be used with school staff and students. The objectives for this unit are to:
 - Explain the steps involved in exercise development.
 - List the types of exercises and the purposes of each.
 - Identify the exercises required for the earthquake portion of the Emergency Operations Plan (EOP).
- **Course Summary**, reviews the key points of the training.

**Display
Visual 4**



Instructor Notes: Conduct the following discussion.

Ask the participants: What are your expectations for this course?

Record all participants' responses on chart paper. If necessary, suggest some of the following course expectations to:

- Identify the earthquake hazards at this school and in my classroom.
- Learn strategies for mitigating or preparing for the risks associated with those hazards.
- Review the earthquake-related procedures in the existing school Emergency Operations Plan (EOP).
- Identify areas for improving the EOP, as needed.
- Discuss strategies with other teachers for training and exercising the earthquake procedures in the EOP.

Keep this list of expectations and questions visible for the duration of the course. Check off listed expectations as they are met.

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Earthquake Basics

Earthquake Basics

Objectives

At the end of this unit, the participants will be able to:

- Describe how an earthquake occurs.
 - Describe possible consequences of an earthquake at their school.
 - Identify the actions that are included in an earthquake safety program.
-

Scope

This unit covers the following topics:

- Unit Introduction
 - Earthquake Definitions
 - Earthquake Effects
 - Earthquake Safety
 - Additional Resources
 - Unit Summary
-

Methodology

The instructor will introduce the unit by reviewing the unit objectives.

The instructor will then define key earthquake terms and briefly describe how an earthquake occurs. Next, the instructor will present an overview of how earthquakes can affect schools and the hazards that are likely to be encountered following an earthquake.

The instructor will conclude the unit with an overview of earthquake safety actions that are described in more detail in the other units in this course. The instructor will facilitate a case study discussion of the recent Sichuan, China earthquake, including how that earthquake affected schools.

The instructor will conclude the unit with a description of Web resources that participants can use to obtain additional information about earthquakes.

Earthquake Basics

Time Plan

A suggested time plan for this unit is shown below. More or less time may be required, based on the experience level of the group.

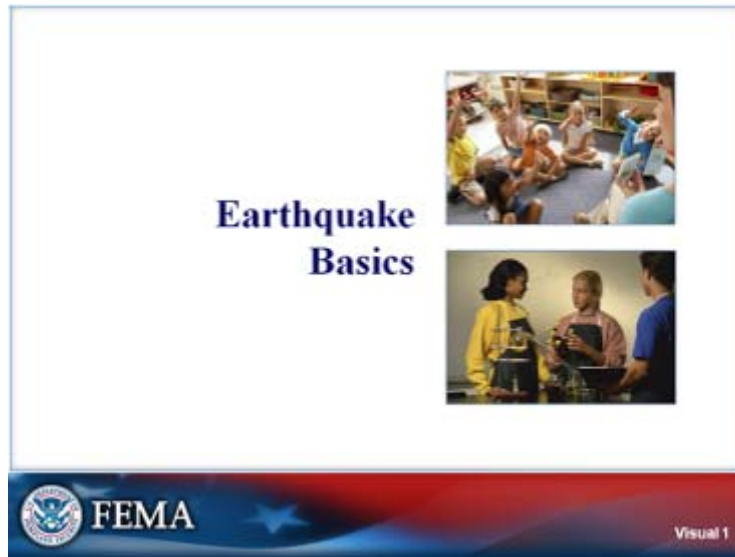
Topic	Time
Unit Introduction	3 minutes
Earthquake Definitions	5 minutes
Earthquake Effects	30 minutes
Earthquake Safety	15 minutes
Additional Resources	5 minutes
Unit Summary	2 minutes
Total Time	1 hour

Optional Activities

Include one or more of the following optional activities, if time permits.

- (1) Invite a guest speaker from the local Emergency Management Agency, U.S. Geological Survey (USGS), or geologists from the U.S. Department of Agriculture (USDA) local extension agency to address earthquake risks in the community.
- (2) Display maps with earthquake risks/fault lines near school locations.
- (3) Collect clippings of historical newspaper articles with earthquake events in the area (if relevant).
- (4) Show local photographs of previous earthquake damage (if relevant).

Display
Visual 1

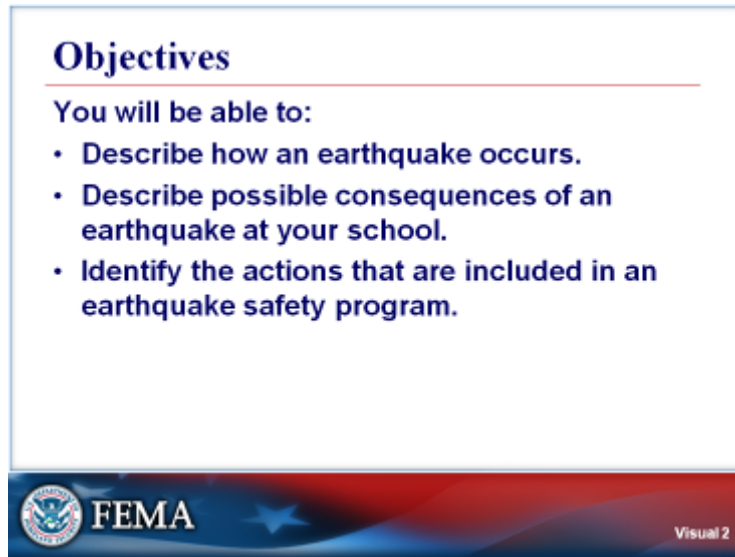


Instructor Notes: Present the following key points.

This unit provides an overview of earthquake basics and reviews the consequences of earthquakes for schools.

The unit also includes a brief overview of an earthquake safety program and provides information about additional Web resource materials.

Display
Visual 2



Objectives

You will be able to:

- Describe how an earthquake occurs.
- Describe possible consequences of an earthquake at your school.
- Identify the actions that are included in an earthquake safety program.

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Visual 2

Instructor Notes: Present the following key points.

When evaluating a school's earthquake safety plan, it is important to first understand the nature of the hazards or vulnerabilities.

At the end of this unit, the participants will be able to:


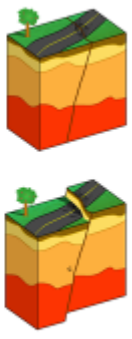
- Describe how an earthquake occurs.
- Describe possible consequences of an earthquake at their school.
- Identify the actions that are included in an earthquake safety program.

Display
Visual 3

Earthquake Definition

An earthquake is:

- The sudden slipping or movement of part of the Earth's crust, . . .
- That occurs along a fault, and . . .
- Is accompanied by shaking/vibration.



FEMA

Visual 3

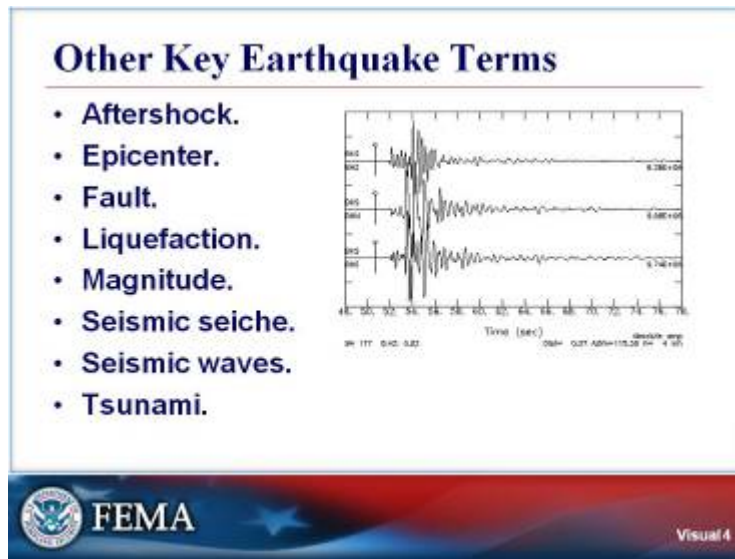
Instructor Notes: Present the following key points.

One of the most frightening and destructive phenomena of nature is a severe earthquake and its terrible aftereffects.

An earthquake is defined as the sudden slipping or movement of part of the Earth's crust that occurs along a fault and is accompanied by shaking/vibration.

The huge plates that form the Earth's surface are in constant motion, moving over, under, and past each other. Sometimes the movement is gradual. At other times, the plates are locked together, unable to release the accumulating energy. When the accumulated energy grows strong enough, the plates suddenly break free, causing an earthquake.

Image Source: www.usgs.gov



Instructor Notes: Present the following key points.

Other key terms associated with earthquakes include:

- **Aftershock:** An earthquake of similar or lesser intensity that follows the main earthquake.
- **Epicenter:** The place on the Earth's surface directly above the point on the fault where the earthquake rupture began. Once fault slippage begins, it expands along the fault during the earthquake and can extend hundreds of miles before stopping.
- **Fault:** A fracture or zone of fractures along which there has been displacement of the adjacent blocks of the earth's crust relative to one another.
- **Liquefaction:** The transformation of loose sediment or soil into a fluid state as a result of increasing the pressure of the fluid in between the grains due to strong ground shaking. Liquefaction typically occurs in poorly consolidated, water-saturated sediment. Liquefaction can cause significant earthquake-related damage because structures located on ground that liquefies can collapse or sink into the ground.
- **Magnitude:** The amount of energy released during an earthquake, which is computed from the amplitude of the seismic waves. A magnitude of 7.0 on the Richter Scale indicates an extremely strong earthquake. Each whole number on the scale represents an increase of about 30 times more energy released than the previous whole number represents. Therefore, an earthquake measuring 6.0 is about 30 times more powerful than one measuring 5.0.

Terms (Continued)

- **Seismic Seiche:** [pronounced “seysh”] Standing waves set up on rivers, reservoirs, ponds, and lakes when seismic waves from an earthquake pass through the area.
- **Seismic Waves:** Vibrations that travel outward from the earthquake fault at speeds of several miles per second. Although fault slippage directly under a structure can cause considerable damage, the vibrations of seismic waves cause most of the destruction during earthquakes.
- **Tsunami:** A sea wave caused by an underwater earthquake or landslide (usually triggered by an earthquake) displacing the ocean water.

Definition source: www.usgs.gov and www.fema.gov

Earthquake Effects

- Ground shaking and aftershocks.
- Landslides.
- Liquefaction.
- Fires.
- Flooding.
- Tsunamis or seismic seiche.

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Visual 5

Instructor Notes: Present the following key points.


Potential hazards during and after an earthquake include:



- **Ground shaking and aftershocks**, which may cause falling objects and structural damage. While structural damage is often the most visible effect of an earthquake, a key point to remember is that earthquake effects go beyond readily visible structural damage.
- **Landslides**, when surface soil (and anything built upon it) slides down a slope.
- **Liquefaction**, when seismic vibration causes soils to “liquefy” and lose their ability to support the weight of buildings and other structures.
- **Fires**, often caused by ruptured gas lines or downed electric lines.
- **Flooding**, often caused by water main breaks or dam or levee failures.
- **Tsunamis or seismic seiche**, when the earthquake displaces waves of water from nearby oceans, lakes, or other bodies of water.

Display
Visual 6

Factors That Affect Ground Shaking

- **Magnitude:** Determines the amount of energy released.
- **Distance from the epicenter:** Reduces the amount of shaking.
- **Local soils:** Can amplify or diminish the seismic waves.



 **FEMA**  Visual 6

Instructor Notes: Present the following key points.

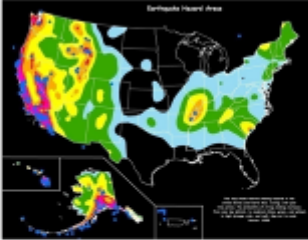
The amount of ground shaking during an earthquake is determined by a number of factors.

- **The magnitude** of the earthquake determines the amount of energy released.
- **The distance** from the epicenter is also a factor. Greater distances reduce the amount of shaking.
- **The types of local soils** can either amplify or diminish the seismic waves. For instance, soft, water-saturated soil can amplify shaking. Young and fractured rocks in west coast soil cause seismic waves to die out faster than the older and more homogenous rocks of central and eastern U.S. soil.

Earthquake Risks

Earthquakes can strike:

- Almost anywhere in the United States.
- At any time of year.
- Without warning.



FEMA

Visual 7

Instructor Notes: Present the following key points.

It is important to remember that earthquakes can happen almost anywhere in the United States. Residents on the west coast of the U.S. are regularly educated about seismic safety. However, seismic activity is prevalent almost everywhere in the U.S. and earthquake safety should be a priority.

Earthquakes can happen at any time of year—they are equally common in cold or warm weather. There is no “earthquake season.”

An earthquake can strike without warning and poses hazards in almost every classroom and school facility (e.g., books on a shelf, chemicals in a science lab).

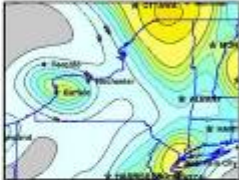
Image Source: www.usgs.gov


“This map shows the relative shaking hazards in the United States and Puerto Rico. During a 50-year time period, the probability of strong shaking increases from very low (white), to moderate (blue, green, and yellow), to high (orange, pink, and red). Map not to scale.”

Activity: Earthquake Risks

Instructions:

- Research your area using:
 - <http://www.fema.gov>.
 - <http://earthquake.usgs.gov>.
 - Other Web or print sources.
- Summarize your area's earthquake history and hazards.
- Be prepared to present your summary in 10 minutes.



 **FEMA** Visual 8

Instructor Notes: Conduct the following activity.

Preparation: This activity will require access to the Internet. If there are no computers in the classroom, download and/or print this information before class.

Purpose: This activity will enable the participants to identify earthquake hazards in their local area.

Estimated Time: 20 minutes (10 minutes activity + 10 minutes debrief)

Instructions:

1. Research your area using:
 - The Federal Emergency Management Agency Web site (<http://www.fema.gov>).
 - The U.S. Geological Survey Web site (<http://earthquake.usgs.gov>).
 - Other Web or print sources.
2. Summarize your area's earthquake history and hazard(s).
3. Be prepared to present your summary in 10 minutes.

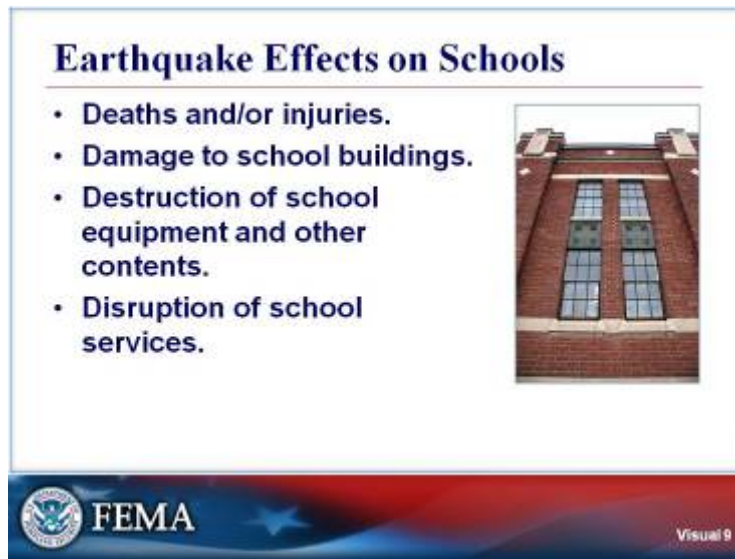
Debrief:

After 10 minutes have passed, ask a volunteer to present their summary. Ask for other volunteers to share any additional earthquake events or hazards they found for your area.

Conclude the discussion by asking the group:

Were you surprised by the earthquake hazard level in your area?

Acknowledge the responses.



Instructor Notes: Present the following key points.

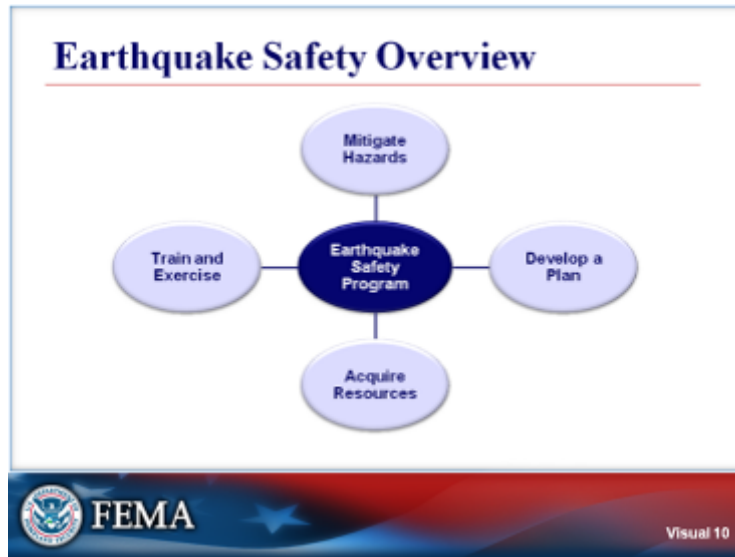
School vulnerabilities during an earthquake include:

- **Death and/or injury** of students, teachers, staff, and volunteers (e.g., from structural collapse or falling objects).
- **Damage to school buildings:**
 - Structural damage may stem from ground shaking, fault ruptures under or near the building, soil liquefaction or other disruptions that weaken the soil bearing capacity, landslides, fires, or the force of water during a tsunami or seismic seiche.
 - The risk of damage is a function of each building's:
 - Type: Based on the type and construction of a building or structure, engineers can determine the likely amount of damage that could be expected during an earthquake.
 - Age: Older school structures may not meet current seismic requirements and standards.
 - Maintenance: Schools suffering from deferred maintenance will experience greater damage than well-maintained schools.
 - Location: School damage may also be a factor of its proximity to the earthquake epicenter or structures that may cause cascading events (e.g., nearby dams or chemical plants).
- **Destruction of school equipment** and other contents.
- **Disruption of school services**, including the capability to provide shelter to affected residents, a function that is frequently assigned to schools in a disaster.

Earthquake Effects (Continued)

The school's multihazard Emergency Operations Plan (EOP) should assess these vulnerabilities and outline procedures for preparedness and mitigation.

**Display
Visual 10**



Instructor Notes: Present the following key points.

This course addresses the consequences of an earthquake, and actions to take at your school to reduce the affects of an earthquake and accelerate your school's recovery.

A thorough earthquake safety program includes the following components:


- **Mitigate Hazards:** Identify the structural and nonstructural hazards in your school and classroom. Take steps to mitigate the danger of these hazards during an earthquake.
- **Develop a Plan:** Review your school's multihazard Emergency Operations Plan (EOP) to ensure that it includes any policies, procedures, and resources that will be needed before, during, and after an earthquake.
- **Acquire Resources:** Follow school guidance on acquiring any resources needed to successfully implement the procedures in the EOP, such as food, water, medical supplies, and blankets.
- **Train and Exercise:** Ensure that staff, students, and parents are properly educated about the earthquake safety procedures in the EOP. Conduct regular training and exercise the plan frequently.

This process is cyclical and ongoing. After every training session or exercise, compile any "lessons learned" about new hazards that require mitigation, gaps in procedures that should be clarified in the EOP, or additional resources that must be acquired.

The other units in this course provide detailed information about how to implement each of these actions.

Earthquake Safety: China Case Study

- A magnitude 7.9 earthquake hit Sichuan Province.
- Of the 70,000 fatalities, more than 5,000 students died from school collapses.
- Many schools were damaged beyond repair.



Instructor Notes: Present the following key points.

Schools are not always safe havens for children and teachers. Earthquakes can and do occur anywhere and can affect students in the classroom, on the playground, and even on the bus on the way to or from school.

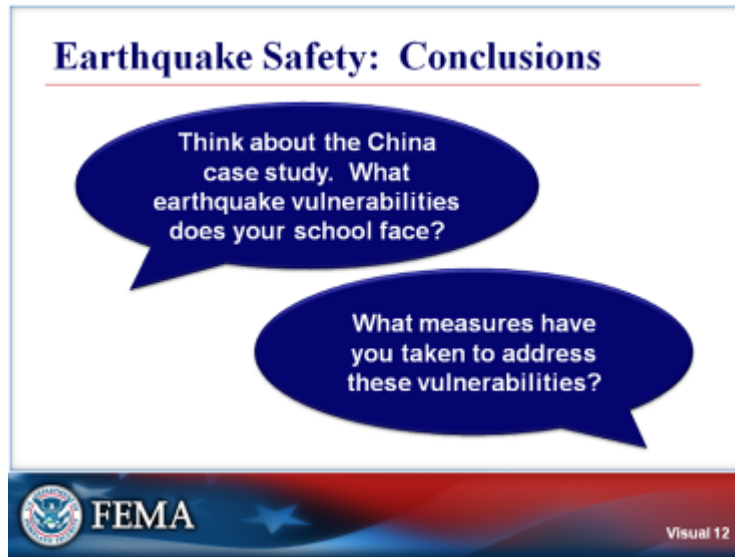
For instance, on May 12, 2008, a magnitude 7.9 earthquake hit Sichuan Province. About 70,000 people were killed and 18,000 were missing. In some areas, entire towns were shattered. The quake split roads and caused massive landslides.

Over 5,000 students died from school collapses in Sichuan Province. Many school buildings were damaged beyond repair.

The devastating power of this earthquake reinforces the need to teach students:

- What earthquakes are and how they occur.
- What kinds of damage earthquakes cause.
- How to prepare for an earthquake.
- What to do during and after the quake ends to remain safe.

Display
Visual 12



Instructor Notes: Present the following key points.

Ask:

Think about the China case study. What earthquake vulnerabilities does your school face?

Call upon volunteers for answers. Acknowledge the responses. If not mentioned, note that vulnerabilities may include structural concerns about the school buildings; nonstructural hazards, such as falling objects; evacuation challenges; etc.

Ask:

What measures have you taken to address these vulnerabilities?

Call upon volunteers for answers. Acknowledge the responses. If not mentioned, note that preparedness actions may include:

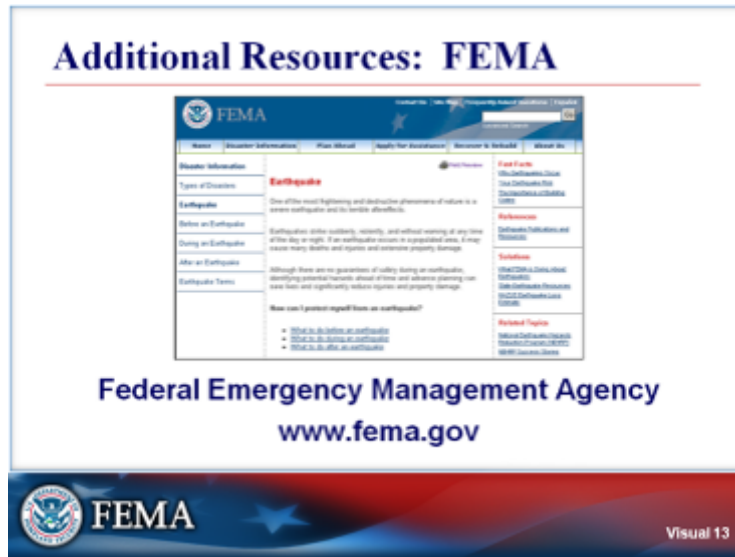
- Mitigating hazards in classrooms and school buildings.
- Stocking resources needed to sustain students and staff.
- Planning for alternate means of communication.
- Practicing earthquake response through a training and exercise program.

Add any additional preparedness or mitigation efforts from your own experience or understanding.

Topic

Additional Resources

Display Visual 13



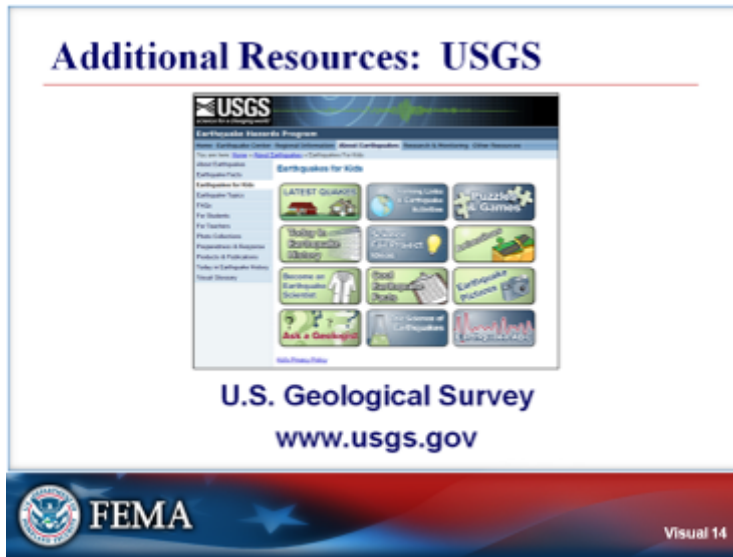
Instructor Notes: Present the following key points.

The Federal Emergency Management Agency (FEMA) Web site contains numerous resources on earthquakes, including:

- **Earthquake Terms**, providing key definitions.
- **Why Earthquakes Occur**, providing an overview of plate tectonics and faults.
- **Your Earthquake Risk**, organizing States into categories of moderate, high, or very high risk for earthquakes.
- **Earthquake Contacts**, listing points of contact in every State to learn more about programs affecting your community.

Topic	Additional Resources (Continued)
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Display
Visual 14

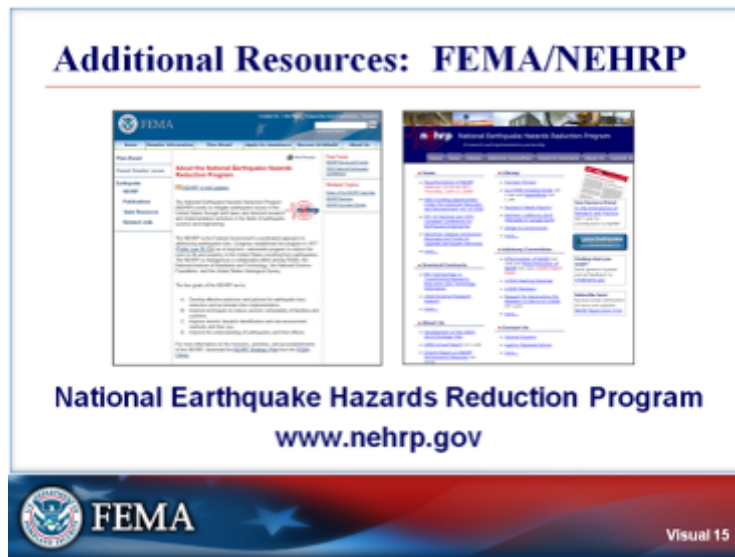


Instructor Notes: Present the following key points.

The U.S. Geological Survey (USGS) Web site is another valuable resource for earthquake information, including:

- **Facts and Terms**, providing earthquake facts, FAQs, Today in Earthquake History, and a visual earthquake glossary.
- **Educational Topics**, offering information on earthquakes for kids (shown on the visual), for students, and for teachers.
- **Resources**, featuring photo collections, animations for earthquake terms and concepts, products and publications, and preparedness and response.
- **The Science of Earthquakes**, describing how and when earthquakes occur.
- **Latest Earthquakes in the World**, displaying U.S. and world maps of seismic activity over the past 7 days.
- **Recent Earthquakes**, showing the past 8-30 days.
- **Earthquake Summary Posters**, showing seismic history and hazards by region or by year.

Display
Visual 15



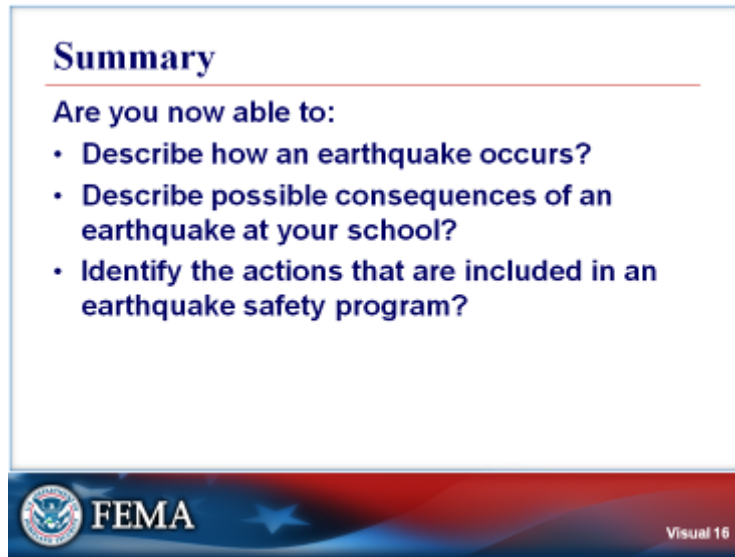
Instructor Notes: Present the following key points.

The National Earthquake Hazards Reduction Program (NEHRP) is the Federal Government's coordinated approach to addressing earthquake risks. It is a collaborative effort among FEMA, the National Institute of Standards and Technology (NIST), the National Science Foundation (NSF), and USGS.

Resources on the NEHRP Web site include:

- **Library** of resources, such as scientific data, response and recovery publications, and success stories.
- **News releases** of earthquake-related events, from State and Federal sources such as FEMA, USGS, NIST, and NSF.
- **E-mail updates and an NEHRP newsletter** of success stories.
- **Grant and contract information.**
- **Links** to additional resources.



Display
Visual 16



Summary

Are you now able to:

- Describe how an earthquake occurs?
- Describe possible consequences of an earthquake at your school?
- Identify the actions that are included in an earthquake safety program?

 **FEMA**  Visual 16

Instructor Notes: Present the following key points.

This unit reviewed earthquake basics and how earthquakes can affect schools.

Ask:

Are you now able to:

- Describe how an earthquake occurs?
- Describe possible consequences of an earthquake at your school?
- Identify the actions that are included in an earthquake safety program?

Facilitate a brief discussion and answer any questions before proceeding.

If you will be presenting the next unit, explain that it will describe mitigation techniques to help reduce the damage if an earthquake occurs at your school.

Earthquake Mitigation

Earthquake Mitigation

Objectives

At the end of this unit, the participants will be able to identify:

- The earthquake hazards in and around their school.
 - Mitigation measures that can be taken.
-

Scope

This unit covers the following topics:

- Unit Introduction
 - School Hazards
 - Mitigation Overview
 - Mitigation Funding
 - Additional Resources
 - Unit Summary
-

Methodology

The instructor will introduce the unit by reviewing the unit objectives.

The instructor will then review some of the hazards in schools associated with earthquakes including both structural hazards in their school and nonstructural hazards in their classrooms. Students will complete an activity to identify hazards in their school.

Next the instructor will review mitigation measures that can be taken to reduce hazards.

Students will complete an activity to identify one mitigation measure that could be applied to each of the hazards identified in the previous activity.

The instructor will describe earthquake mitigation funding programs. The instructor will conclude the unit with a description of additional Web resources that the participants can use to obtain more information about mitigating earthquake hazards.

Earthquake Mitigation

Time Plan

A suggested time plan for this unit is shown below. More or less time may be required, based on the experience level of the group.

Topic	Time
Unit Introduction	3 minutes
School Hazards	40 minutes
Mitigation Overview	60 minutes
Mitigation Funding	10 minutes
Additional Resources	5 minutes
Unit Summary	2 minutes
Total Time	2 hours

**Display
Visual 1**



Instructor Notes: Present the following key points.

This unit introduces earthquake hazards and the risks that are created as a result of those hazards. While some earthquake hazards can be reduced through mitigation, some may not.

The goal is to be able to identify hazards, determine if they can be mitigated or reduced, and if they can't, adjust and adapt the school response procedures so that the potential problems are addressed in school planning and training efforts.

Display
Visual 2

Objectives

You will be able to identify:

- Earthquake hazards in and around your school.
- Mitigation measures that may be taken to reduce loss of life and property.

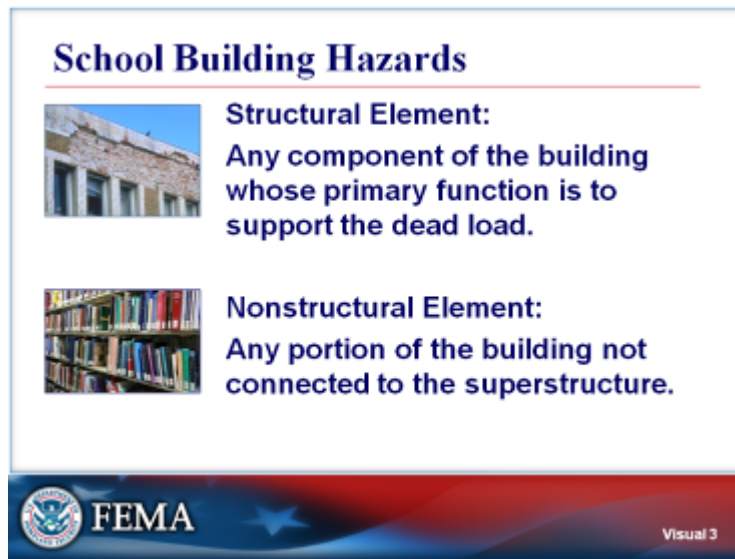
FEMA Visual 2

Instructor Notes: Present the following key points.


One key component of emergency planning is mitigating the damage that could be caused by a disaster.


At the end of this unit, the participants will be able to identify:



- Earthquake hazards in and around their school.
- Mitigation measures that may be taken to reduce the loss of life and property.



School Building Hazards

 **Structural Element:**
Any component of the building whose primary function is to support the dead load.

 **Nonstructural Element:**
Any portion of the building not connected to the superstructure.

 **FEMA**  Visual 3

Instructor Notes: Present the following key points.

Hazards in schools can be separated into two categories: structural and nonstructural.

- **Structural elements** are any components of the building whose primary function is to support the dead load of the building against forces exerted by wind, rain, heavy snow, gravity, vibrations, and people. Other components such as cornices or balconies may be connected to or incorporated into the building structure.

A structural hazard is a building component, such as an unreinforced masonry wall, that may fail during an earthquake.


- **Nonstructural elements** are not connected to or incorporated into the building structure. Nonstructural risks relate to the danger of falling objects or other risks not associated with the building's seismic safety.

Many earthquake injuries are caused by falling objects, such as poorly secured bookcases falling in classrooms, false ceilings, light fixtures, appliances, furniture, and mechanical equipment such as heating and air conditioning units.

**Display
Visual 4**

School Hazards: Structural Examples

- Unreinforced masonry or cinderblock walls.
- Covered walkways.
- Portable buildings.
- Partition walls.
- Drop ceilings.
- Light fixtures.
- Large panes of glass.
- Electrical equipment.



FEMA Visual 4

Instructor Notes: Present the following key points.

Structural hazards in and around the school may include:

- Unreinforced masonry or cinderblock walls.
- Covered walkways. Covered walkways and playground areas have less support in the middle of the structure and may be vulnerable to lateral movement.
- Portable buildings. Portable buildings are considered temporary structures and are often not secured to the ground. They may become vulnerable with ground motion.
- Drop ceilings.
- Light fixtures.
- Large panes of glass.
- Electrical equipment.

In addition, parapets, balconies, or cornices may not be considered part of the building's structure but are particularly vulnerable to ground motion and may affect the school's ability to evacuate easily.

In general, the newer the building, the more likely it will be resilient in earthquakes. While seismic building codes vary across the country, building codes are upgraded and improved as building materials and techniques change.

An evaluation of a school's structural hazards is best done by a licensed and experienced structural engineer. The age of the building, the type of soils the building is built on, the type of construction, and the building materials are just a few factors that are considered when a building is evaluated for seismic performance.

Structural Hazards (Continued)


Knowing how the school building will perform in a moderate to major earthquake is valuable information for developing earthquake response procedures.


Structural hazards take extensive time, planning, and funding to mitigate. Actions to mitigate these hazards are usually taken at the district level. Until these hazards are mitigated, a school may need to adjust response procedures to take into consideration the problems that might be caused by the hazard.

**Display
Visual 5**

School Hazards: Nonstructural Examples

- Bookshelves.
- File boxes and drawers.
- Furnishings.
- Portable room dividers.
- Office and classroom equipment.
- Vending machines.



 **FEMA**  Visual 5

Instructor Notes: Present the following key points.

The first step in mitigating nonstructural hazards is to become aware of all the items that could become earthquake hazards during ground motion.

Examples of potential nonstructural hazards include:

- Bookshelves.
- File boxes and drawers.
- Furnishings, such as desks, tables, and chairs.
- Portable room dividers.
- Office and classroom equipment, such as computers, televisions, and photocopiers.
- Vending machines.

Hazard Identification Assistance

- Review existing plans and reports.
- Ask local experts.
- Conduct Internet research.

The slide features a photograph of a woman in a white shirt sitting at a table, looking towards the camera. The slide has a blue and red footer with the FEMA logo and the text 'Visual 6'.

Instructor Notes: Present the following key points.


When identifying hazards in your school, follow the guidelines listed on the visual.

- **Review existing plans and reports**, such as:
 - State mitigation plans.
 - Local comprehensive plans.
 - The school's multihazard Emergency Operations Plan (EOP).
- **Ask local experts**, such as:
 - Local emergency management staff.
 - The department of public works.
 - Police or fire.
 - Structural engineers, architects, or soil engineers.
- **Conduct Internet research**, beginning with the resources listed at the end of this unit.

Activity: School Hazards

Instructions:

- Your group will be assigned one type of hazard: structural or nonstructural.
- Using the checklist in your Student Manual, identify school examples of your hazard type.
- Be prepared to share your responses in 15 minutes.



The bottom of the slide features a decorative banner with the FEMA logo on the left, the text 'FEMA' in the center, and 'Visual 7' on the right.

Instructor Notes: Conduct the following activity.

Preparation: Ensure that the participants will have access to areas of the school that are adjacent to the classroom while completing this activity (e.g., request that doors remain unlocked and hallway gates remain open, if feasible). When you are ready to begin the activity, divide the class into two teams.

Purpose: This activity will enable students to identify the earthquake hazard(s) in their school building.

Estimated Time: 20 minutes (15 minutes activity + 5 minutes debrief)

Instructions:

1. Your group will be assigned one type of hazard: structural or nonstructural.
2. Using the checklist in your Student Manual, beginning on the next page, identify examples of your assigned hazard type in the school (including this classroom and any other accessible areas).
3. Be prepared to share your responses in 15 minutes.

Debrief:

After 15 minutes, call both teams back to the main classroom.

Ask a volunteer from each team: **What hazards did you identify?**

Acknowledge the responses. Add any additional hazards that you have noted in the school. Explain that this unit will describe techniques for mitigating the danger of these hazards.

Checklist Structural Hazards

- Walls are built of unreinforced masonry or cinderblocks.
- Building exit routes pass through arcades, canopies, or porch-like structures.

Columns supporting arcades or porches may fail, and roof overhangs may sag or fall.

- Building roofs have clay or slate tiles.
- The school building includes parapets, balconies, or cornices.

Roof tiles, parapets, balconies, cornices, and other facades and decorations may fall during an earthquake. If weakened, these components may fall even after the ground stops shaking.

The greatest danger exists directly outside building exits. Students should be cautioned to move quickly past these hazardous areas.

- There are one or more modular classroom buildings on the school campus.

Modular buildings may not be securely anchored to the ground.

- The building has elevators.

Elevators are extremely vulnerable to damage from earthquakes. Ground shaking may cause counterweights and other components to be torn from their connections, causing extensive damage to elevator cabs and operating mechanisms.

Post signs near elevators prohibiting their use in the event of fire and earthquakes.

Checklist Nonstructural Hazards

Ceilings and Overhead Items:

- Suspended ceilings do not have diagonal bracing wires and tiles may fall.
- Light fixtures rest only in a ceiling grid without other support.
- Pendant light fixtures do not have safety cables.
- Enclosed hallways or stairs are lit only by electricity.
- Ductwork or large diameter pipes do not have diagonal bracing and could fall.
- Suspended items, such as displays and plants, do not have closed eye-hooks and cannot swing freely 45 degrees.
- Suspended space heaters or air conditioning units could fall.
- Masonry chimneys are not reinforced.
- Decorative ceiling panels or latticework is not securely attached.

Walls and Wall-Mounted Items:

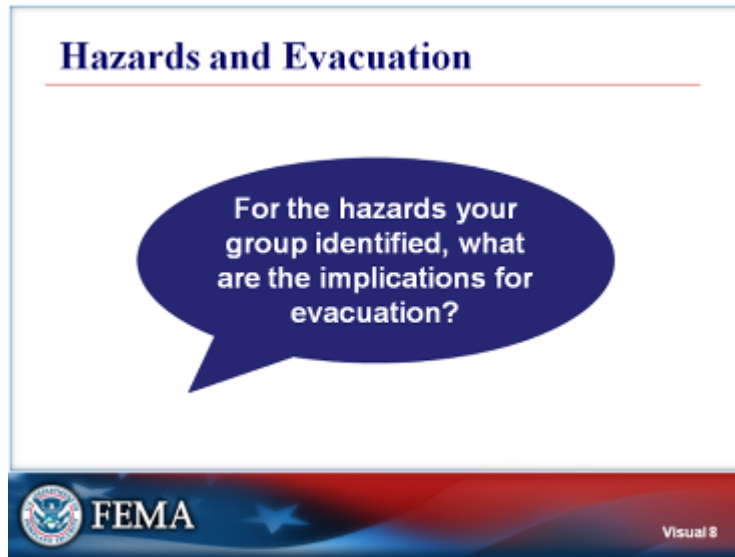
- Windows and glass panels in hallways, doors, and display cases could shatter.
- Fire extinguishers are not secured.
- Fire sprinkler risers do not have v-braces to the wall.
- Free-standing and cubicle partitions are not secured.
- Ceiling-height walls are not secured.
- Wall-mounted televisions, monitors, and speakers are not secured.
- Wall-mounted objects such as clocks, maps, and artwork are not connected to structural framing.
- Shelving could fall.
- Lockers, bookshelves, and other storage units line hallways.

Furniture and Equipment:

- Desks and tables may slide and block exits.
- Free-standing cabinets, bookcases, wall shelves, and office file cabinets are not secured.
- Drawers and cabinet doors do not have safety latches.
- There are heavy objects on high shelves.
- Computers and television monitors are not securely fastened.
- Aquariums and other potentially hazardous displays are unsecured and located near student seats.
- Laboratory chemicals are not isolated and restrained.
- Laboratory gas lines do not have flexible connections.
- Gas cylinders are not secured with a top and bottom strap or safety chain.
- Wheeled items, such as carts, whiteboards, or pianos, are not secured against rolling.
- Vending machines could topple.
- Shop and gym equipment could fall.
- Kitchen equipment, such as ovens, range hoods, refrigerators, and dishwashers, is unsecured.
- Appliances, such as water heaters, boilers, and furnaces, are not secured.
- Hazardous materials are stored by custodians and gardeners.
- Large, heavy equipment may fall or slide, blocking exits.

Exterior:

- Gas, sewer, or power lines are located near the outdoor assembly area.
- Decorations and statuary are not anchored.
- Fences or masonry walls are not reinforced.
- Large trees are in poor health and may fall.
- Signage is not adequately secured.



Instructor Notes: Present the following key points.

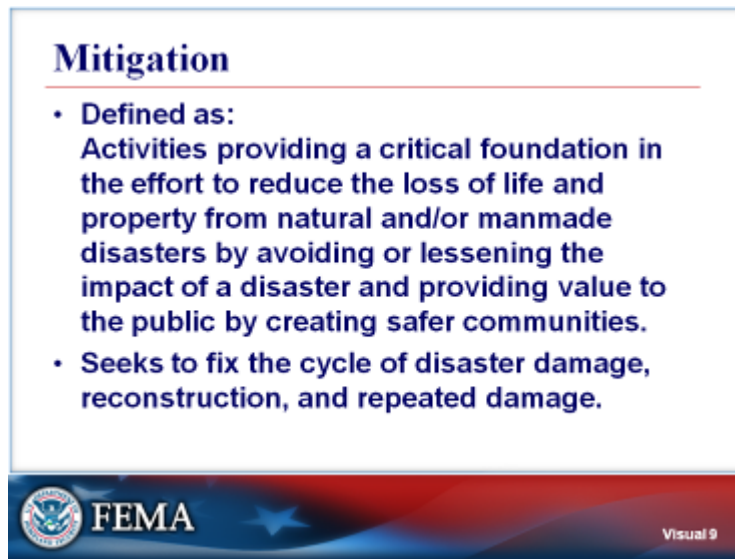
Conclude the activity by asking:

For your identified hazards, what are the implications for evacuation (e.g., blocked exits)?

Acknowledge the responses. Potential answers include:

- **Blocked exits.** Evacuation might be delayed or impossible. New evacuation routes might need to be identified.
- **Blocked hallways.** Following an earthquake, hallways may be cluttered with debris from ceilings, fallen light fixtures, and toppled storage units. Tell students to anticipate these hazards.
- **Broken glass.** Windows, especially large pane windows, are prevalent hazards throughout schools. Tinted adhesive solar film used to reduce light and heat also will help hold together glass fragments from window panes that crack in an earthquake. Shatter-resistant plastic films with stronger adhesive, however, work better than ordinary "solar films." Check the fire code for safety glass requirements along evacuation routes.
- **Poor lighting.** If the lighting system fails, darkness will make it difficult to navigate safely. Emergency (battery-powered) lights should be installed and secured against falling.
- **Outdoor hazards.** Unreinforced masonry walls or statues could topple and block exits or evacuation routes. Anchor and/or reinforce such hazards. Utility lines (e.g., gas, sewer, power) may fall or rupture during an earthquake. Avoid these hazards when identifying evacuation routes and assembly areas.

Display
Visual 9



Mitigation

- **Defined as:**
Activities providing a critical foundation in the effort to reduce the loss of life and property from natural and/or manmade disasters by avoiding or lessening the impact of a disaster and providing value to the public by creating safer communities.
- **Seeks to fix the cycle of disaster damage, reconstruction, and repeated damage.**

FEMA Visual 9

Instructor Notes: Present the following key points.

Mitigation is defined as:

Activities providing a critical foundation in the effort to reduce the loss of life and property from natural and/or manmade disasters by avoiding or lessening the impact of a disaster and providing value to the public by creating safer communities.

Mitigation seeks to fix the cycle of disaster damage, reconstruction, and repeated damage. These activities or actions, in most cases, will have a long-term sustained effect.

**Display
Visual 10**



Instructor Notes: Present the following key points.

The FEMA Hazard Mitigation program can be instrumental in helping schools reduce the risks of damage and injury during earthquakes. The examples on the visual are described in more detail below and on the next pages.

Light Fixtures and Earthquakes: Protecting School Children

Los Angeles, CA - The Los Angeles Unified School District (LAUSD) is second in size only to the New York City School District. At present, the District is composed of over 900 schools, serving over 800,000 students, and employing 57,000 full-time and 24,000 part-time staff. The LAUSD provides public education services to a 708-square-mile area including the cities of Los Angeles, Bell, Carson, Cudahay, Gardenia, Huntington Park, Lomita, Maywood, San Fernando, South Gate, Vernon, and West Hollywood; portions of 18 other cities; and the unincorporated areas of Los Angeles County.

At the time of the 1994 Northridge Earthquake, the LAUSD facilities were illuminated with suspended ceilings and imbedded pendant lighting systems. These lights tend to fall from the ceiling when impacted by strong seismic motion. Hundreds of lighting units fell onto desks in the classrooms when the earthquake hit.

Fortunately, the earthquake occurred early in the morning when the schools were closed. As a result of this experience the LAUSD, with the support of FEMA, decided to undertake the seismic retrofitting or replacement of pendant lights to increase life safety, reduce the earthquake injury risk, and meet current building code standards.

Light Fixtures and Earthquakes: Protecting School Children (Continued)

In the Northridge Earthquake, 5,500 buildings owned by LAUSD were damaged, with total damages currently estimated at \$134 million. Under Section 406 of the Stafford Act, FEMA funded \$3.1 million for damaged, unbraced pendant ceiling and lights. In addition, \$45 million was obligated to mitigate unbraced pendant ceiling and light systems of the same design that were not damaged.

The reinforcement and/or replacement of the unbraced pendant lights in the Los Angeles Unified School District will reduce the high risk of injury to the more than 800,000 school children during the next earthquake event.

DHS Funds Seismic Retrofit For Tumwater School

Seattle, WA -- Secretary of Homeland Security Tom Ridge has approved an \$875,535 Hazard Mitigation Grant for Tumwater School District #33. According to Ridge, the funds will be used to retrofit the Littlerock Elementary School Multipurpose Building to better withstand structural damage from future earthquakes. "We know from damage sustained during the Nisqually Earthquake that the structure is susceptible to seismic stress," said Ridge. "This retrofit will strengthen the building and make children safer."

Acting Under Secretary of Homeland Security for Emergency Preparedness and Response and Director of the Federal Emergency Management Agency (FEMA), Michael D. Brown agrees. "If we needed a reminder that the Pacific Northwest is a seismically active region, the Nisqually Earthquake was that reminder. We all know it could have been much, much worse," said Brown. "No building can be made 'earthquake proof,' but hazard mitigation projects offer the peace of mind of providing school staff and school children alike, safer surroundings next time the earth moves."

Total project cost is \$875,535, with FEMA providing \$656,651, or 75 percent. The funds were made available through FEMA's Hazard Mitigation Grant Program (HMGP) administered by the Washington Emergency Management Division (WEMD). Local jurisdictions apply for grant aid through a competitive process that demonstrates high-hazard disaster risk and provides a cost-effective mitigation project that greatly reduces or eliminates the hazard.

On March 1, 2003, FEMA became part of the Department of Homeland Security, responsible for emergency preparedness and response. Regional offices are located in Boston, New York, Philadelphia, Atlanta, Chicago, Denton (Texas), Kansas City, Denver, San Francisco, and Seattle

Acquisition and Relocation from Multiple Hazards: Full Mitigation Best Practice Story

Los Angeles County, CA - After the 1994 Northridge Earthquake, the Castaic Union School District conducted a study of the earthquake-related risks. The District had 63 buildings that were a mix of permanent and portable structures with construction dating as far back as 1917, serving approximately 1,200 students and 115 staff. The San Andreas and San Gabriel fault systems, two of the most active faults in the Nation, pass through the District's area. The assessment revealed that earthquake-related damage was not the only risk.

Besides seismic damage, the study revealed two additional threats: flooding from the Castaic Dam (located only 1.7 miles upstream) and fire or explosion from a rupture in nearby oil pipelines (a 1925 gas-welded pipeline, and a 1964 modern arc-welded steel pipeline). If the dam were to fail, the 2,200-acre reservoir could release nearly 105 billion gallons of water, inundating the area below with 50 feet of water.

The potential economic costs from either a dam failure or an oil pipeline break following an earthquake were enormous. The first potential cost would be incurred from both building and content damage. Replacement of the school buildings would cost an estimated \$7.7 million in direct construction costs (1995 dollars). Second, if such an earthquake occurred, alternative school facilities would have to be located and rented at an estimated cost of over \$500,000 per year. Third, the community would have to absorb the costs of losing the educational services provided by the District in the time period between the actual loss of the facilities and the relocation to temporary facilities. The School District calculated the cost of the lost public services based on the operating expenses required to provide the services. The daily cost of lost educational services was estimated at \$28,601.

The District determined that the most feasible method to reduce their risks would be to condemn the structures on the old, high-risk site and relocate to a low-risk area. The location selected was completely out of the dam inundation area and far removed from the high-pressure oil pipelines, thus eliminating the risk posed by the dam and oil pipelines hazards. While the campus would still be within an active earthquake fault area, the new campus building would be constructed to fully conform to 1995 building code provisions.


The District then agreed to turn the land over to the Newhall County Water District. The old school property is located above two active wells, which the water district can use to supply their customers in Castaic. In doing so, they changed the property deed to restrict human habitation and development, and to return the site to natural open space.

The Castaic School District financed the relocation effort through a combination of the \$20 million generated by the sale of school bonds and a \$7.2 million grant through FEMA's Hazard Mitigation Grant Program for the market value of the property, including the existing structures and infrastructure. The District used this funding to rebuild the elementary and middle school, and district office, and to relocate the elementary school students into temporary buildings during the construction. The new middle school opened in the fall of 1996, and the new elementary school opened in August 1997.

Display
Visual 11

Major Structural Mitigation

- Reinforce building structure with steel frames.
- Protect walls by stiffening floors.
- Provide tie-backs for parapets or heavy exterior elements.
- Reinforce walls and columns with fiber materials.





Instructor Notes: Present the following key points.

Major structural hazard mitigation efforts are normally initiated at the district or other governmental entity level because of funding, logistical, and other constraints.

Teachers should:



- Recognize the structural hazards that affect their classrooms and evacuation routes.
- Be aware of the mitigation techniques that have been taken or are planned.
- Ensure that their preparedness measures take into account any structural hazards that have not yet been mitigated.

**Display
Visual 12**

Less Extensive Structural Mitigation

- Cover windows with shatter-resistant plastic film.
- Secure suspended ceilings and light fixtures with safety wire.
- Install bracing for ducts and pipes.
- Brace interior building partitions.



 **FEMA** 

Visual 12

Instructor Notes: Present the following key points.

Mitigation may include modification of smaller components of the building structure at the local or school level to minimize damage or injury. Teachers should be aware of these less extensive mitigation strategies that may have an impact directly on their classroom and/or students.

- During an earthquake, window frames can experience extreme shaking or distortions that trigger glass breakage.
 - Tempered glass is stronger than conventional glass and breaks into smaller, less dangerous fragments.
 - Adhesive film applied to existing windows can hold the glass fragments together, reducing damage and falling hazards.
- Suspended ceilings and overhead lighting fixtures typically fail where anchorage is poor, or the runners that support the panels and lights are too weak to withstand lateral earthquake forces.
 - Unbraced suspended ceilings can swing independently of the supporting floor and be damaged or fall.
 - Installing “four-way” diagonal wire bracing and compression struts can help mitigate this hazard.
- Aboveground utility pipelines and ducts are often inadequately braced or inadequately secured to their foundation structures. Like buildings and other facilities, utilities tend to be designed for vertical gravity loads.
 - The equipment anchorage and pipeline bracing may not be strong enough to carry the large lateral forces associated with earthquakes.
 - Additional bracing can help mitigate the hazard of falling pipes or ducts.

Mitigation Strategies (Continued)

- Interior building partitions, particularly non-load-bearing walls or partial walls, may not be well anchored to the building structure.
 - Additional anchors or bracing that more firmly connects partitions to the building structure can help mitigate the risk of interior partitions falling during an earthquake.

Display
Visual 13

Nonstructural Mitigation

- Provide a backup system for vital equipment.
- Move furniture away from exits.
- Separate and secure chemicals.
- Secure loose objects.

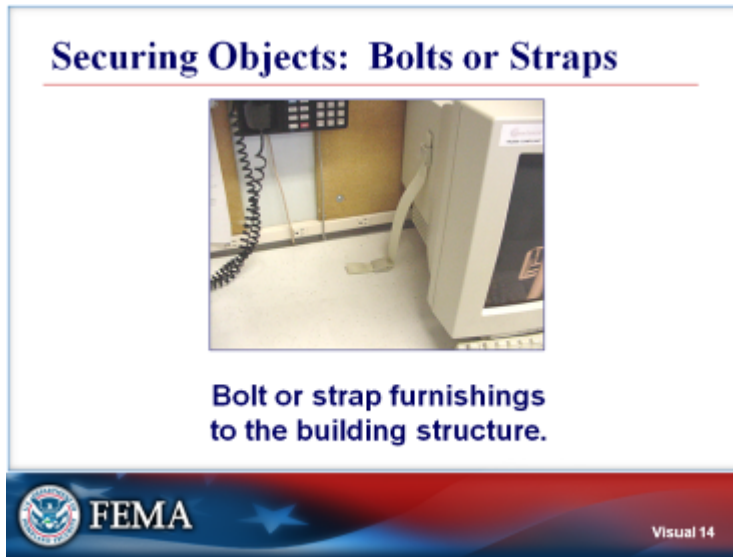


Visual 13

Instructor Notes: Present the following key points.

Nonstructural hazards can often be very easy and inexpensive to fix.

- Backup systems for vital equipment permit continued access to vital services. A Continuity of Operations (COOP) Plan is vital because it describes the staffing and resource requirements that would be needed to continue essential services and functions after a disaster.
- Moving furniture away from exits permits faster and easier evacuation because furniture does not need to be moved in order to exit the room.
- Chemical labs and custodial closets are notorious for having chemicals on shelving units. It's important to keep the contents on the shelves so that they won't fall, break open, and mix to cause an even more dangerous situation.
- Securing heavy objects and tall furniture are possible fixes and will be described in more detail on the next visuals.



Instructor Notes: Present the following key points.

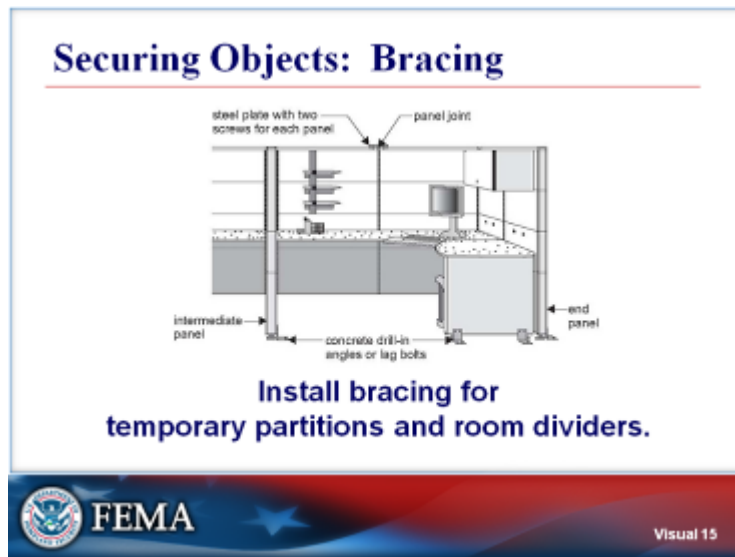
Secure objects by bolting or strapping furnishings to the building structure.

For instance, computers and small appliances can be easily tossed from a desk, table, or counter top. Other examples of dangerous loose items include:

- Televisions.
- Aquariums.
- Display cases.
- Bookcases.
- File cabinets.
- Lockers.

Gas cylinders should be strapped in place with a top and bottom safety chain.

Water heaters also need to be strapped in place. They are a common cause of fire because they are top heavy and the sloshing of the water inside the tank causes it to rock and fall over, breaking loose of the electrical or gas supply. There are strapping kits available for water heaters. In most areas prone to earthquakes, water heaters are required by building code to be strapped. Water heaters can also be an emergency source of drinking water, but only if they stay upright and secured.

**Display
Visual 15**

Instructor Notes: Present the following key points.

Another means of securing loose objects is to install bracing. For instance, ensure that any temporary partitions and room dividers are secured.

Diagonal bracing should be installed for overhead ductwork or large-diameter pipes.

Florescent lighting and pendant lighting should be braced with safety wire and closed eye-hooks to allow them to swing freely 45 degrees.

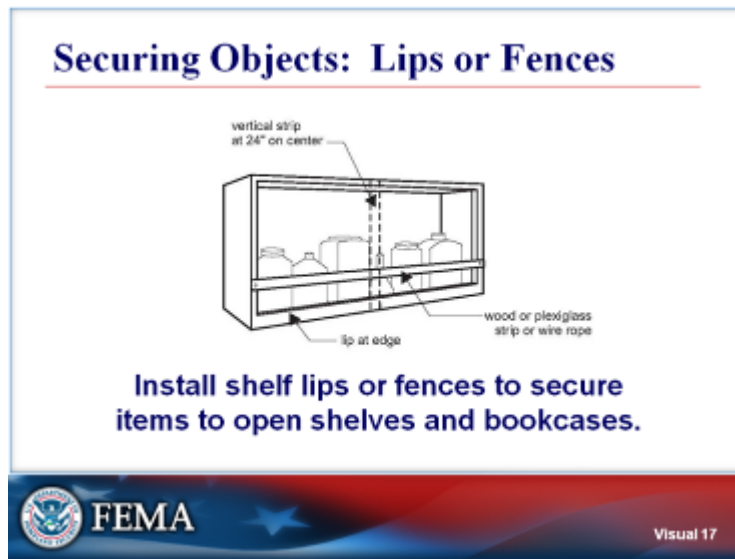
Display
Visual 16



Instructor Notes: Present the following key points.

Secure loose drawers and cabinet doors with positive latches. Positive latches prevent the drawers and cabinets from swinging open and can keep the contents from spilling out.

Spilled items can make evacuation more difficult or cause injury when falling from an overhead cabinet.

**Display
Visual 17**

Instructor Notes: Present the following key points.

Another method to secure objects is the use of shelf lips or fences.

These items prevent the contents from sliding off the shelf. Some schools have added netting to the front of open shelving units to keep the contents on the shelves.

Display
Visual 18

Incremental Seismic Rehabilitation

- Is a long-term plan to address earthquake vulnerabilities.
- Can coincide with scheduled improvements.
- Costs less than replacement.
- Allows use of the structure.



Instructor Notes: Present the following key points.

If you have identified earthquake vulnerabilities in your school structure, failure to take action is a high-risk proposition. Instead, determine whether to replace the structure or rehabilitate the structure.

The advantage of replacement is that it guarantees that the new facility will comply with the most current seismic regulations and standards. However, the high costs associated with this option are often prohibitive.

Rehabilitation is a cost-effective means to protect school buildings and, most importantly, the safety of students, teachers, staff, and volunteers.

If the rehabilitation is completed in a single stage, the risks are quickly mitigated and the benefits are quickly accomplished. However, the school structure may not be available for use during construction.

Therefore, many school districts choose an incremental approach. Incremental seismic rehabilitation is a long-term plan to upgrade structural elements. When possible, these upgrades are planned to coincide with scheduled repairs, maintenance, or improvements to help minimize additional costs. Disruption costs may be reduced if the structure can remain in use while repairs are implemented.

**Display
Visual 19**

Prioritizing Rehabilitation Efforts

- **Prioritize according to:**
 - **Structural benefit.**
 - **Alternate uses for the structure.**
 - **Ability to integrate with scheduled improvements.**
 - **Once decided, document the overall rehabilitation plan.**

The slide features a blue header with the title. Below the title is a bulleted list. To the right of the list is a photograph of a person in a white shirt sitting at a desk, looking down at papers. The slide has a red and blue footer with the FEMA logo and the text 'Visual 19'.

Instructor Notes: Present the following key points.

The first step in an incremental seismic rehabilitation is to identify the earthquake vulnerabilities to be addressed.

Then, prioritize the rehabilitation efforts using the following guidelines:

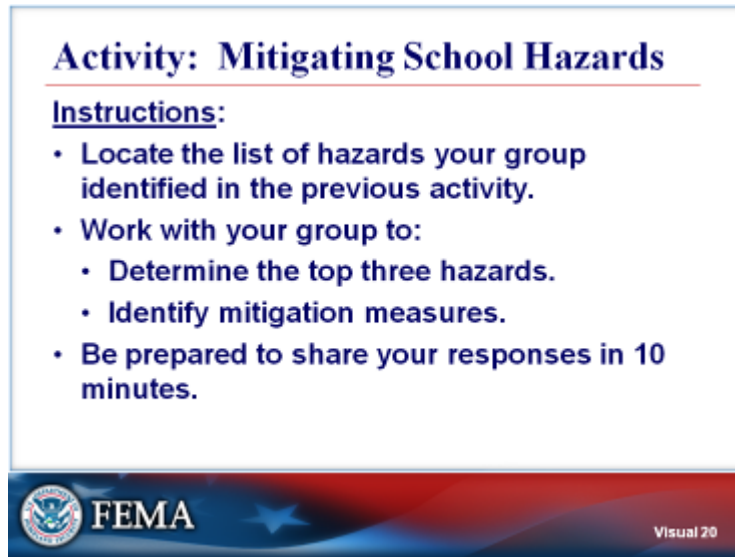
- **Structural Benefits:** Generally, tasks should be prioritized according to their relative benefit to the overall earthquake resistance of the structures. Tasks that have the greatest benefit should be completed first.
- **Use of the Structure:** A second strategy for prioritizing rehabilitation efforts is to evaluate the use of the structures. School districts may plan alternative uses for vulnerable structures (e.g., as storage*) and expand the use of less vulnerable facilities for regular school activities.

*Note: While a non-earthquake-resistant building may be used for traditional storage, it is important to store academic records in a secure location to prevent them from being damaged or destroyed.

- **Ability To Integrate:** Another prioritization strategy is to determine which rehabilitation efforts can be integrated with standard repairs, maintenance, or improvements. This approach reduces the seismic rehabilitation costs by “sharing” some of the engineering, design, and construction expenses.

It is critical to document the stages of your incremental seismic rehabilitation. This documentation serves as a guide for implementation of the program and ensures that the school district does not lose sight of overall rehabilitation goals.

Display
Visual 20



Activity: Mitigating School Hazards

Instructions:

- Locate the list of hazards your group identified in the previous activity.
- Work with your group to:
 - Determine the top three hazards.
 - Identify mitigation measures.
- Be prepared to share your responses in 10 minutes.

FEMA Visual 20

Instructor Notes: Conduct the following activity.

Purpose: This activity will enable students to determine mitigation strategies for the earthquake hazard(s) in their school building that were identified in the previous activity.

Estimated Time: 20 minutes (10 minutes activity + 10 minutes debrief)

Instructions:

1. Locate the list of hazards your group identified in the previous activity.
2. Work with your group to record on chart paper:
 - The top three hazards (high probability, high consequence).
 - Mitigation measures that can realistically be taken for each hazard.
3. Be prepared to share your responses in 10 minutes.

Debrief:

After 10 minutes, ask one volunteer to share their top hazard and their strategy to mitigate its risks. Ask the class if anyone has another mitigation strategy for that hazard.

Ask a second volunteer to share a different hazard and their mitigation strategy. Ask the class for other strategies.

Continue in this “round robin” fashion until all volunteers have shared their hazards and mitigation strategies. Acknowledge the responses and review additional mitigation measures described in this unit.

Display
Visual 21

Mitigation Funding

- School funds:
 - Maintenance and operation budget.
 - Capital improvement budget.
- School and community fundraising activities.
- State, Federal, and private grant programs.



Visual 21

Instructor Notes: Present the following key points.

Once your school has identified mitigation projects, the next step is to estimate the costs and identify funding opportunities.

Common funding sources are:

- The school's maintenance and operation funds for small projects, and capital improvement funds for large ones.
- School and community fundraising activities.
- State, Federal, and private grant programs.



Instructor Notes: Present the following key points.

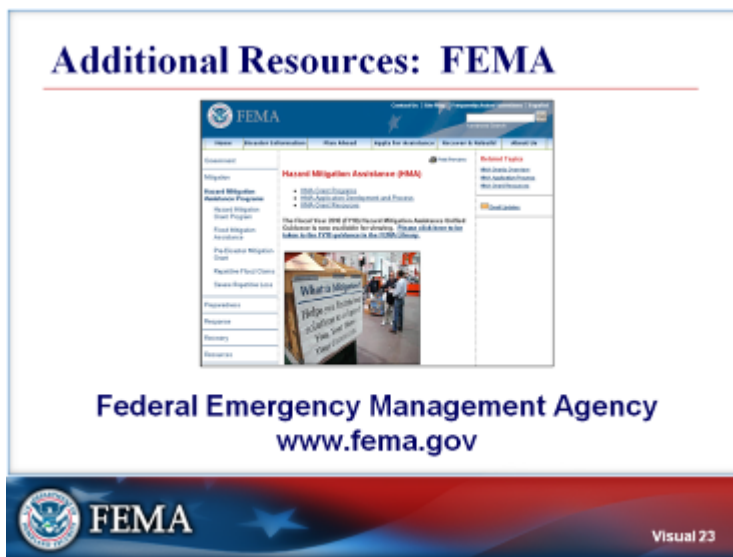
Federal sources of mitigation funding include:

- **Pre-Disaster Mitigation (PDM) Grant Program:** The PDM program provides funds to States, territories, Indian tribal governments, communities, and universities for hazard mitigation planning and the implementation of mitigation projects prior to a disaster event. Funding these plans and projects reduces overall risks to the population and structures, while also reducing reliance on funding from actual disaster declarations. PDM grants are to be awarded on a competitive basis and without reference to State allocations, quotas, or other formula-based allocation of funds.
- **Hazard Mitigation Grant Program (HMGP):** The HMGP provides grants to States and local governments to implement long-term hazard mitigation measures after a major disaster declaration. The purpose of the HMGP is to reduce the loss of life and property due to natural disasters and to enable mitigation measures to be implemented during the immediate recovery from a disaster. The HMGP is authorized under Section 404 of the Robert T. Stafford Disaster Relief and Emergency Assistance Act.
- **Public Assistance (PA) Program:** The PA program provides Federal aid to communities to help save lives and property in the immediate aftermath of a disaster, and to help rebuild damaged facilities. Grants cover eligible costs associated with the repair, replacement, and restoration of facilities owned by State or local governments and nonprofit organizations. The Public Assistance program is administered by FEMA.

Funding (Continued)

- **Community Development Block Grants (CDBG):** The CDBG program provides flexible grants to help cities, counties, and States recover from Presidentially declared disasters, especially in low-income areas, subject to availability of supplemental appropriations. Grantees may use CDBG Disaster Recovery funds for recovery efforts involving housing, economic development, infrastructure, and prevention of further damage to affected areas, if such use does not duplicate funding available from the Federal Emergency Management Agency, the Small Business Administration, and the U.S. Army Corps of Engineers. The Department of Housing and Urban Development (HUD) provides funds for the CDBG, and the Division of Community Assistance administers the program in each State.

Display
Visual 23



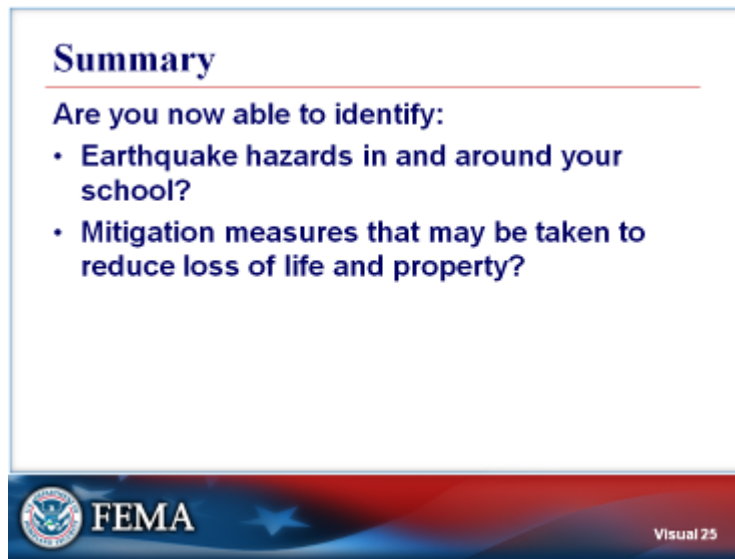
Instructor Notes: Present the following key points.

FEMA's Hazard Mitigation Assistance (HMA) grant programs provide funding for eligible mitigation activities that reduce disaster losses and protect life and property from future disaster damages. Information about the programs themselves and how to apply for funding can be found on this site.

The FEMA Web site also contains other mitigation resources, including:

- **Seismic Rehabilitation Cost Estimator** (online)
Use this free online program to calculate cost estimates for the seismic rehabilitation of buildings.
- **Incremental Seismic Rehabilitation of School Buildings (K-12): Providing Protection to People and Buildings** (FEMA 395, June 2003)
 - Part A: Critical Decisions for Earthquake Safety in Schools
 - Part B: Managing the Process for Earthquake Risk Reduction in Existing School Buildings
 - Part C: Tools for Implementing Incremental Seismic Rehabilitation in School Buildings
- **Design Guide for Improving School Safety in Earthquakes, Floods, and High Winds** (FEMA 424)
- **Reducing the Risks of Nonstructural Earthquake Damage, A Practical Guide** (FEMA 74)
- **Hazards-United States (Multi-Hazard) (HAZUS-HM)**
Use this risk assessment methodology to analyze potential losses from earthquakes. Potential loss estimates include physical damage, economic loss, and social impacts.

Display
Visual 25



Summary

Are you now able to identify:

- Earthquake hazards in and around your school?
- Mitigation measures that may be taken to reduce loss of life and property?

FEMA Visual 25

The slide features a blue and red wavy background at the bottom with the FEMA logo and the text 'FEMA' and 'Visual 25'.

Instructor Notes: Present the following key points.

A structural engineer is your best resource for predicting how the building will perform in an earthquake and identifying appropriate mitigation actions.

Nonstructural hazards are easy to identify and are often easy to mitigate. Prioritize mitigation efforts based on life safety first. If you can't mitigate, revise your plan as needed to address the consequences of the hazards.

Ask:

Are you now able to identify:

- **The hazards in and around your school?**
- **Mitigation measures that can be taken?**

Facilitate a discussion and answer any questions before proceeding.

If you will be presenting the next unit, explain that it will describe earthquake planning and preparedness measures.

Earthquake Planning

Earthquake Planning

Objectives

At the end of this unit, the participants will be able to:

- Explain how earthquake preparedness fits within their school's multihazard plan.
 - Identify supplies and equipment needed to prepare students, classrooms, and the entire school.
 - Describe response priorities and procedures.
 - Describe recovery techniques.
-

Scope

This unit covers the following topics:

- Unit Introduction
 - Emergency Operations Plan (EOP)
 - Preparedness Measures
 - Response Activities
 - Recovery Strategies
 - Additional Resources
 - Unit Summary
-

Methodology

The instructor will explain how earthquake preparedness relates to a school's multihazard emergency plan.

The instructor will then describe preparedness measures, including the supplies and equipment that should be available during and after an earthquake. Participants will complete an activity to identify resources needed in different situations.

Next, the instructor will review earthquake response procedures. Given a scenario, participants will identify priorities that their schools' response procedures should address.

The instructor will then describe recovery strategies for after the dangers of the earthquake have passed. To conclude the unit, the instructor will describe additional Web resources that the participants can use to obtain more information about earthquake planning.

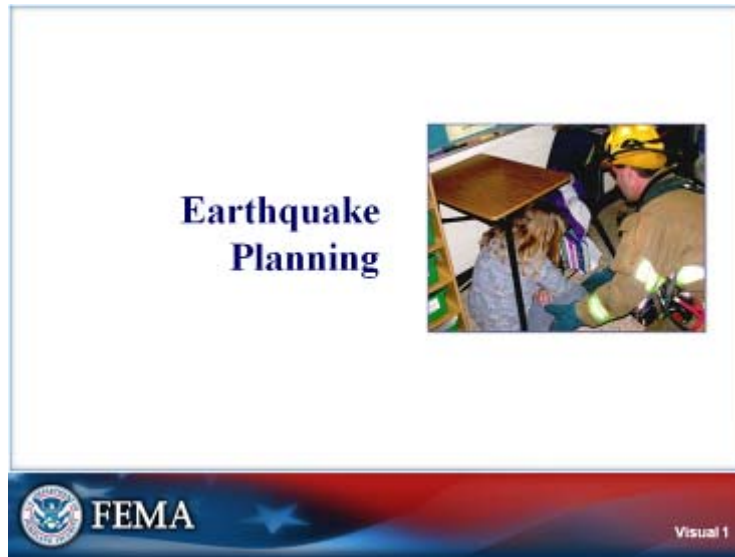
Earthquake Planning

Time Plan

A suggested time plan for this unit is shown below. More or less time may be required, based on the experience level of the group.

Topic	Time
Unit Introduction	3 minutes
Emergency Operations Plan (EOP)	10 minutes
Preparedness Measures	30 minutes
Response Activities	70 minutes
Recovery Strategies	25 minutes
Additional Resources	10 minutes
Unit Summary	2 minutes
Total Time	2 hours 30 minutes

Display
Visual 1

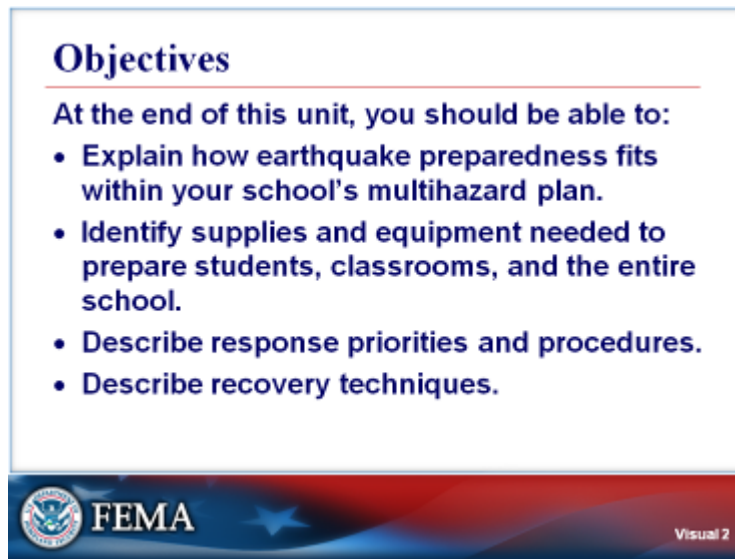


Instructor Notes: Present the following key points.

Earthquake preparedness includes:

- Acquiring and storing supplies and equipment that might be needed after an earthquake.
- Developing procedures to carry out critical functions following an earthquake.
- Identifying strategies to help the school community recover from an earthquake.

Display
Visual 2



Objectives

At the end of this unit, you should be able to:

- Explain how earthquake preparedness fits within your school's multihazard plan.
- Identify supplies and equipment needed to prepare students, classrooms, and the entire school.
- Describe response priorities and procedures.
- Describe recovery techniques.

FEMA Visual 2

Instructor Notes: Present the following key points.

Earthquake planning involves the development of strategies and procedures to be employed before, during, and after an incident.

At the end of this unit, the participants will be able to:

- Explain how earthquake preparedness fits within their school's multihazard plan.
- Identify supplies and equipment needed to prepare students, classrooms, and the entire school.
- Describe response priorities and procedures.
- Describe recovery techniques.

Your School's Emergency Operations Plan

- Your school should have a multihazard Emergency Operations Plan (EOP) that covers:
 - Natural hazards.
 - Technological hazards.
 - Human-caused hazards.
- Be prepared for multiple or cascading hazards.

CPG 101

FEMA

Visual 3

Instructor Notes: Present the following key points.

The school, or school district, should have a multihazard Emergency Operations Plan (EOP), developed by a planning team of administrators, teachers and staff, parents, legal counsel, insurance representatives, the local/county Emergency Manager, first responders, and other community partners.

A thorough EOP covers the following types of hazards:

- **Natural hazards**, such as an earthquake, epidemic, flood, hurricane, tornado, tsunami, wildfire, or winter storm.
- **Technological hazards**, such as a hazardous materials (hazmat) release, radiological release, power failure, or urban fire.
- **Human-caused hazards**, such as civil disturbance, school violence, terrorist act, or sabotage.

The EOP should account for the fact that several types of hazards may happen simultaneously or in close succession. For instance, an earthquake may lead to power outages or looting.

For more information about the elements of a thorough EOP, review Comprehensive Preparedness Guide (CPG) 101, "Developing and Maintaining State, Territorial, Tribal, and Local Government Emergency Plans." This FEMA document is available online at www.fema.gov.

The general preparedness techniques outlined in this unit are for training purposes only! Refer to your school EOP and any State and local regulations for the official procedures to be followed in an emergency.

**Display
Visual 4**

Instructor Notes: Present the following key points.

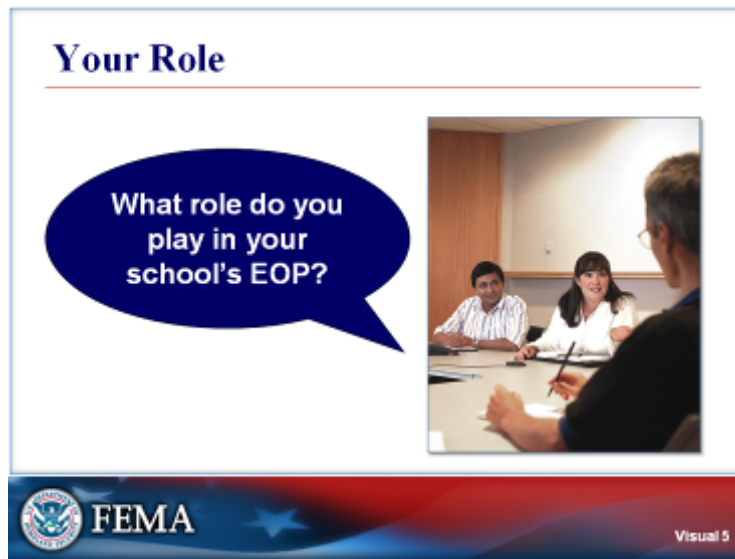
A multihazard EOP contains three key components:

- **The Basic Plan** provides an overview of the school's preparedness and response strategies. It describes expected hazards, outlines roles and responsibilities, and explains how the school keeps the plan current.
- **The Functional Annexes** focus on the individual functions that are critical for successful emergency response. Each annex describes one function, defines the roles of the responsible parties, and addresses general strategies that can be used for any emergency incident. Examples of critical functions include direction, control, and coordination; information collection and dissemination; communications; population warning; emergency public information; public protection (e.g., evacuation, sheltering in place); mass care and emergency assistance; health and medical services; and resource management.
- **The Hazard-Specific Appendixes** describe preparedness and response activities for specific hazards. Each appendix addresses hazard-specific risks, preparedness strategies, evacuation procedures, and other protocols. These appendixes are typically attached to the end of each Functional Annex to explain procedures that are unique for that hazard type. These appendixes may be short or long, depending on the needed detail. Strategies already outlined in the Basic Plan or Functional Annex should not be repeated in the Hazard-Specific Appendix.

As a general rule, when gaps are identified, first determine if the gap can be addressed by updating the school policies in the Basic Plan or the procedures in a Functional Annex. If not, create or amend the Hazard-Specific Appendix.

This unit describes key factors to consider when creating earthquake-specific procedures.

Display
Visual 5



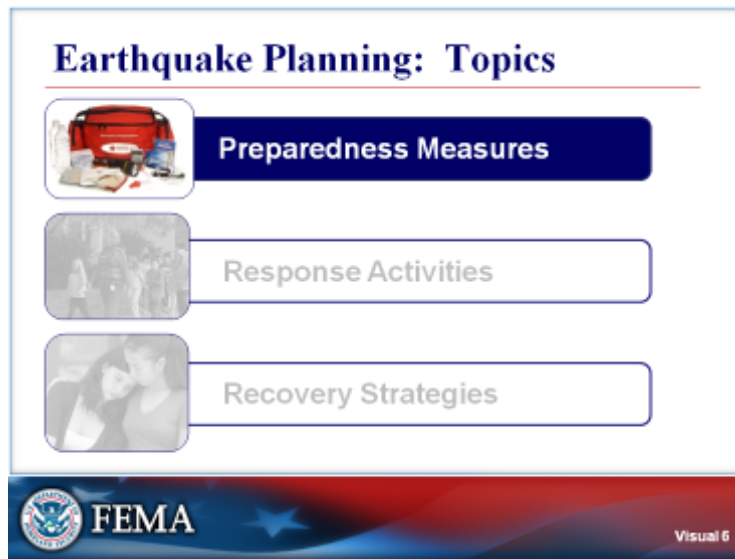
Instructor Notes: Present the following key points.

Ask:

What role do you play in your school's EOP?

Acknowledge the responses. Note that roles may include a range of activities, such as participation in planning meetings before an incident, supervision and evacuation of students during an incident, and/or implementation of recovery measures after an incident. Add any key points from your own experience and from your understanding of the roles in your school's EOP.

Display
Visual 6

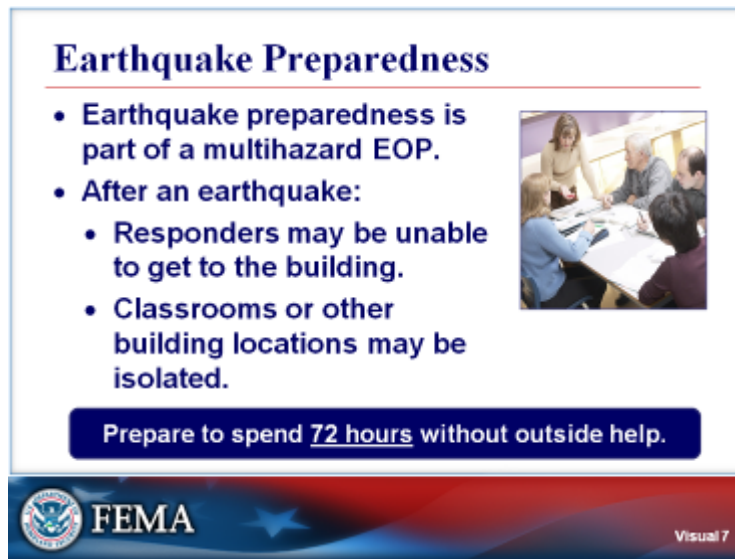


Instructor Notes: Present the following key points.

The topics in this unit are illustrated by the advance organizer on the visual and include:

- Preparedness measures.
- Response activities.
- Recovery strategies.



First, we will discuss the measures school districts, and individual teachers, can take to prepare for an earthquake at school.

**Display
Visual 7**

Earthquake Preparedness

- Earthquake preparedness is part of a multihazard EOP.
- After an earthquake:
 - Responders may be unable to get to the building.
 - Classrooms or other building locations may be isolated.

Prepare to spend **72 hours** without outside help.

 **FEMA**  Visual 7

The slide features a title 'Earthquake Preparedness' in blue. Below it is a bulleted list with three main points. The second point is expanded with two sub-points. A photograph of a group of people in a meeting is positioned to the right of the list. A dark blue banner at the bottom of the text area contains the text 'Prepare to spend 72 hours without outside help.' The slide footer includes the FEMA logo, the word 'FEMA' in large letters, a blue star, and the text 'Visual 7'.

Instructor Notes: Present the following key points.

As you develop earthquake preparedness measures, you will work within the framework of your school's multihazard EOP. Earthquake-specific preparedness information should be integrated into appropriate components of the overall plan.

Remember that after an earthquake, the school must be prepared to care for students, staff, and volunteers for **up to 72 hours** without outside help. Responders may be unable to get to the building. Classrooms or other building locations may be isolated.

The checklist on the next page, adapted from the National Clearinghouse for Educational Facilities (NCEF), describes key considerations when assessing the earthquake-specific procedures in your EOP.

Mitigation and Preparedness Checklist

Use this checklist to determine how prepared your school is for earthquakes and to identify additional preparation that may be needed.

1. Does your school have a disaster plan? Is staff aware of roles and responsibilities? Do they know they may be responsible for students for up to 72 hours after a disaster?
2. Does staff know the location of the main gas, electricity, and water shutoff valves? Who has been instructed to turn them off if the need arises?
3. Have you prepared and distributed a map of the school and its grounds? Does it include evacuation procedures, potential earthquake hazards to avoid, and the locations and availability of emergency kits?
4. What nonstructural hazard mitigation measures have you completed?
5. Have inventories been made of hazardous chemicals (e.g., in the science building and maintenance shops)? Who is appointed to check these chemicals after an earthquake?
6. Does the school have arrangements with structural engineers or local contractors who will report to the school after a disaster to assess the damage and help determine whether to close the school?
7. Do you know if your school has been designated as a potential mass care shelter? If so, have you selected the space, determined its capacity, and planned how to obtain a post-earthquake safety inspection, how food and supplies will be provided, and how school operation will continue if space is occupied by survivors?
8. Does your school have a backup communications system to communicate with local emergency services? What will you do if cell phone service is unavailable?
9. Is there an earthquake preparedness program in your curriculum? Is it inclusive of special needs students (called "vulnerable populations" in some communities)? How is it communicated to students, staff, parents, and caregivers, including those whose primary language is not English?
10. How and where are you storing vital data and records? Do you have backups of important information stored off-site?
11. What is your plan for conducting classes if some school facilities are damaged?
12. Has a central "command post" (and alternate location) been identified for managing emergency response activities after a disaster?
13. Do classroom teachers have basic operating procedures to follow such as:
 - Knowing how to implement the basic "drop, cover, and hold" actions when an earthquake begins?
 - Having a file handy (i.e., "go kit") that contains a roll sheet, special medical information, and student release information?
 - Knowing when to evacuate or remain in the classroom after an earthquake?
 - Knowing how to triage and administer basic first aid to the injured and comfort those who are in shock, frightened, or hysterical?
 - Knowing what to do with the injured, if an evacuation is necessary?
 - Knowing the procedures for parent-student reunification?
 - Working in a "buddy system" with another teacher and class, so that if one teacher is injured the other can care for the students and get them to safety?
14. What are your immediate damage assessment procedures? To whom do you report that information?
15. Who has been designated for search and rescue, and have they received training?

Source: "Earthquakes and Schools," National Clearinghouse for Educational Facilities at the National Institute of Building Sciences (www.ncef.org), prepared under a grant from the U.S. Department of Education, Office of Safe and Drug-Free Schools.

**Display
Visual 8**

Acquiring and Storing Resources

An EOP:

- Identifies needed resources.
- Assigns responsibility for specific supplies to teams.
- Covers resource procurement, storage, and maintenance.

FEMA Visual 8

Instructor Notes: Present the following key points.

An EOP identifies needed resources, such as:

- Medical supplies and equipment (e.g., asthma inhalers, epilepsy medication administered at school, equipment for special needs students).
- Tools and equipment (e.g., flashlight in every classroom).
- Drinking water and food.

Based on the needs identified in the EOP, the school or school district administration will determine what resources will be acquired or provided for each classroom and should notify teachers accordingly. If funding is limited, some school communities have organized fundraising events, worked with local businesses, or applied for grants to acquire the needed resources.

The school will then divide resources into categories and assign teams the responsibility for specific supplies and equipment. This responsibility should include procurement, storage, and maintenance of resources (including replacement, as needed, so they remain usable).

**Display
Visual 9**

Activity: Resource Needs

Instructions:

- You will be assigned one of the following groups of students:
 - Special needs.
 - In an isolated classroom.
 - On a bus.
 - Sheltered outside.
- List resources that your assigned students may need after an earthquake.

FEMA logo and Visual 9 label.

Instructor Notes: Conduct the following activity.

Preparation: Divide the class into four groups. Assign each group to one of the categories on the visual: students with special needs, in an isolated classroom, on a bus, or sheltered outside.

Purpose: This activity will build awareness of needs that should be met after an earthquake.

Estimated Time: 10 minutes (5 minutes activity + 5 minutes debrief)

Instructions:

1. Work with your assigned group.
2. Review the following list of items that are commonly needed for classroom preparedness kits:
 - List of students, including a description of any special needs or medications administered at school (e.g., asthma inhalers, epilepsy medication).
 - School emergency procedures.
 - Utility turnoff procedures.
 - Food and water for 3 days.
 - Battery-operated flashlight and extra batteries.
 - Emergency communication device.
 - First aid kit with instructions.
 - Plastic sheeting and duct tape.
 - Blankets.
 - Bucket.
 - Sanitary items (e.g., towelettes, toilet paper).
 - Student activities.
3. Develop a list of additional, unique resources that may be needed for your assigned group of students after an earthquake.

Debrief:

After 5 minutes, ask:

What items would you add to this list for your assigned group of students?

Acknowledge the responses. If not mentioned, add the following suggested resources:

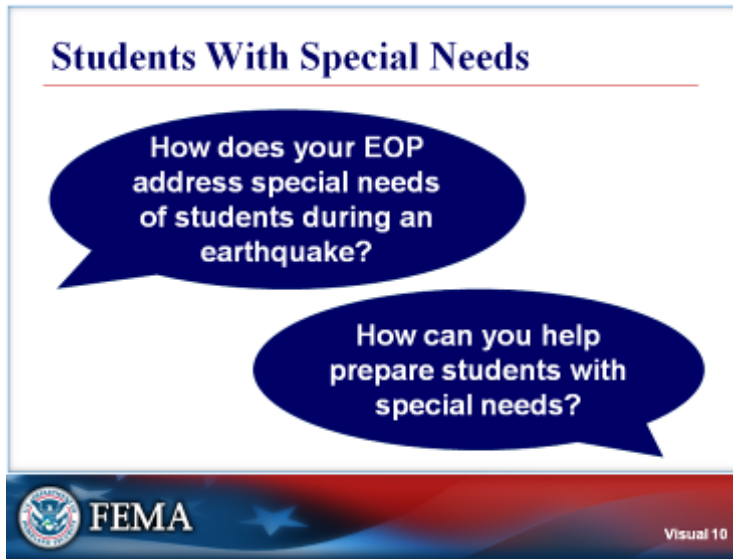
- Students with special needs:
 - Equipment, including special sustaining equipment
 - Backup power for equipment
 - Simple diagrams or pictures with directions for non-reading and overwhelmed students
 - Extra cane for visually impaired or blind students

- Students in isolated classrooms:
 - Backup communication device
 - Radio to stay informed while isolated from the Incident Commander
 - Fire extinguisher
 - Can opener, manual
 - Plastic garbage bags, heavy duty (2 per child for warmth and sanitation)
 - Whistle to alert rescuers to your location
 - Emergency water supply

- Students on a bus:
 - Backup communication device
 - Radio to stay informed if isolated from the Incident Commander
 - Backup power (e.g., for safety signals and exit lifts for students in wheelchairs)
 - Flares or a “caution” sign to alert other drivers of the bus location
 - Fire extinguisher
 - Plastic garbage bags, heavy duty (2 per child for warmth and sanitation)
 - Parent/Guardian reunification procedures, including the name of the parent/guardian on file for each student and any required release forms (if the bus is near the parent or guardian’s home, he or she will likely want to take the child home)

- Students sheltered outdoors:
 - Bullhorn, battery operated, extra batteries
 - Can opener, manual
 - Gas lantern and fuel
 - Cups, paper or plastic
 - Matches with wax-protected tips
 - Plastic garbage bags, heavy duty (2 per child for warmth or rain protection and sanitation)
 - Plastic sheeting, black, 4 foot wide x 100 foot long agricultural quality (for rain protection or privacy screening)
 - Plastic water containers, 55 gallon (and a bung wrench to open them)
 - Rope, nylon
 - Tools (e.g., hand saws, screwdrivers, shovels)
 - Stretcher
 - Tarps, drop cloths

Display
Visual 10



Instructor Notes: Present the following key points.

Ask:

How does your school's EOP address special needs of students during an earthquake?

Acknowledge the responses. If not mentioned, explain that the EOP should describe procedures for the:

- Evacuation of students with limited mobility, vision, or hearing.
- Acquisition of any special transportation.
- Acquisition and storage of backup supplies of vital medications and equipment.
- Acquisition of power for special sustaining equipment.
- Creation and maintenance of individual emergency cards.

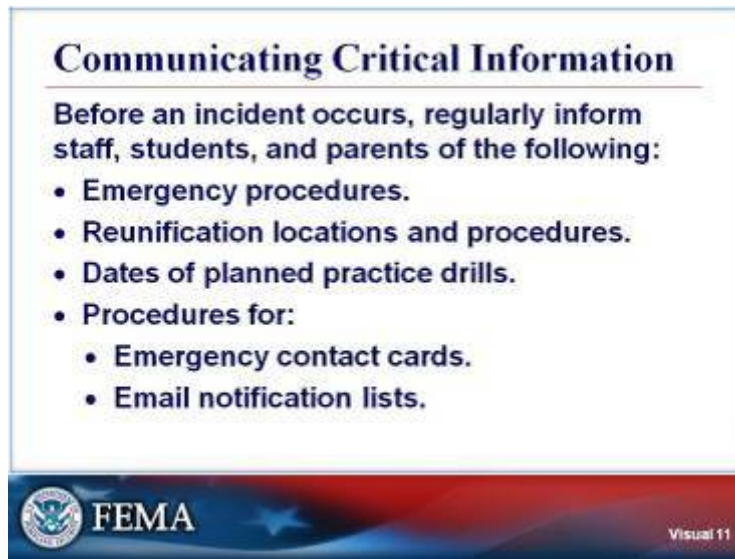
Ask:

How can you help prepare students with special needs for an emergency, such as an earthquake?

Acknowledge the responses. If not mentioned, explain that teachers should:

- Consult with parents or guardians to discuss needs if a student is isolated.
- Know their assignments and complete training to manage special needs.
- Keep students involved in preparedness activities and practice the EOP frequently.

Display
Visual 11



Communicating Critical Information

Before an incident occurs, regularly inform staff, students, and parents of the following:

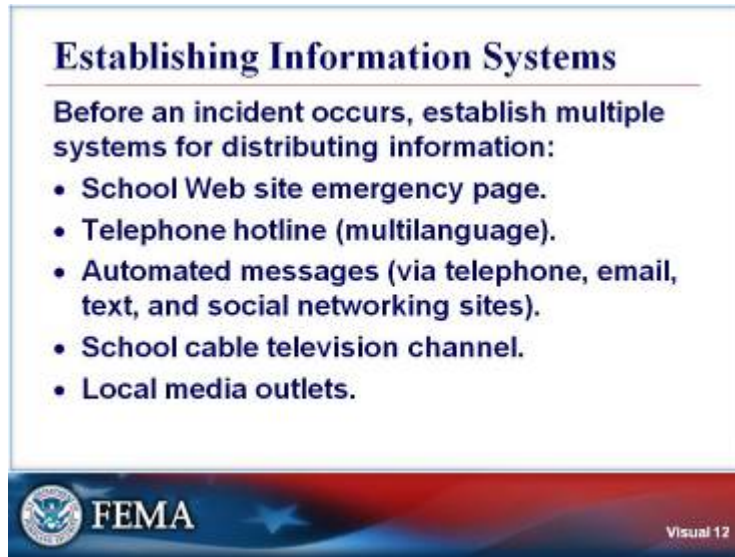
- Emergency procedures.
- Reunification locations and procedures.
- Dates of planned practice drills.
- Procedures for:
 - Emergency contact cards.
 - Email notification lists.

FEMA Visual 11

Instructor Notes: Present the following key points.

Before an incident occurs, the school should inform staff, students, and parents on a regular basis about:

- Emergency procedures that the school will use in the event of an incident.
- Family reunification locations, an alternate location, and procedures that will be followed.
- Dates and time of practice drills and exercises.
- Procedures that should be used to:
 - Update emergency contact cards.
 - Subscribe to email notification lists or other means of communication.

**Display
Visual 12**

Establishing Information Systems

Before an incident occurs, establish multiple systems for distributing information:

- School Web site emergency page.
- Telephone hotline (multilanguage).
- Automated messages (via telephone, email, text, and social networking sites).
- School cable television channel.
- Local media outlets.

FEMA Visual 12

Instructor Notes: Present the following key points.

The EOP should establish multiple systems for distributing information during an incident because one or more of the primary methods of communication may no longer be available.

Potential communications systems include:

- The school Web site emergency page.
- A multilanguage telephone hotline.
- Automated messages including:
 - Telephone.
 - Email.
 - Text.
 - Social networking sites.
- The school cable television channel.
- Local media outlets.

Information can also be transmitted to parents and guardians via:

- “Back to school” night announcements.
- Parent-teacher conferences.
- Newsletters.
- Parent-Teacher Association (PTA) meetings.

**Display
Visual 13**

Working With the Media

Before an Incident Create a media plan. Identify key partners. Include public information in emergency training and exercises.

During an Incident Follow a cycle (gather, verify, coordinate, disseminate). Disseminate only approved information. Keep the message concise and accurate. Never say, "No comment."

After an Incident Evaluate and modify plans and training, as needed.

FEMA

Visual 13

The infographic is titled "Working With the Media" and is divided into three sections: "Before an Incident", "During an Incident", and "After an Incident". Each section contains specific instructions for media handling. The FEMA logo is at the bottom left, and "Visual 13" is at the bottom right.

Instructor Notes: Present the following key points.

The EOP should identify a staff member to serve as the school's spokesperson with the media. This person must understand and follow the procedures for validating emergency information with school officials, disseminating approved information, and handling requests for information.

Before an incident occurs:

- Create a plan that establishes protocols for working with the media.
- Determine who speaks for the school (e.g., Public Information Officer (PIO), school board chair).
- Develop processes to approve, disseminate (including the creation of a media list and a determination of the key languages spoken by school students and their families), track, and evaluate public information.
- Identify key partners (e.g., news media, PIOs from responder agencies).
- Include public information elements when conducting training and exercises related to the EOP.

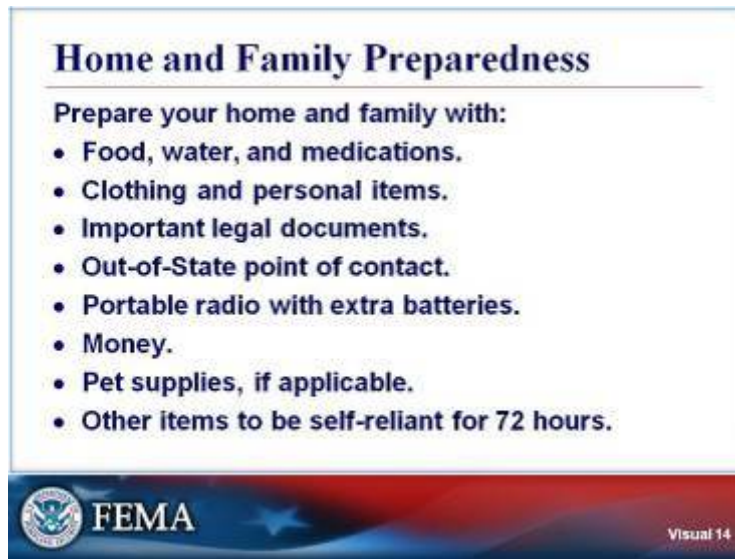
During an incident:

- Follow a cyclical protocol: Gather information, verify information, coordinate information (internal), and disseminate information (external).
- Disseminate only approved information.
- Keep the message concise and accurate.
- Never say, "No comment." Instead, provide approved information, state that you will find an answer and report back, or refer the media to the appropriate person.

After an incident:

- Evaluate what went well and what you would do differently next time.
- Modify plans and training, as appropriate.

Display
Visual 14



Instructor Notes: Present the following key points.

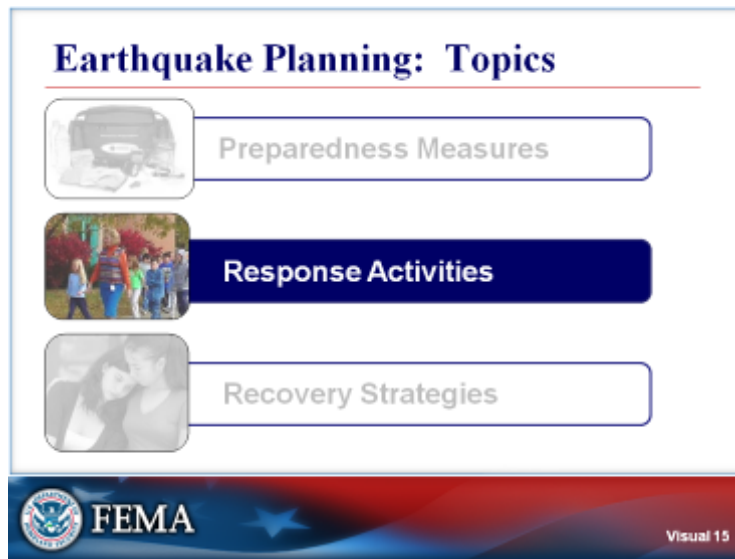
Teachers play a vital role in ensuring the safety of students during and after an emergency incident, such as an earthquake. Teachers will likely be expected (and in some States or counties, legally required) to stay until the students have been safely reunited with their parents or guardians.

For peace of mind, knowing that they may not be able to return home immediately, teachers should prepare their own families with the items they'll need to be self-reliant during an incident.

Topic

Response Activities

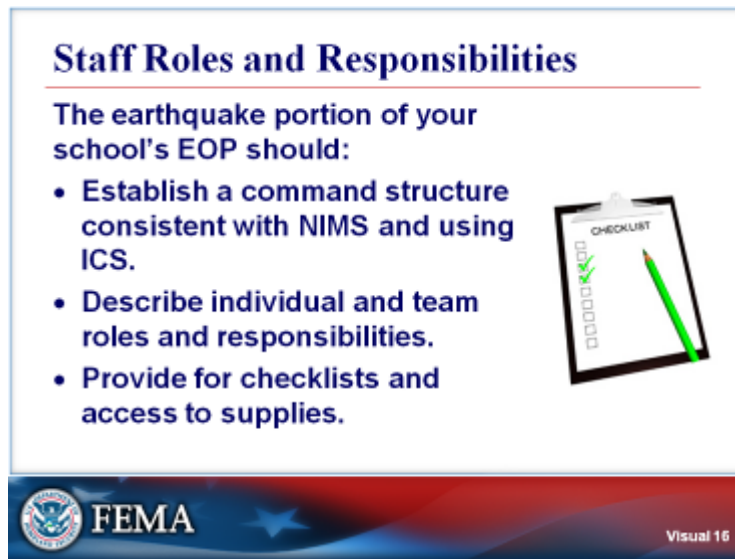
**Display
Visual 15**



Instructor Notes: Present the following key points.

As shown on the advance organizer on the visual, the second section of this unit will describe response activities that teachers should be prepared to complete during and immediately after an earthquake.


Display
Visual 16





Staff Roles and Responsibilities

The earthquake portion of your school's EOP should:

- Establish a command structure consistent with NIMS and using ICS.
- Describe individual and team roles and responsibilities.
- Provide for checklists and access to supplies.



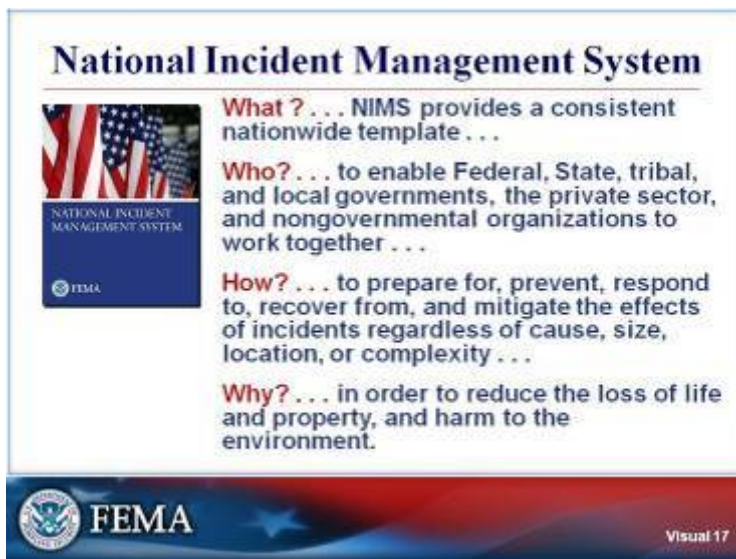
 **FEMA**  Visual 16

Instructor Notes: Present the following key points.

Some portions of your school's multihazard emergency plan should specifically address earthquake roles and responsibilities.

The plan should:

- Establish a command structure consistent with the National Incident Management System (NIMS) and using the Incident Command System (ICS).
- Describe individual and team roles and responsibilities.
- Provide for procedural checklists and access to supplies and equipment needed by individuals and teams.

**Display
Visual 17**

Instructor Notes: Present the following key points.

The National Incident Management System (NIMS) provides a consistent framework for incident management at all jurisdictional levels regardless of the cause, size, or complexity of the incident.

The NIMS document was developed through a collaborative intergovernmental partnership with significant input from the incident management functional disciplines, nongovernmental organizations (NGOs), and the private sector. Originally published on March 1, 2004, the NIMS document was revised in 2008 to reflect contributions from stakeholders and lessons learned during recent incidents.

The benefits of NIMS include:

- A standardized approach to incident management that is scalable and flexible.
- Enhanced cooperation and interoperability among responders.
- Comprehensive all-hazards preparedness.
- Efficient resource coordination among jurisdictions or organizations.
- Integration of best practices and lessons learned for continuous improvement.

**Display
Visual 18**

Collaborative Incident Management

NIMS:

- Is **NOT** an operational incident management or resource allocation plan.
- Represents a core set of doctrines, concepts, principles, terminology, and organizational processes
- Enables effective, efficient, and collaborative incident management.

Diagram illustrating the components of Collaborative Incident Management: Doctrines, Terminology, Principles, Concepts, and Processes, all contributing to Collaborative Incident Management.

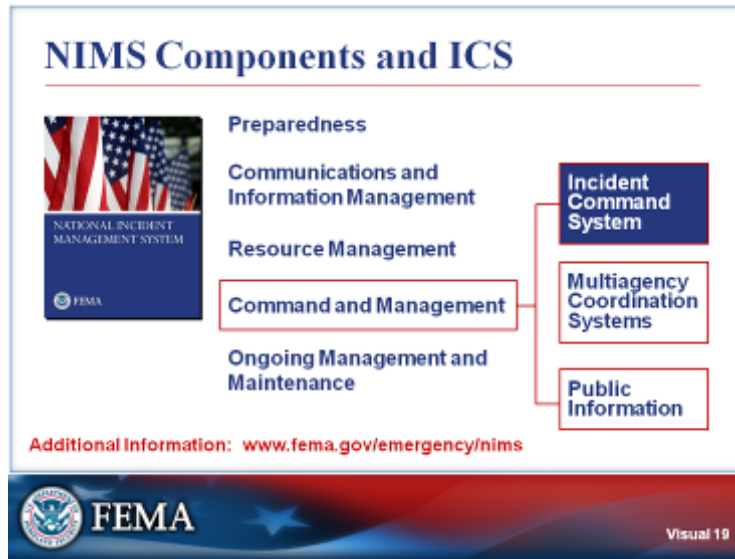
FEMA Visual 18

Instructor Notes: Present the following key points.

NIMS is **not** an operational incident management or resource allocation plan.

NIMS represents a core set of doctrines, concepts, principles, terminology, and organizational processes that enables effective, efficient, and collaborative incident management.

NIMS is a comprehensive, national approach to incident management that is applicable at all jurisdictional levels and across functional disciplines. NIMS enables us to work together to prevent, protect against, respond to, recover from, and mitigate the effects of incidents, regardless of cause, size, location, or complexity, in order to reduce the loss of life and property and harm to the environment.

Topic**Response Activities (Continued)****Display
Visual 19**

Instructor Notes: Present the following key points.

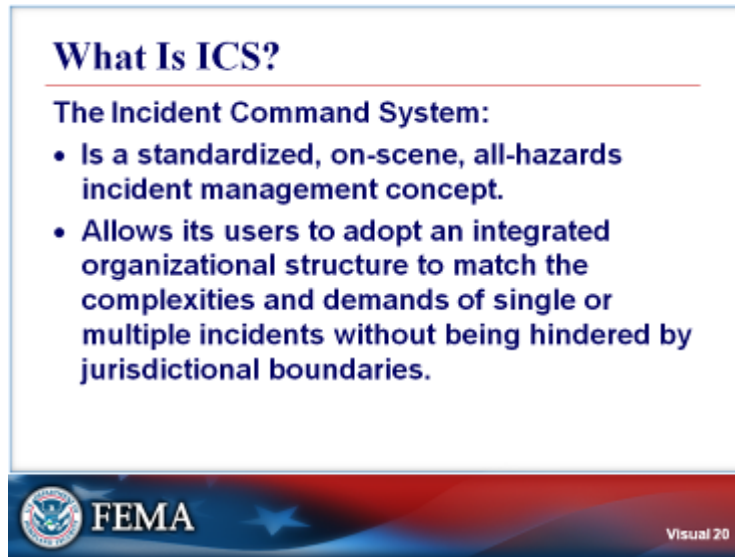
Tell the participants that NIMS represents a core set of doctrine, concepts, principles, terminology, and organizational processes that enables effective, efficient, and collaborative incident management.

- **Preparedness:** Effective emergency management and incident response activities begin with a host of preparedness activities conducted on an ongoing basis, in advance of any potential incident. Preparedness involves an integrated combination of planning, procedures and protocols, training and exercises, personnel qualifications and certification, and equipment certification.
- **Communications and Information Management:** Emergency management and incident response activities rely upon communications and information systems that provide a common operating picture to all command and coordination sites. NIMS describes the requirements necessary for a standardized framework for communications and emphasizes the need for a common operating picture. NIMS is based upon the concepts of interoperability, reliability, scalability, portability, and the resiliency and redundancy of communications and information systems.
- **Resource Management:** Resources (such as personnel, equipment, and/or supplies) are needed to support critical incident objectives. The flow of resources must be fluid and adaptable to the requirements of the incident. NIMS defines standardized mechanisms and establishes the resource management process to: identify requirements, order and acquire, mobilize, track and report, recover and demobilize, reimburse, and inventory resources.

NIMS Components (Continued)

- **Command and Management:** The Command and Management component within NIMS is designed to enable effective and efficient incident management and coordination by providing flexible, standardized incident management structures. The structures are based on three key organizational constructs: the Incident Command System, Multiagency Coordination Systems, and Public Information.
- **Ongoing Management and Maintenance:** Within the auspices of Ongoing Management and Maintenance, there are two components: the National Integration Center (NIC) and Supporting Technologies.

Display
Visual 20



Instructor Notes: Present the following key points.

The Incident Command System (ICS):

- Is based on proven incident management practices.
- Defines incident response organizational concepts and structures.
- Consists of procedures for managing personnel, facilities, equipment, and communications.
- Is used throughout the lifecycle on an incident (i.e., from threat to restoration of normal operations).

By using management best practices, ICS helps to ensure the safety of responders, students, faculty, workers, and others; the achievement of response objectives; and the efficient use of resources.

The use of ICS is mandated by NIMS.

A description of the essential ICS features begins on the next page.

ICS Features

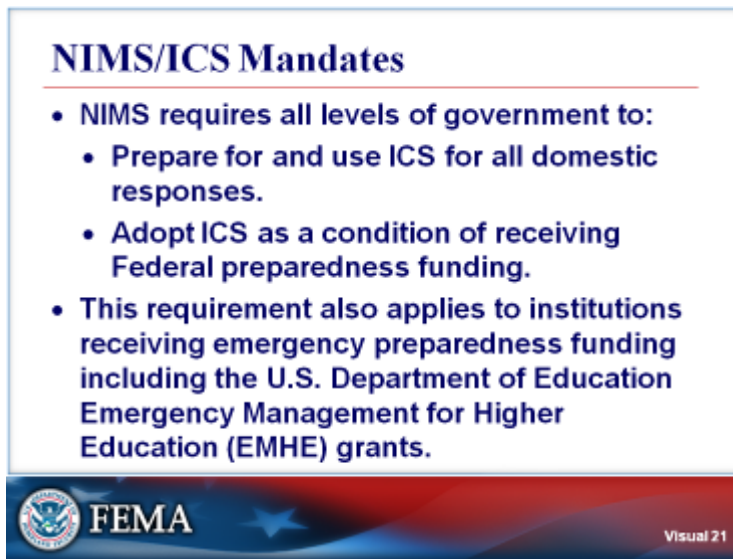
The 14 essential ICS features are listed below:

1. **Common Terminology:** Using common terminology helps to define organizational functions, incident facilities, resource descriptions, and position titles.
2. **Chain of Command and Unity of Command:** Chain of command refers to the orderly line of authority within the ranks of the incident management organization. Unity of command means that every individual has a designated supervisor to whom he or she reports at the scene of the incident. These principles clarify reporting relationships and eliminate the confusion caused by multiple, conflicting directives. Incident managers at all levels must be able to control the actions of all personnel under their supervision.
3. **Unified Command:** In incidents involving multiple jurisdictions, a single jurisdiction with multiagency involvement, or multiple jurisdictions with multiagency involvement, Unified Command allows agencies with different legal, geographic, and functional authorities and responsibilities to work together effectively without affecting individual agency authority, responsibility, or accountability.
4. **Modular Organization:** The Incident Command organizational structure develops in a top-down, modular fashion that is based on the size and complexity of the incident, as well as the specifics of the hazard environment created by the incident.
5. **Management by Objectives:** Includes establishing overarching objectives; developing and issuing assignments, plans, procedures, and protocols; establishing specific, measurable objectives for various incident management functional activities; and directing efforts to attain the established objectives.
6. **Reliance on an Incident Action Plan:** Incident Action Plans (IAPs) provide a coherent means of communicating the overall incident objectives in the contexts of both operational and support activities.
7. **Manageable Span of Control:** Span of control is key to effective and efficient incident management. Within ICS, the span of control of any individual with incident management supervisory responsibility should range from three to seven subordinates.
8. **Incident Locations and Facilities:** Various types of operational locations and support facilities are established in the vicinity of an incident to accomplish a variety of purposes. Typical predesignated facilities include Incident Command Posts, Bases, Camps, Staging Areas, Mass Casualty Triage Areas, and others as required.

ICS Features (Continued)

9. **Comprehensive Resource Management:** Resource management includes processes for categorizing, ordering, dispatching, tracking, and recovering resources. It also includes processes for reimbursement for resources, as appropriate. Resources are defined as personnel, teams, equipment, supplies, and facilities available or potentially available for assignment or allocation in support of incident management and emergency response activities.
10. **Information and Intelligence Management:** The incident management organization must establish a process for gathering, sharing, and managing incident-related information and intelligence.
11. **Integrated Communications:** Incident communications are facilitated through the development and use of a common communications plan and interoperable communications processes and architectures.
12. **Establishment and Transfer of Command:** The command function must be clearly established from the beginning of an incident. When command is transferred, the process must include a briefing that captures all essential information for continuing safe and effective operations.
13. **Accountability:** Effective accountability at all jurisdictional levels and within individual functional areas during incident operations is essential. To that end, the following principles must be adhered to:
 - Check-In: All responders, regardless of agency affiliation, must report in to receive an assignment in accordance with the procedures established by the Incident Commander.
 - Incident Action Plan: Response operations must be directed and coordinated as outlined in the IAP.
 - Unity of Command: Each individual involved in incident operations will be assigned to only one supervisor.
 - Span of Control: Supervisors must be able to adequately supervise and control their subordinates, as well as communicate with and manage all resources under their supervision.
 - Resource Tracking: Supervisors must record and report resource status changes as they occur.
14. **Dispatch/Deployment:** Personnel and equipment should respond only when requested or when dispatched by an appropriate authority.

Display
Visual 21



NIMS/ICS Mandates

- NIMS requires all levels of government to:
 - Prepare for and use ICS for all domestic responses.
 - Adopt ICS as a condition of receiving Federal preparedness funding.
- This requirement also applies to institutions receiving emergency preparedness funding including the U.S. Department of Education Emergency Management for Higher Education (EMHE) grants.

FEMA Visual 21

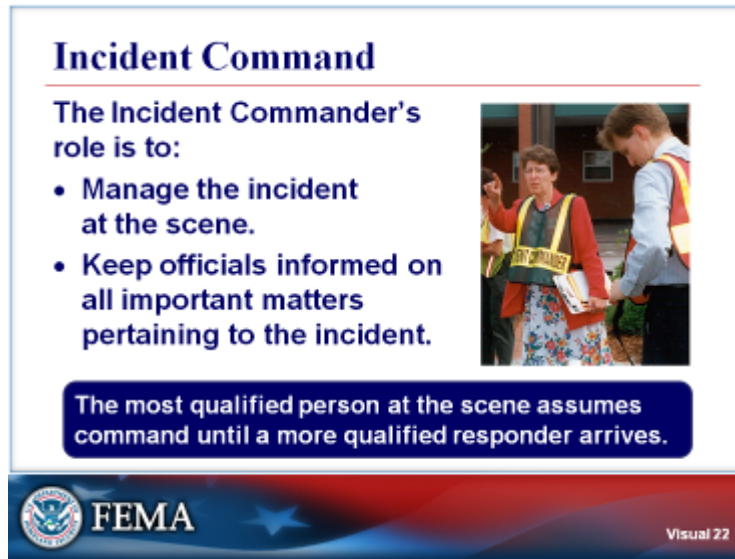
Instructor Notes: Present the following key points.

Adopting ICS and NIMS is a condition of receiving Federal preparedness funding and certain grants.

ICS will help you implement Federal, State, and local mandates and is a requirement for receiving emergency preparedness funding, such as the U.S. Department of Education Emergency Management for Higher Education (EMHE) grants.

According to the National Integration Center, “institutionalizing the use of ICS” means that government officials, incident managers, and emergency response organizations at all jurisdictional levels must adopt the Incident Command System. Actions to institutionalize the use of ICS take place at two levels:

- **Policy Level:** At the policy level, institutionalizing ICS means government officials (i.e., Governors, mayors, county and city managers, tribal leaders, and others) must:
 - Adopt ICS through executive order, proclamation, or legislation as the jurisdiction's official incident response system; and
 - Direct that incident managers and response organizations in their jurisdictions train, exercise, and use ICS in their response operations.
- **Organizational Level:** At the organizational/operational level, evidence that incident managers and emergency response organizations are institutionalizing ICS would include the following:
 - ICS is being integrated into functional and system-wide emergency operations policies, plans, and procedures.
 - ICS training is planned or underway for responders, supervisors, and command-level officers.
 - Responders at all levels are participating in and/or coordinating ICS-oriented exercises that involve responders from multiple disciplines and jurisdictions.

Topic**Response Activities (Continued)****Display
Visual 22**

Incident Command

The Incident Commander's role is to:

- Manage the incident at the scene.
- Keep officials informed on all important matters pertaining to the incident.

The most qualified person at the scene assumes command until a more qualified responder arrives.

FEMA

Visual 22

The slide features a photograph of two individuals at an incident scene. One person is wearing a yellow safety vest with 'INCIDENT COMMANDER' written on it. The slide has a blue and red background with the FEMA logo and a star.

Instructor Notes: Present the following key points.

The most qualified person at the scene assumes command, as the Incident Commander, until a more qualified responder arrives to assume command (e.g., firefighters, emergency medical technicians (EMTs), or law enforcement officers). It is quite possible that the Incident Commander may not be the highest ranking official on scene.

The Incident Commander is the primary person in charge at the incident. In addition to managing the incident scene, he or she must keep officials in the Executive Policy Group informed and up to date on all important matters pertaining to the incident.

The ICS hierarchy of command must be maintained. Not even executives and senior officials can bypass the system.

The Incident Commander is responsible for all ICS management functions until he or she delegates the function.

Topic**Response Activities (Continued)****Display
Visual 23**

Executives

The school executives provide the following to the Incident Commander:

- Policy Direction.
- Mission Support (Resources).
- Authority To Make Decisions.

To maintain the unity of command and safety of responders, do NOT bypass the chain of command.

FEMA

Visual 23

Instructor Notes: Present the following key points.

All incident responses begin by establishing command, and the chain of command is critical.

Chain of command is an orderly line of authority within the ranks of the incident management organization. It allows incident managers to direct and control the actions of all personnel under their supervision and avoids confusion by requiring that orders flow from supervisors.

Chain of command does not prevent personnel from directly communicating with each other to ask for or share information.

Following the ICS chain of command, the school executives (e.g., principals, superintendents, school board) provide the following to the Incident Commander:

- Policy Direction.
- Mission Support (Resources).
- Authority To Make Decisions.

Display
Visual 24

Incident Objectives

Incident objectives are established based on the following priorities:

- #1: Life Safety.
- #2: Incident Stabilization.
- #3: Property Preservation.

What additional priorities are critical for managing school incidents?

FEMA

Visual 24

Instructor Notes: Present the following key points.

As educators, you understand the value of learning objectives. Incident objectives are used to ensure that everyone within the ICS organization has a clear understanding of what needs to be accomplished.

Priorities for incident objectives are:

- 1: Life Safety.
- 2: Incident Stabilization.
- 3: Property/Environmental Preservation.

Ask:

What additional priorities are critical for managing school incidents?

Acknowledge the responses. If not mentioned, note that school priorities may include keeping parents informed, parent-student reunification, continuity of academics, and addressing the psychological/emotional aftermath of an earthquake.

Display
Visual 25

Scenario: Earthquake

Scenario:
Several minutes ago, an earthquake occurred. One teacher and an aide, who is certified in first aid and CPR, were not injured but are isolated in a damaged part of the building with students and no other faculty or staff.

Who should take command of the incident scene?

FEMA

Visual 25

Instructor Notes: Present the following key points.

Review the following scenario:

Several minutes ago, an earthquake occurred. One teacher and an aide, who is certified in first aid and cardiopulmonary resuscitation (CPR), were not injured but are isolated in a damaged part of the building with students and no other faculty or staff.

Ask:

Who should take command of the incident scene?

Acknowledge the responses.

If not mentioned, remind the participants that the Incident Commander is responsible for leadership and decisionmaking. Therefore, the adults in the isolated classroom must quickly decide who is “most qualified” for the given situation. Depending on the level of training, experience, and expertise—and the immediate response tasks to be accomplished—the teacher or the aide may be the most qualified for command. Remember that the Incident Commander may not be the highest ranking official on scene.

**Display
Visual 26**

Instructor Notes: Present the following key points.

As incidents grow, the Incident Commander may delegate authority for performance of certain activities to the Command Staff and the General Staff.

The Incident Commander will add positions only as needed.

In ICS, the following personnel comprise the Command Staff:

- **Public Information Officer**, who serves as the conduit for information to internal and external stakeholders, including the media or parents.
- **Safety Officer**, who monitors safety conditions and develops measures for assuring the safety of all response personnel.
- **Liaison Officer**, who serves as the primary contact for supporting agencies assisting at an incident.

**Display
Visual 27**



Instructor Notes: Present the following key points.

The **Incident Commander** is responsible for establishing incident objectives.

The General Staff includes:

- **Operations Section Chief**, who is responsible for managing all tactical operations at an incident. The Incident Action Plan provides the necessary guidance. The need to expand the Operations Section is generally dictated by the number of tactical resources involved and is influenced by span of control considerations.
- **Planning Section Chief**, who is responsible for providing planning services for the incident. Under the direction of the Planning Section Chief, the Planning Section collects situation and resources status information, evaluates it, and processes the information for use in developing action plans. Dissemination of information can be in the form of the Incident Action Plan, in formal briefings, or through map and status board displays.
- **Logistics Section Chief**, who provides all incident support needs with the exception of logistics support to air operations.
- **Finance/Administration Section Chief**, who is responsible for managing all financial aspects of an incident. Not all incidents will require a Finance/Administration Section. Only when the involved agencies have a specific need for finance services will the Section be activated.

In an expanding incident, the Incident Command first establishes the Operations Section. The remaining Sections are established as needed to support the operation.

**Display
Visual 28**

Earthquake-Specific Response

Your EOP should address any earthquake-specific risks during:

- Evacuation.
- Reverse evacuation.
- Lockdown.
- Lockout/Modified lockdown.
- Shelter in place.
- Parent-student reunification.

Who?
What?
Where?
When?
Why?
How?

FEMA

Visual 28

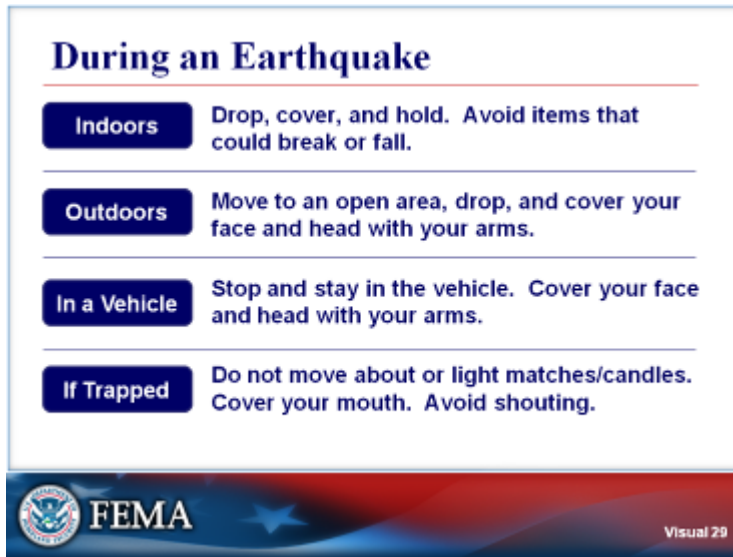
Instructor Notes: Present the following key points.

If not covered in the EOP Basic Plan or Functional Annexes, any earthquake-specific procedures should be addressed in Hazard-Specific Appendixes.

For instance, ensure that the EOP addresses any unique risks associated with earthquakes for the procedures below.

- **Evacuation:** Vacating the building and accounting for students, staff, and volunteers at a designated assembly area.
- **Reverse evacuation:** Bringing all persons inside the building when outdoor conditions are more dangerous than indoors.
- **Lockdown:** Securing students, staff, and volunteers inside the building for an immediate threat to the school or its occupants (keeping students and staff in place).
- **Lockout/Modified lockdown:** Securing students, staff, and volunteers inside the building for potential threats in the area of the school (but allowing for normal classroom activities).
- **Shelter in place:** Identifying a location (indoor or outdoor) and the resources required for students and staff to stay for an extended time, including overnight.
- **Parent-student reunification:** Establishing policy and procedures for reuniting students with their parents or guardians (e.g., reunification location; requirements, such as photo identification and signatures; and procedures).

Earthquake-specific considerations for each of these procedures will be described on the next visuals.

**Display
Visual 29**

Instructor Notes: Present the following key points.

During an earthquake, the first step is to remain calm. Having a plan and practicing it with your students will help them stay calm, too. Minimize your movements to a few steps to a nearby safe place and follow the recommendations below.

If Indoors:

- DROP to the ground, take COVER by getting under a sturdy table or other piece of furniture, and HOLD on to the furniture to keep it over you until the shaking stops. If there isn't a table or desk near you, cover your face and head with your arms and crouch in an inside corner of the building.
- Stay away from glass, windows, outside doors and walls, and anything that could fall, such as lighting fixtures or furniture.
- Stay inside until shaking stops and it is safe to go outside. Research has shown that most earthquake injuries occur when people inside buildings attempt to move to a different location inside the building or try to leave.
- Be aware that electricity may go out or the sprinkler system or fire alarm may turn on.
- DO NOT use the elevators.

If Outdoors:

- Stay there.
- Move away from buildings, streetlights, and utility wires.
- Once in the open, drop to the ground and cover your face and head with your arms. The greatest danger exists directly outside buildings, at exits, and alongside exterior walls. Many of the 120 fatalities from the 1933 Long Beach earthquake occurred when people ran outside of buildings only to be killed by falling debris from collapsing walls. Ground movement during an earthquake is seldom

Topic	Response Activities (Continued)
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If Outdoors: (Continued)

the direct cause of death or injury. Most earthquake-related casualties result from collapsing walls, flying glass, and falling objects.

If in a Moving Vehicle:

- Stop as quickly as safety permits and stay in the vehicle.
- Avoid stopping near or under buildings, trees, overpasses, and utility wires.
- Cover your face and head with your arms.
- Proceed cautiously once the earthquake has stopped. Avoid roads, bridges, or ramps that might have been damaged by the earthquake.

If Trapped Under Debris:

- Do not move about, kick up dust, or light matches/candles.
- Cover your mouth with a handkerchief or clothing.
- Tap on a pipe or wall so rescuers can locate you. Use a whistle if one is available. Shout only as a last resort. Shouting can cause you to inhale dangerous amounts of dust.

**Display
Visual 30**

Evacuation After an Earthquake

- Evacuate school buildings.
- Provide first aid.
- Assemble in designated areas.
- Account for all students, staff, and volunteers.
- Provide identification tags.

Provide simple checklists

FEMA Visual 30

Instructor Notes: Present the following key points.

Your EOP's Basic Plan and Functional Annexes should address standard evacuation procedures, such as:

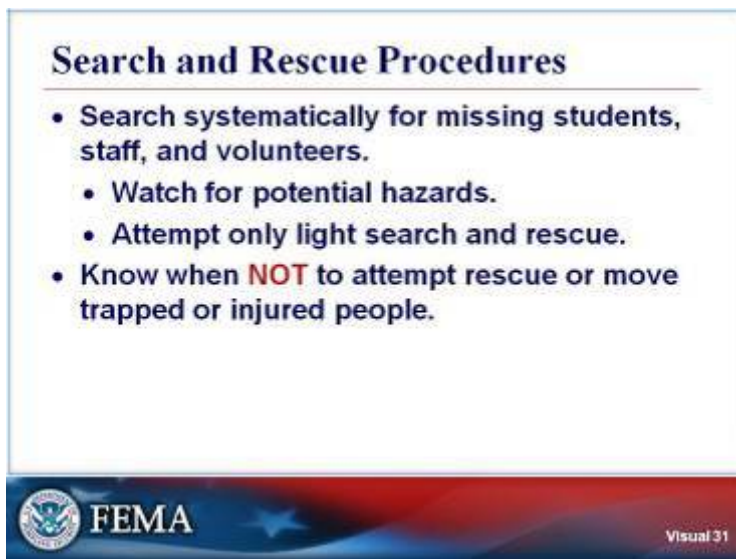
- Evacuating school buildings, unless it is not safe to do so.
- Providing basic first aid and triaging, or prioritizing medical treatment based on the nature of the injuries.
- Assembling in predesignated areas, including separate areas by class or other grouping and a designated first aid/medical area.
- Accounting for all students, staff, and volunteers.
- Providing student identification tags.

It is critical to post clear signs and simple checklists that describe evacuation procedures.

Ask:

Given the structural damage that is likely after an earthquake, do your procedures adequately describe alternatives for evacuation routes and assembly areas?

Acknowledge the responses. If the group identifies gaps in the school's evacuation procedures, make a note of the suggested changes. Explain that more information about updating the EOP will be provided at the end of this unit.

**Display
Visual 31**

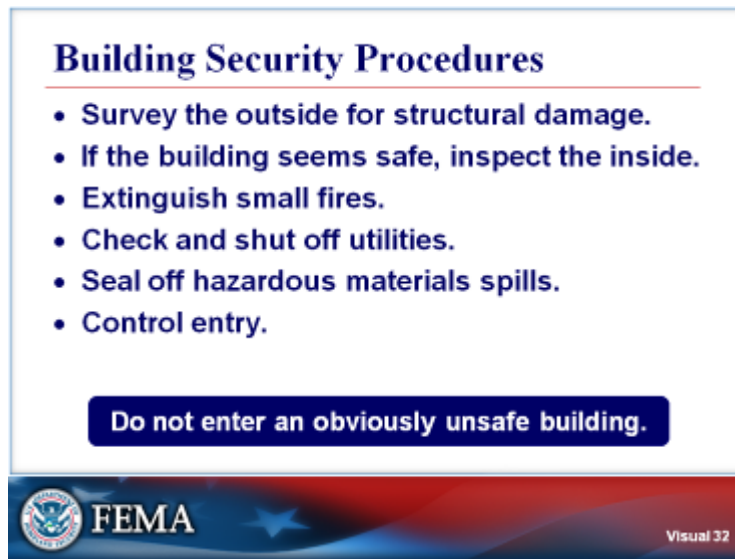
Instructor Notes: Present the following key points.

If any staff, students, or volunteers are missing, a designated and trained search and rescue team should search systematically to locate them, following procedures to ensure that closets, stairwells, or other areas of the building are not overlooked.

- Attempt only light rescue, and know not to attempt a rescue that endangers rescuers.
- Watch for potential hazards such as live electrical wires, flooding, tsunamis, landslides, fire, and aftershocks.

Know when not to move trapped or injured people, who might suffer further injury if moved by an untrained person. **Do not move injured people unless you have specialized training, or they are still in danger.**

As part of your school's emergency preparedness and mitigation efforts, form partnerships with the local or county Emergency Manager and emergency responders (e.g., police, fire, and emergency medical teams). Invite these partners to the school to familiarize them with the layout and learn more about potential hazards or preparedness strategies. For instance, firefighters or EMTs can demonstrate techniques to assist an injured or trapped person until trained help arrives (e.g., using a wedge to prevent further injury if someone is trapped under a bookcase).

Topic**Response Activities (Continued)****Display
Visual 32**

Building Security Procedures

- Survey the outside for structural damage.
- If the building seems safe, inspect the inside.
- Extinguish small fires.
- Check and shut off utilities.
- Seal off hazardous materials spills.
- Control entry.

Do not enter an obviously unsafe building.

FEMA

Visual 32

Instructor Notes: Present the following key points.

The safety and security of school buildings is an important concern.

To begin, survey the outside of building(s) for structural damage. No one should enter if a building is obviously unsafe. If the building seems safe, inspect the inside for signs of structural damage. EOP procedures should include instructions and diagrams for judging structural damage.

Other safety measures include:

- Extinguish small fires.
- Check and shut off utilities.
 - The EOP should include utility locations and shutoff instructions.
 - Check natural gas, water, and electrical lines for damage. Shut off these utilities if you suspect a leak. Do not use the telephone, light switches, matches, candles, or other open flame unless you are absolutely certain there is not natural gas leaking.
 - Do not touch electrical power lines or broken electrical equipment.
- Seal off hazardous materials spills.
- Control entry to the building.
 - Lock external gates and doors.
 - Be sure locked doors can be opened from the inside to prevent entrapment.
 - Station a team member at the front gate or door to deal with parents and others in the community.
 - Have the team member route fire, police, fire, search and rescue, and medical responders to areas of need.

Display
Visual 33

Communication Disruptions

- Normal means may be disrupted.
- Ensure that backup communication equipment is available.

What backup communication equipment is recommended in your school EOP?

FEMA

Visual 33

Instructor Notes: Present the following key points.

Following an earthquake, normal means of communication may be partially or totally disrupted.

Possible backup means of communication include:

- Emergency backup power for the intercom system.
- A battery-powered bullhorn or megaphone.
- Battery-powered portable radios, or car radios, to receive information from emergency officials.
- Battery-powered walkie-talkies to communicate with groups in the outdoor assembly area and with search and rescue teams.
- Signaling devices, such as whistles.
- Satellite phones.
- Ham radio operators.

Your school may have a backup radio communications system, or may arrange communications support from ham radio operators.

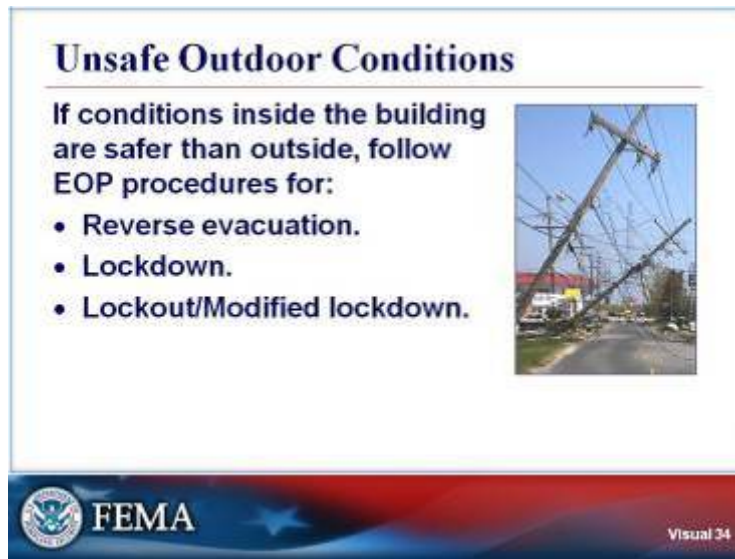
Ask:

What backup communication equipment is recommended in your school EOP?

Call upon volunteers for answers. Acknowledge the responses. Add any additional equipment from your understanding of the EOP.

Topic**Response Activities (Continued)**

Display
Visual 34



Unsafe Outdoor Conditions

If conditions inside the building are safer than outside, follow EOP procedures for:

- Reverse evacuation.
- Lockdown.
- Lockout/Modified lockdown.

The slide features a photograph of a power line tower that has been knocked over by an earthquake, with power lines sagging and hanging over a street. The FEMA logo is visible in the bottom left corner, and the text 'Visual 34' is in the bottom right corner.

Instructor Notes: Present the following key points.

After an earthquake, it is possible that conditions inside the building may be safer than outside. For instance, an earthquake may have caused minimal structural damage to the building, but downed power lines on the school property.

In such cases, follow EOP procedures for:



- **Reverse evacuation** to bring students, staff, and volunteers indoors.
- **Lockdown** to secure the building and keep students, staff, and volunteers in place.
- **Lockout/Modified lockdown** to secure the building, but continue with normal classroom activities.

Display
Visual 35

Shelter in Place

The EOP should:

- Establish designated shelter areas.
- Identify alternate outdoor areas if the school building is unsafe.
- Consider needs if students stay overnight.



Visual 35

Instructor Notes: Present the following key points.

Unlike some hazards, an earthquake is likely to affect a large portion of the community around the school. For instance, roads, bridges, and other infrastructure may be disrupted, making it impossible to release students or for parents and guardians to reach the school.

In such cases, students, staff, and volunteers may need to stay at the school for an extended period of time.

The EOP should:

- Establish designated shelter areas.
- Identify alternate outdoor shelter areas, if the school building is unsafe.
- Consider resource needs if students must stay overnight on school grounds.

Display
Visual 36



Instructor Notes: Present the following key points.

To reunite students with their parents or guardians, the EOP should describe specific reunification locations, any requirements (e.g., photo identification and signatures), and orderly and efficient procedures.

Ask:

What are the reunification challenges after an earthquake?

How does your EOP address these challenges?

If not mentioned, note that:

- The predesignated reunification site may be damaged. Roads leading to the site, or the site itself, may have been destroyed. The EOP should establish procedures for selecting an alternate location and informing parents and guardians of the change.
- It may be difficult to provide sufficient staffing of the site to maintain an orderly and efficient process. For instance, predesignated site staff may be injured or may need to stay at the main school facility with students.
- Accountability is critical! The school is responsible for the students until an authorized person arrives to pick them up. It is important to release students only to the parties identified on the student emergency/release card on file with the school. The guardian should present photo identification and sign a document to verify the release of the child to his or her custody. Explain to any well-intentioned neighbors or relatives that you cannot release the child to anyone else without written authorization from the guardian on file.

Display
Visual 37



Instructor Notes: Present the following key points.

Ask:

What records need to be maintained after an earthquake?

Acknowledge the responses. If not mentioned, provide the following possible responses:


- Roster of students and staff
- Student accounting at the assembly area
- Injuries and first aid or medical treatment provided
- Special needs treatment and care
- Names of missing individuals
- Student release
- Team reports
- Supplies and equipment accounting

Display
Visual 38

Activity: Response Procedures

Instructions:

- Review the following scenario:
Your school just experienced an earthquake. There are minor injuries, treatable with basic first aid. No one is trapped. Utilities are interrupted until further notice. The school buildings evidently suffered little damage and seem structurally sound. Emergency responders are too busy serving harder hit areas to respond to the school.
- Identify three priorities that your school's response procedures should address.



Visual 38

Instructor Notes: Conduct the following activity.

Purpose: This activity will enable the participants to identify priorities that response procedures should address in a specific situation.

Estimated Time: 10 minutes (5 minutes activity + 5 minutes debrief)

Instructions:

1. Review the scenario shown on the visual.
2. Work with your previously assigned group.
3. Identify three priorities that response procedures should address in this situation.

Debrief:

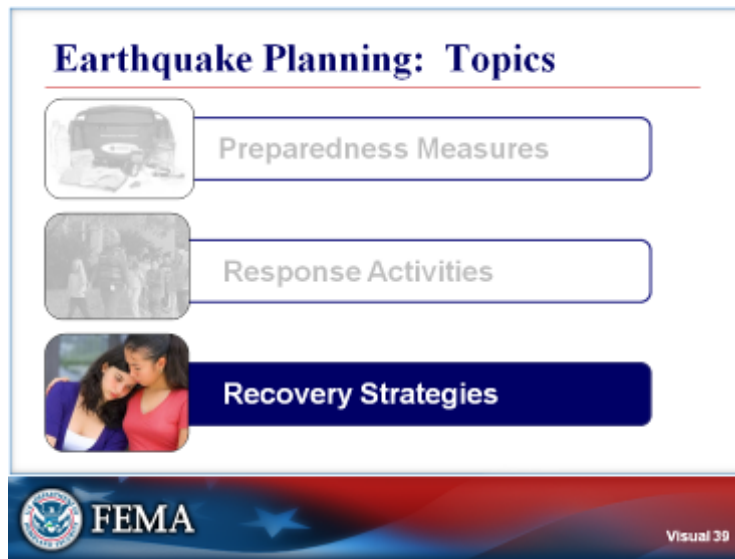
After 5 minutes, ask:

What priorities did you identify?

Acknowledge the responses. If not mentioned, provide the following possible answers:

- Carrying out individual and team roles and responsibilities under ICS
- Accounting for all staff, students, and volunteers
- Providing first aid to the injured
- Performing search and rescue
- Checking and shutting off utilities
- Extinguishing small fires
- Sealing off hazardous materials spills

Display
Visual 39



Instructor Notes: Present the following key points.



As shown on the advance organizer on the visual, the last section of the unit will outline recovery strategies after an earthquake.

Display
Visual 40

What Happens Next?

After the immediate dangers have passed, the EOP should describe the school's plan for:

- Continuity of academics.
- Repairing or replacing school facilities.
- Helping the school community to heal.



Visual 40

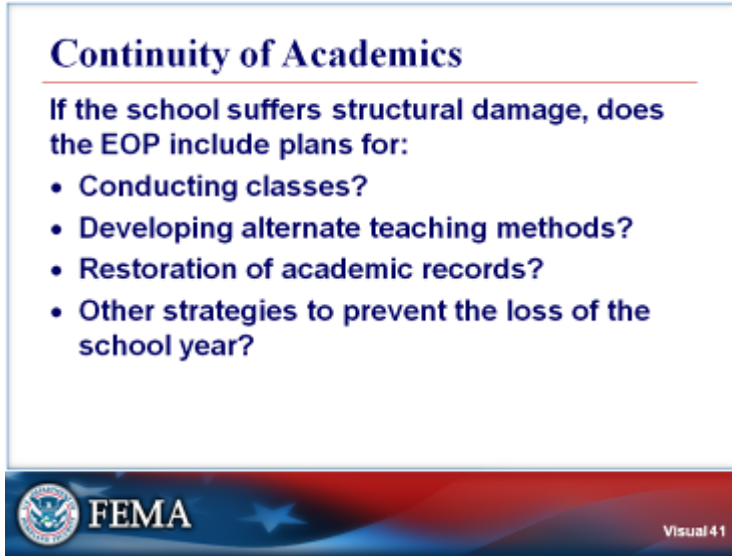
Instructor Notes: Present the following key points.

After the immediate dangers have passed, the EOP should describe the school's plan for:

- Continuity of academics.
- Repairing or replacing school facilities.
- Helping the school community to heal.

Each topic will be discussed in more detail on the next visuals.

Display
Visual 41



Continuity of Academics

If the school suffers structural damage, does the EOP include plans for:

- Conducting classes?
- Developing alternate teaching methods?
- Restoration of academic records?
- Other strategies to prevent the loss of the school year?

FEMA Visual 41

Instructor Notes: Present the following key points.

If the school suffers structural damage, the EOP should include detailed plans for:

- **Conducting classes when facilities are damaged.** Possible solutions include:
 - Relocation of school operations to adjacent communities or alternative sites.
 - Portable classrooms.
 - Rotating students through half-day sessions in undamaged portions of the building.
- **Developing alternative teaching methods** for students unable to return immediately to classes. Options include:
 - Correspondence classes.
 - Web-based instruction.
 - Videoconferencing.
 - Telegroup tutoring.
- **Restoration of academic records.**
- **Other strategies to prevent the loss of the school year.**

If an earthquake necessitates a secondary location for short- or long-term operation of the school, the relocation site:


- Should be defined in the EOP, after consultation with the State/local Emergency Manager and emergency responders.
- Should not be located in the vicinity of the school.
- May be shared with other schools.



Display
Visual 42

Repairs and Mitigation

After an earthquake:

- Determine how the school will repair or replace buildings and equipment.
- Identify mitigation efforts that could reduce the effects of another earthquake.



 **FEMA**  Visual 42

Instructor Notes: Present the following key points.

After an earthquake:

- Determine how the school will repair or replace buildings and equipment.
- Identify mitigation efforts that could reduce the effects of another earthquake.

Refer to the mitigation unit of this course for more information about specific mitigation techniques that can be incorporated into the school's post-earthquake repairs.

Display
Visual 43

Psychological Healing

The psychological healing annex should address:

- Disruptions of regular school functions.
- Psychological injury to students and/or staff.
- Coping with pressure from the media.



Visual 43

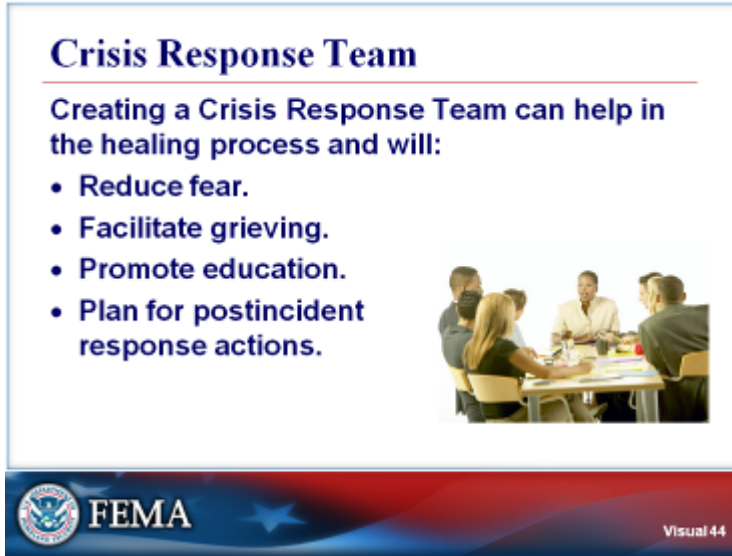
Instructor Notes: Present the following key points.

The psychological healing annex of the EOP should address:

- Disruptions of regular school functions.
- Psychological injury to students and/or staff.
- Coping with pressure from the media.

This annex should include tasks, such as providing psychological first aid services for those in need and accessing local/regional providers for ongoing crisis counseling for students, staff, and parents.


Display
Visual 44




Crisis Response Team

Creating a Crisis Response Team can help in the healing process and will:

- Reduce fear.
- Facilitate grieving.
- Promote education.
- Plan for postincident response actions.



 **FEMA**  Visual 44

Instructor Notes: Present the following key points.

Creating a Crisis Response Team can help in the healing process and will:

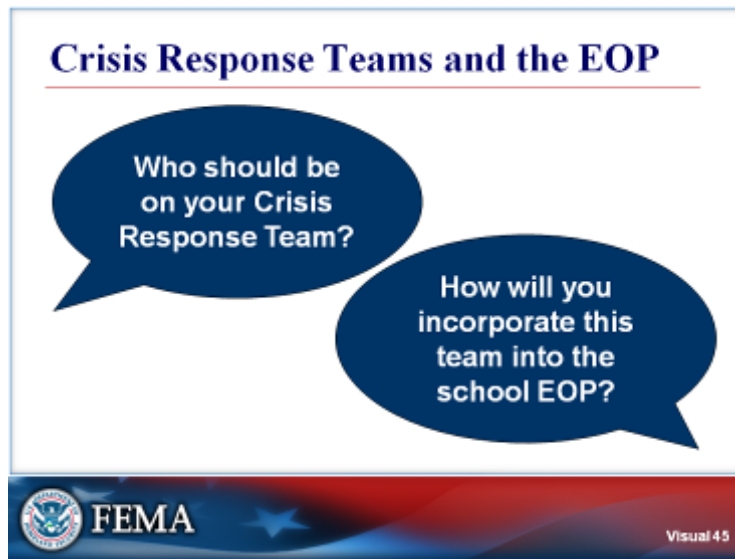
- Reduce fear.
- Facilitate grieving.
- Promote education.
- Plan for postincident response actions.

School crisis response teams should include a combination of school staff and community partners, such as mental health professionals. It is important to include school staff on the team because they:

- Have an ongoing relationship with students and parents, giving them:
 - An understanding of students' and parents' emotional needs.
 - A reputation as a trusted source of information within the school community.
- Will remain in the school community throughout the recovery period and can monitor the emotional needs of the students.

All crisis team members and school administrators must understand the difficult nature of this assignment and provide adequate support for school staff, and each other, as they work.

Display
Visual 45



Instructor Notes: Present the following key points.

Ask:

Who is or should be on your school's Crisis Response Team?

How did or will you incorporate this team into the school EOP?

Acknowledge the responses. If not mentioned, explain the following key points.


- Crisis Response Team members:
 - Are trained to handle emotional responses.
 - Have the ability/authority to make decisions.
 - Must be respected, sensitive, and calm.
- The EOP should specify the team members, clearly define roles and expectations, and identify and arrange for any specialized training.



**Display
Visual 46**

Maintaining the EOP

If the EOP requires additional or revised procedures, update it by:

- Dividing staff into teams with specific responsibilities.
- Keeping procedures simple.
- Providing a backup for every procedure.
- Making clear who is in charge and who makes specific decisions.
- Providing new training and drills.



 **FEMA** 

Visual 46

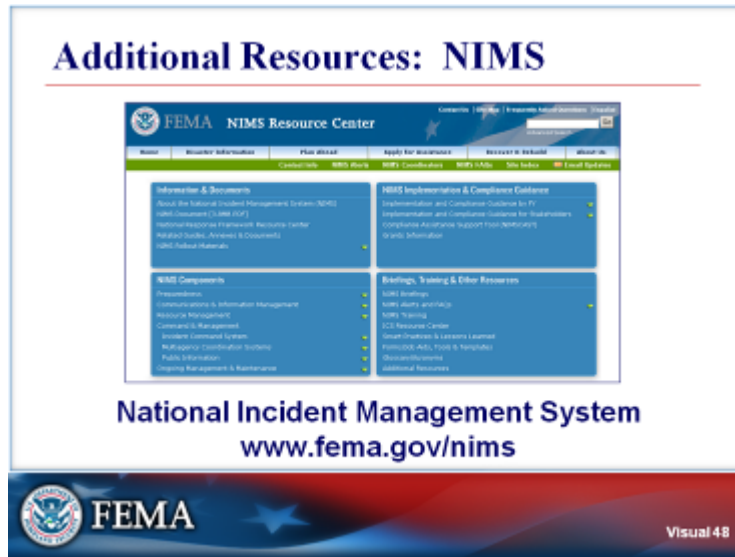
Instructor Notes: Present the following key points.

Not all teachers will be involved in the maintaining the school's EOP. However, teachers will participate in training and exercises related to the emergency procedures.

If a teacher identifies areas for improvement, he or she should forward suggestions for additional or revised procedures to an appropriate party (e.g., the department head, principal, or a member of the EOP planning team) for a revision of the EOP.

Teachers will then be involved in any re-training or exercises for the new EOP.

Display
Visual 48



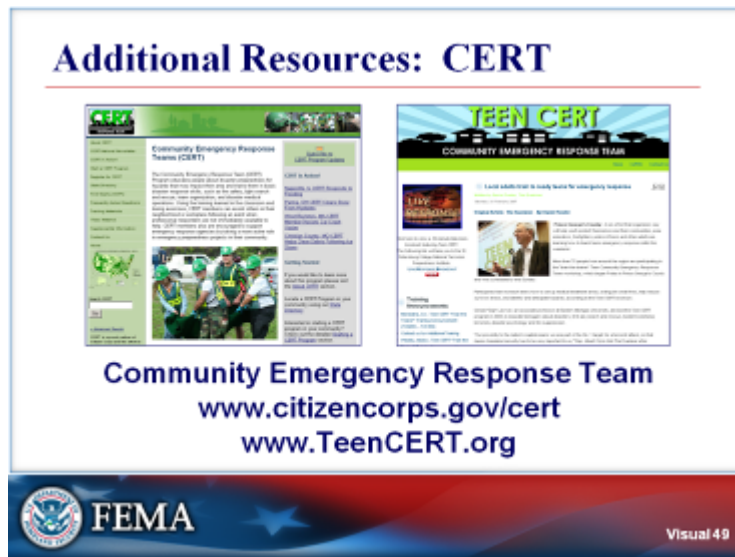
Instructor Notes: Present the following key points.

The FEMA Web site also includes a NIMS resource center that includes more information about NIMS and the National Response Framework.

The site covers the following topics:

- Information and Documents.
- NIMS Components.
- NIMS Implementation and Guidelines.
- Briefings, Training, and Other Resources.

Display
Visual 49



The slide is titled "Additional Resources: CERT" in a large, blue, serif font. Below the title, there are two side-by-side screenshots of the CERT website. The left screenshot shows the "Community Emergency Response Teams (CERT)" page, which includes a map of the United States and a photo of a CERT team. The right screenshot shows the "TEEN CERT" page, which features a "LIVE RESOURCES" section with a video thumbnail. Below the screenshots, the text "Community Emergency Response Team" is centered, followed by the URLs "www.citizencorps.gov/cert" and "www.TeenCERT.org". At the bottom of the slide, there is a red and blue banner with the FEMA logo on the left and the text "Visual 49" on the right.

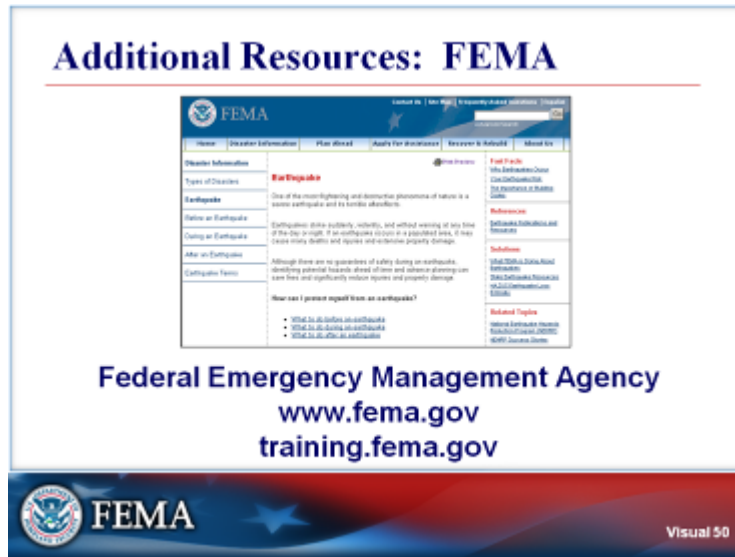
Instructor Notes: Present the following key points.

Community Emergency Response Team (CERT) training:

- Describes techniques to help an injured or trapped person until trained, professional responders arrive.
- Is available for adults (school staff) and teens (students).

CERT training is offered through Citizen Corps, FEMA's grassroots strategy to bring together government and community leaders to involve citizens in all-hazards emergency preparedness and resilience.

Display
Visual 50



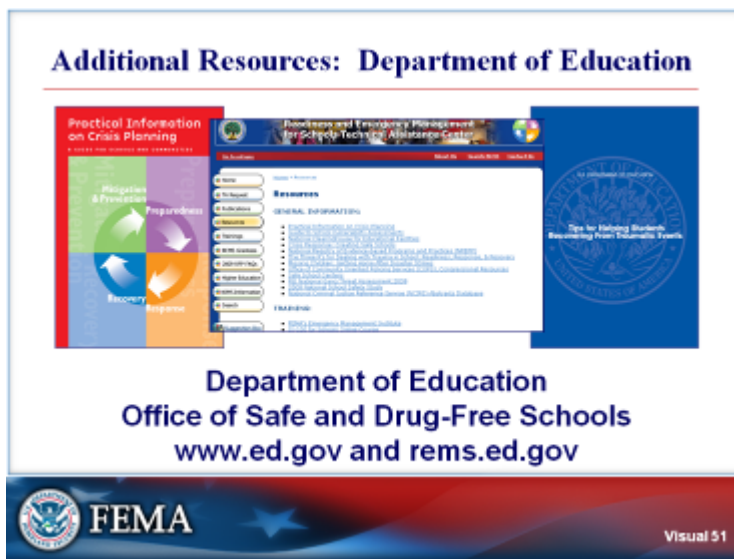
Instructor Notes: Present the following key points.

The Federal Emergency Management Agency (FEMA) Web site includes numerous preparedness and planning resources, including:

- **Comprehensive Preparedness Guide (CPG) 101**, “Developing and Maintaining State, Territorial, Tribal, and Local Government Emergency Plans,” which describes the elements of a thorough EOP.
- **Introduction to the Incident Command System for Schools (IS-100.SC/IS-100.SCa)** is a 3-hour web-based course that focuses on how ICS can be applied in school-based incidents and how to interface with community response personnel.
- **Multihazard Emergency Planning for Schools**
 - The EMI offering (E-361) is a 4-day course that provides school district teams with the knowledge, skills, and tools needed to review, enhance and sustain an all-hazard school Emergency Operations Plan (EOP).
 - G364, *Multihazard Emergency Planning for Schools*. The field course is a 9½ hour course that provides schools with knowledge, skills, and tools needed to review, enhance, and sustain an all-hazards school EOP. Included in the field course is an optional third-day, seven-hour module on “Conducting and Designing Tabletops.”
 - The independent study course (IS-362) is an 8-hour, short and “easy to take” web-based course that focuses on multihazard emergency planning for schools.
- **Earthquake Preparedness.** This section of the Web site is divided into three categories: what to do before an earthquake, what to do during an earthquake, and what to do after an earthquake.

Resources (Continued)

- **Earthquake Preparedness: What Every Child Care Provider Needs to Know.** This publication features practical and low-cost techniques to make child care facilities safer in the event of an earthquake, whether they are based in a home or a larger facility. The publication offers tips for conducting earthquake drills and includes a checklist of supplies to keep on hand in an emergency kit.
- **Are You Ready? An In-depth Guide to Citizen Preparedness (IS-22),** is FEMA's most comprehensive source on individual, family, and community preparedness. This document contains a section on earthquake preparedness and response, as well as a section on recovering from a disaster. The recovery section includes guidelines for immediate postincident actions as well as long-term recovery, such as recognizing signs of emotional distress.

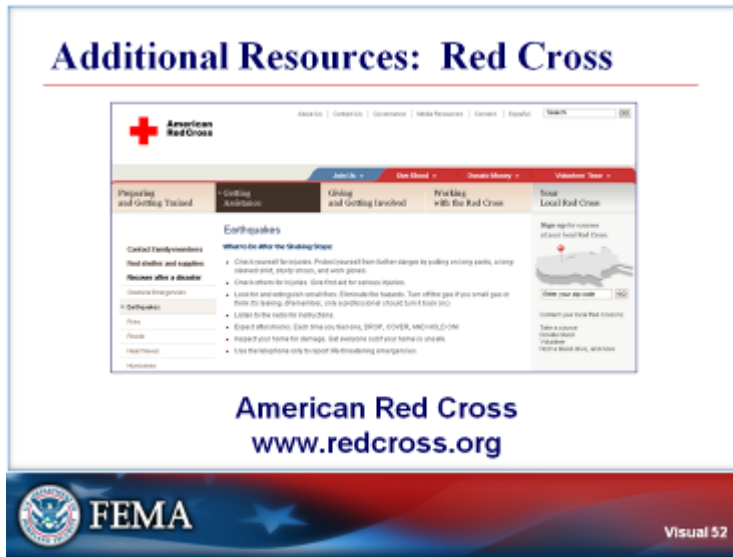


Instructor Notes: Present the following key points.

The Department of Education's Office of Safe and Drug-Free Schools Web site offers:

- **Emergency Management for Schools**, a collection of webcasts and training materials related to multihazard emergency prevention and mitigation, preparedness, response, and recovery.
- **Practical Information on Crisis Planning: A Guide for Schools and Communities**. This guide, with a companion brochure, provides schools and communities with basic guidelines and useful ideas on how to develop emergency response and crisis management plans.
- **Crisis Response: Creating Safe Schools**. This is a 4-day, facilitated online workshop event. However, the supporting materials are available in the Online Events section of the Department of Education Web site. Materials include "Building a School-Based Crisis Team," "Protocols for Dealing with a Crisis," "Informing Students and Staff," "Mapping Community Resources," "Identifying Seriously Traumatized Children," and "Activities to Help Students Recover from Traumatic Events."
- **Tips for Helping Students Recovering from Traumatic Events**. This brochure, which is based on discussions with some three dozen experts who work with students, provides practical information for parents and students who are coping with the aftermath of a natural disaster, as well as teachers, coaches, school administrators, and others who are helping those affected.
- **Readiness and Emergency Management for Schools (REMS) Technical Assistance Center**. This collection of resources includes general information on crisis planning, as well as information about training opportunities, education materials and resources, preparedness and mitigation, crisis planning for students with disabilities, mental health services for children following trauma, firsthand accounts of dealing with emergencies, and other recovery resources.

Display
Visual 52



Instructor Notes: Present the following key points.

The American Red Cross Web site includes information for preparing your school and students for a disaster, such as an earthquake. The information is organized into the three DHS categories:

- Get a Kit.
- Make a Plan.
- Be Informed.

The Recover After a Disaster section includes information about what to do immediately after an earthquake.

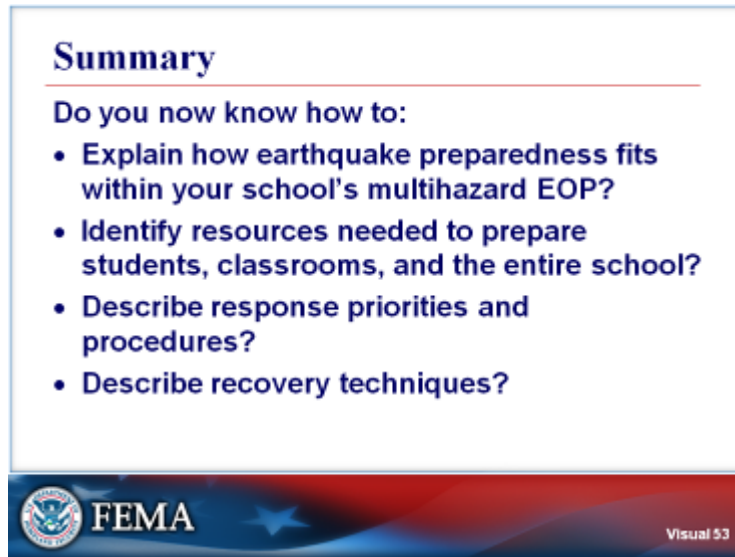
Earthquake-related information sheets include:

- **Earthquake Safety** checklist, describing tasks to complete before, during, and after an earthquake.
- **Taking Care of Your Emotional Health After a Disaster.**

The site includes an Alternative Language Materials page, with links to preparedness resources in Arabic, Cambodian, Chinese, English, Farsi, French, Hmong, Japanese, Korean, Laotian, Russian, Spanish, Tagalog, and Vietnamese.

The site also provides links to local chapters that offer training opportunities for first aid and cardiopulmonary resuscitation (CPR).

Display
Visual 53



Summary

Do you now know how to:

- Explain how earthquake preparedness fits within your school's multihazard EOP?
- Identify resources needed to prepare students, classrooms, and the entire school?
- Describe response priorities and procedures?
- Describe recovery techniques?

FEMA Visual 53

Instructor Notes: Present the following key points.

This unit described resources and procedures for earthquake preparedness, response, and recovery.

Ask:

Are you now able to:

- Explain how earthquake preparedness fits within your school's multihazard EOP?
- Identify resources needed to prepare students, classrooms, and the entire school?
- Describe response priorities and procedures?
- Describe recovery techniques?

Facilitate a discussion and answer any questions before proceeding.

If you will be presenting the next unit, explain that it will provide guidelines for training staff, students, and guardians about earthquake procedures and conducting exercises to evaluate those procedures.

Training and Exercises

Training and Exercises

Objectives

At the end of this unit, the participants will be able to:

- Explain the steps involved in exercise development.
 - List the types of exercises and the purposes of each.
 - Identify the exercises required for the earthquake portion of their school's Emergency Operations Plan (EOP).
-

Scope

This unit covers the following topics:

- Unit Introduction
 - Why Exercise the Plan?
 - How To Exercise the Plan: Homeland Security Exercise and Evaluation Program (HSEEP)
 - After Exercises: Evaluation
 - Tabletop Exercise
 - Additional Resources
 - Unit Summary
-

Methodology

The instructor will begin the unit by the discussing the importance of training and exercising the school's earthquake response procedures with students and staff.

The instructor will review the types of exercises that comprise the Homeland Security Exercise and Evaluation Program (HSEEP). Participants will then complete a final, tabletop exercise that presents an earthquake scenario and asks them to apply what they learned about earthquake response.

The instructor will conclude the unit with a description of additional Web resources that participants can use to obtain information about training and exercising the earthquake portions of the EOP.

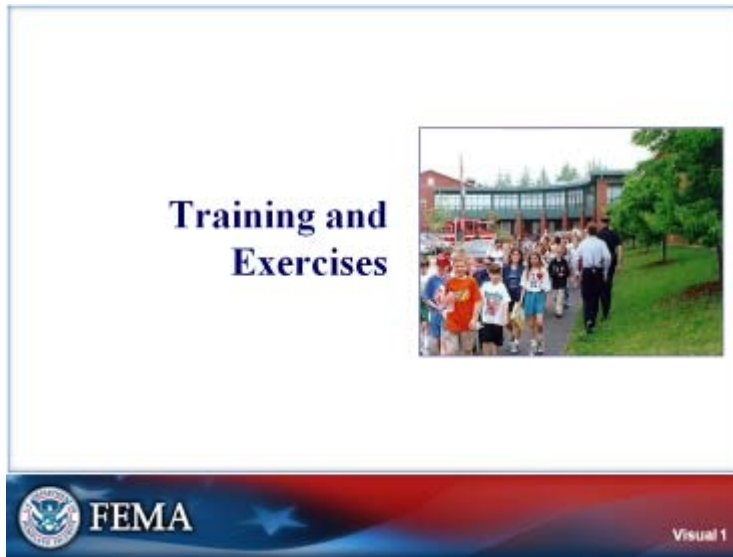
Training and Exercises

Time Plan

A suggested time plan for this unit is shown below. More or less time may be required, based on the experience level of the group.

Topic	Time
Unit Introduction	3 minutes
Why Exercise the Plan?	25 minutes
How To Exercise the Plan: HSEEP	90 minutes
After Exercises: Evaluation	15 minutes
Tabletop Exercise	60 minutes
Additional Resources	15 minutes
Unit Summary	2 minutes
Total Time	3 hours 30 minutes

**Display
Visual 1**

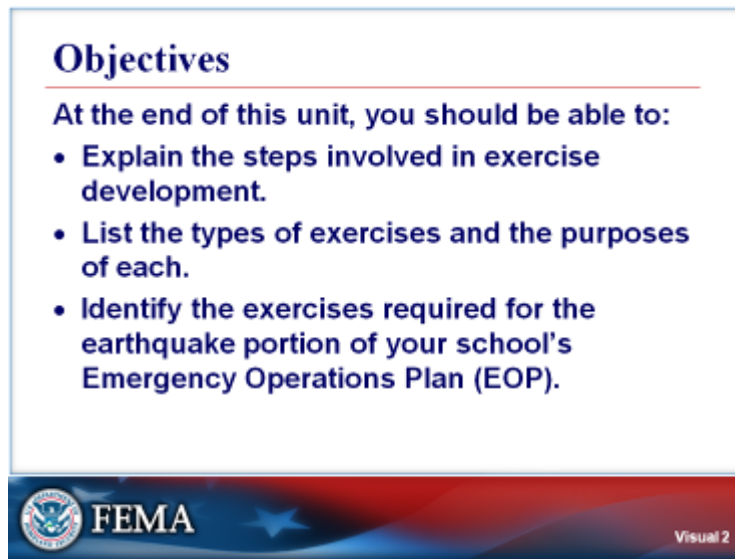


Instructor Notes: Present the following key points.

Training and exercises are both essential to a successful earthquake response. School staff, students, and parents need to know what to do after an earthquake.

This unit introduces concepts of training and exercises and describes types of exercises that can be used with your school staff and students.

Display
Visual 2



Objectives

At the end of this unit, you should be able to:

- Explain the steps involved in exercise development.
- List the types of exercises and the purposes of each.
- Identify the exercises required for the earthquake portion of your school's Emergency Operations Plan (EOP).

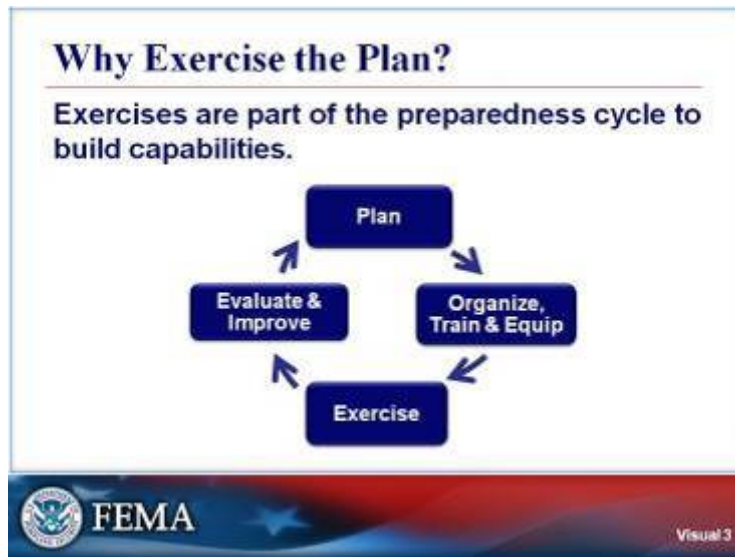
FEMA Visual 2

Instructor Notes: Present the following key points.

Once a school has developed an Emergency Operations Plan (EOP), teachers will participate in the education of staff, students, and parents and guardians about the emergency procedures. They will also be expected to participate in the planning and implementation of exercises to evaluate those procedures.

At the end of this unit, the participants will be able to:

- Explain the steps involved in exercise development.
- List the types of exercises and the purposes of each.
- Identify the exercises required for the earthquake portion of their school's Emergency Operations Plan (EOP).

Topic**Why Exercise the Plan?****Display
Visual 3**

Instructor Notes: Present the following key points.

Exercises are part of an ongoing preparedness cycle:

- Create an emergency response plan.
- Organize supplies, conduct training, and equip students and staff to implement the plan.
- Exercise the plan.
- Evaluate the results and identify areas for improvement in the plan. Then, repeat the cycle.

The preparedness cycle ensures that specific capabilities that are inherent to a variety of scenarios (e.g., evacuation and lockdown) are integrated into a workable plan to safeguard the school community. Capabilities provide the means to achieve a desired outcome by performing critical tasks, under specified conditions, to target levels of performance.

**Display
Visual 4**



Instructor Notes: Present the following key points.

Training on EOP procedures is critical to the successful implementation of those plans and procedures. Only through training can staff and students learn to follow the procedures correctly and to fulfill their roles and responsibilities. Reunification of families will occur more quickly and more efficiently if all family members are trained in what to expect, what to do, how to do it, and where to go.

Training is critical because it expands staff, student, and parent knowledge of earthquake procedures in the EOP so that:

- Staff and students can follow procedures correctly.
- Staff and students can fulfill their roles and responsibilities.
- Families are reunified following an earthquake as quickly as possible.

Exercises test the school's earthquake procedures in the EOP and help to:


- Reveal training needs.
- Reveal planning weaknesses.
- Reveal resource needs.
- Improve coordination.
- Clarify roles and responsibilities.
- Improve individual performance.
- Identify a path forward.

Display
Visual 5

Activity: Training Ideas

Instructions:

- You will be assigned one of three target audiences: school staff, students, or parents.
- Working with your team, identify three earthquake skills from the EOP that you should train and exercise with your assigned audience.
- Be prepared to report your results in 10 minutes.



Visual 5

Instructor Notes: Conduct the following activity.

Preparation: Divide the class into three groups and assign one group to identify training needs for staff, one group for students, and one group for parents.

Purpose: This activity will enable the participants to identify capabilities (procedures) in the EOP that should be trained and exercised with students, staff, and parents.

Estimated Time: 15 minutes (10 minutes activity + 5 minutes debrief)

Instructions:

1. You will be assigned one of three target audiences: school staff, students, or parents.
2. Working with your team, identify three earthquake skills from the EOP that you should train and exercise with your assigned audience.
3. Be prepared to report your results in 10 minutes.

Debrief:

Ask:

What capabilities did you identify for your assigned group?

Acknowledge the responses. If not mentioned, provide the following examples:

- Students: Immediately performing “Drop-Cover-Hold” procedures during an earthquake, evacuating the building, and re-assembling the class at an outdoor location.

Debrief: (Continued)

- Staff: Identifying and mitigating hazards in the classroom, evacuating the building, performing first aid, and checking and shutting off utilities.
- Parents: Identifying and mitigating hazards in the home, staying informed after an earthquake (e.g., locating information via the school Web site or email notifications), and following post-earthquake reunification procedures.

Topic**How To Exercise the Plan: HSEEP****Display
Visual 6**

How To Exercise the EOP: HSEEP

The Homeland Security Exercise and Evaluation Program (HSEEP) provides:

- A common exercise policy and program guidance.
- Consistent terminology that can be used and understood.
- Tools to plan, conduct, and evaluate exercises to improve overall preparedness.

FEMA

Visual 6

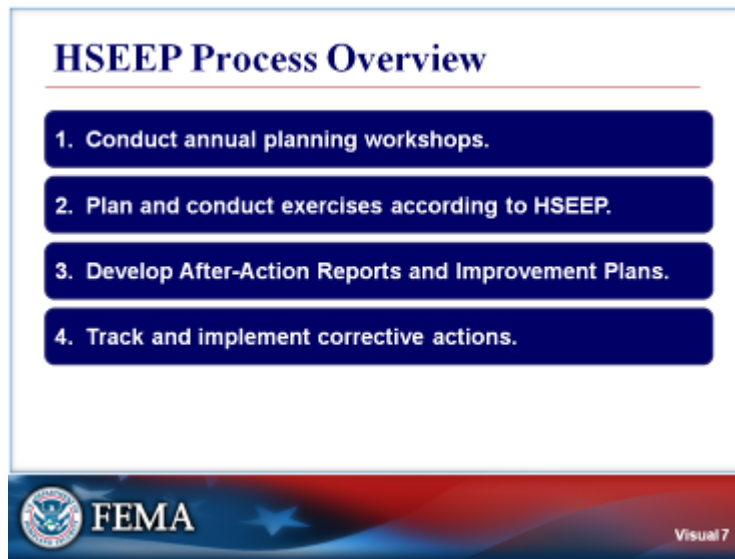
Instructor Notes: Present the following key points.

The Homeland Security Exercise and Evaluation Program (HSEEP) is a capabilities- and performance-based exercise program.

HSEEP provides:

- A common exercise policy and program guidance.
- Consistent terminology that can be used and understood.
- Tools to plan, conduct, and evaluate exercises to improve overall preparedness.

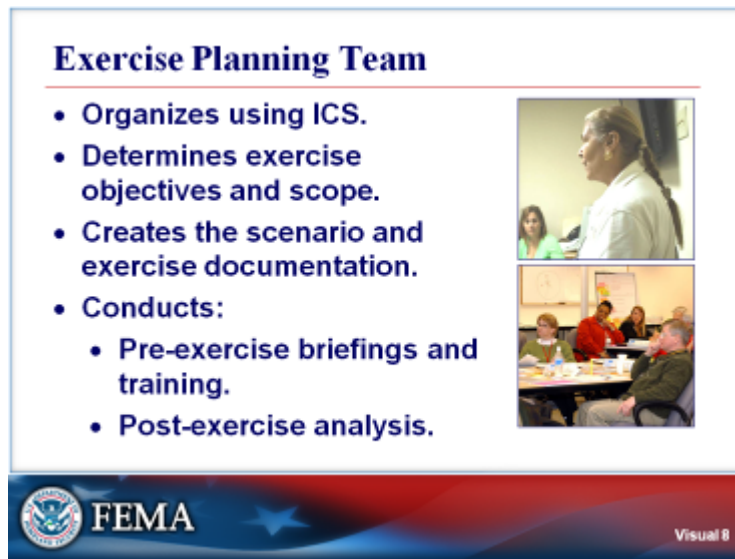
It is important to use HSEEP when developing earthquake exercises for your school.



Instructor Notes: Present the following key points.

The HSEEP program identifies the following performance requirements for exercise program management, design, development, conduct, evaluation, and improvement planning:

1. **Conduct an annual Training and Exercise Planning Workshop (TEPW), and maintain a Multi-Year Training and Exercise Plan.** The purpose of this workshop is to translate strategic goals and priorities into specific training and exercise activities and to develop a schedule for those activities.
2. **Plan and conduct exercises in accordance with the guidelines set forth in HSEEP policy.** Using a series of planning conferences, the design team ensures that the training and exercises are well documented so that all participants are aware of the objectives, purpose, roles and responsibilities, and exercise logistics. HSEEP policy guidance includes an overview of exercise planning and conduct, sample documents for all potential presentations, and manuals for all types of exercises.
3. **Develop and submit a properly formatted After-Action Report/Improvement Plan (AAR/IP),** based on observations of the relevant capabilities and tasks. Capture events as they occur during an exercise, analyze the events relative to exercise objectives, and suggest development actions to either further enhance or improve agencies' planning and response capabilities.
4. **Track and implement corrective actions identified in the AAR/IP** to monitor progress (e.g., identifying a need for additional training, equipment, exercises, coordination, or plans/procedures).

**Display
Visual 8**

Exercise Planning Team

- Organizes using ICS.
- Determines exercise objectives and scope.
- Creates the scenario and exercise documentation.
- Conducts:
 - Pre-exercise briefings and training.
 - Post-exercise analysis.

FEMA

Visual 8

Instructor Notes: Present the following key points.

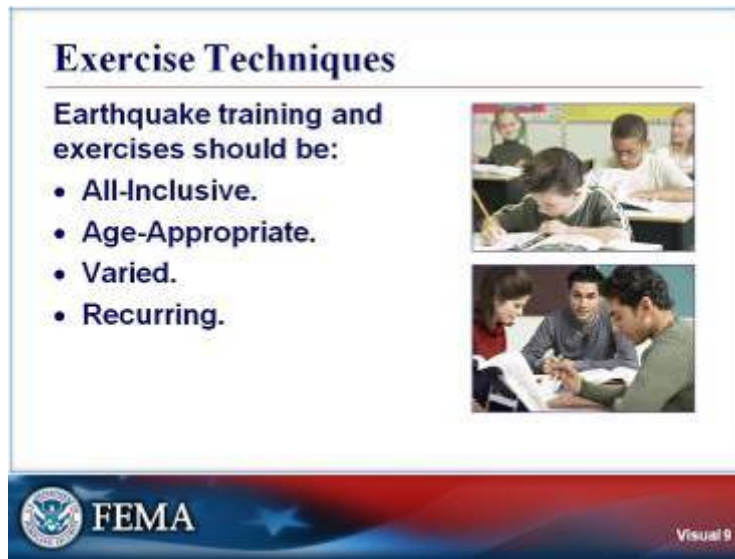
The exercise planning team develops an overall exercise plan for your school. The team lists exercises to develop and determines exercise sequence.

The exercise planning team should be kept to a manageable size, but include all stakeholders, such as:

- One or more school administrator(s).
- The local emergency manager.
- The individual with overall responsibility for the school multihazard EOP, usually a staff member.
- Persons knowledgeable in the area to be tested.

The team is organized using Incident Command System (ICS) structure and is responsible for:

- **Determining the exercise objectives and scope.** This includes identifying the section(s) of the EOP to be tested, the operations to carry out, and the skills, or Target Capabilities, that will be validated.
- **Creating the scenario** using the following guidelines:
 - Exercise only the functions identified in the objectives.
 - Don't add unnecessary complications.
 - Develop any associated exercise documentation.
 - Plan for evaluation "up front," including the evaluation measures
- **Conducting any pre-exercise briefings** and training.
- **Conducting post-exercise analysis** and creating plans for ongoing improvement.

**Display
Visual 9**

Exercise Techniques

Earthquake training and exercises should be:

- All-Inclusive.
- Age-Appropriate.
- Varied.
- Recurring.

The slide features two photographs: the top one shows a group of students in a classroom setting, and the bottom one shows three students looking at a document together. The slide includes the FEMA logo and the text 'Visual 9' in the bottom right corner.

Instructor Notes: Present the following key points.

Like the materials the participants design for all aspects of the school curriculum, earthquake training and exercises should be all-inclusive, age-appropriate, varied, and recurring.

All-inclusive training is designed to include all intended target audiences. Examples include:

- Staff, such as administrators, teachers, substitute teachers, support staff (e.g., cafeteria workers, maintenance staff, custodians, bus drivers, and crossing guards), and volunteers.
- Students, including those with special needs or limited English proficiency.
- Parents and caregivers, including traditional and nontraditional family units (e.g., divorced/multiple households), and those with limited English proficiency.

Age-appropriate training presents concepts in a manner that can be easily understood and ensures that the target audience is prepared, not frightened.

Varied training helps create “new” interest in an “old” topic. Examples include:

- A formal earthquake preparedness curriculum, with prepared courses for all grade levels. Resources for earthquake-specific curriculum development are available online and are listed in the resources section at the end of this unit.
- Reminder-level training, such as posters, signs, or a “tip of the day.”
- Earthquake activities that are linked to Standards of Learning (SOLs), such as hazard hunts for school and home, storybooks, checklists, experiments, writing and drawing activities, or a themed science fair.

Varied Training (Continued)

- Guest speakers and classroom visitors, such as:
 - Emergency management personnel.
 - Search and rescue teams.
- Specialized skills training, such as Community Emergency Response Team (CERT or Teen CERT) training.
- Both small-scale and large-scale training exercises.
- Both discussion-based and hands-on training.

Recurring training ensures that the plan doesn't "gather dust" on the shelf. Periodic exercises provide reminders and refresh learning.

Display
Visual 10



Instructor Notes: Present the following key points.

HSEEP describes several types of exercises that are organized into two main categories:

- Discussion-based exercises
- Operations-based exercises

Each category will be described in more detail on the next visuals.

**Display
Visual 11**

Instructor Notes: Present the following key points.

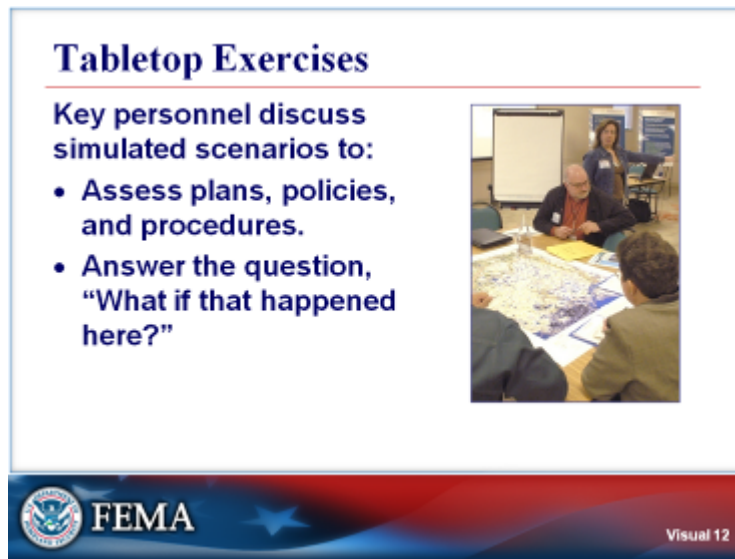
The first building blocks of an exercise program are discussion-based exercises. Discussion-based exercises make participants familiar with current plans and procedures and may be used to develop new plans and procedures.

Types of discussion-based exercises include the following:

- **Seminars** are informal discussions, presentations, or orientations to new or updated plans, policies, and procedures. Example: A seminar to inform staff of a new evacuation procedure.
- **Workshops** resemble a seminar, but build specific products, such as a draft plan or policy. Example: A training and exercise plan workshop to develop a Multi-Year Training and Exercise Plan.
- **Tabletop exercises** involve key personnel discussing hypothetical scenarios in an informal setting. This type of exercise involves indepth discussion and is used to assess the EOP and identify strengths and shortfalls in the plan, policies, and procedures.
- **Games** use a multiplayer concept to create a dynamic decisionmaking environment. Games can be software based and competitive in nature and may involve playing against the computer or “system.”

Additional information about tabletop exercises will be provided on the next few visuals.


Display
Visual 12





Tabletop Exercises

Key personnel discuss simulated scenarios to:

- Assess plans, policies, and procedures.
- Answer the question, “What if that happened here?”



 **FEMA**  Visual 12

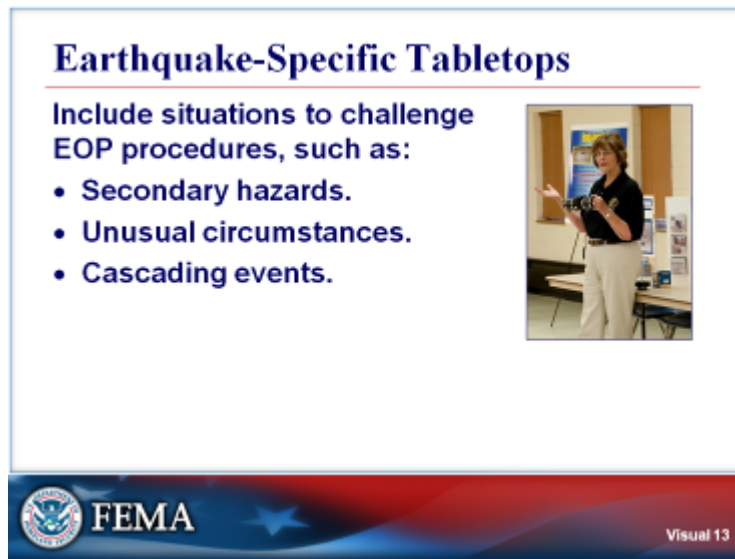
Instructor Notes: Present the following key points.

In tabletop exercises, key personnel discuss simulated scenarios. The scenarios are often based on actual incidents at the school or recent events in the news, particularly from neighboring communities or nearby States.

Tabletop exercises evaluate plans, policies, and procedures and help answer the question, “What if that incident happened here?”

A tabletop exercise requires one or more facilitators. The exercise paints a picture by presenting a scenario. The facilitator then:


- Asks open-ended questions related to the scenario, such as “What is your school policy in this situation?”
- Encourages free-flowing discussion and avoids guiding the discussion.



**Display
Visual 13**

Earthquake-Specific Tabletops

Include situations to challenge EOP procedures, such as:

- **Secondary hazards.**
- **Unusual circumstances.**
- **Cascading events.**



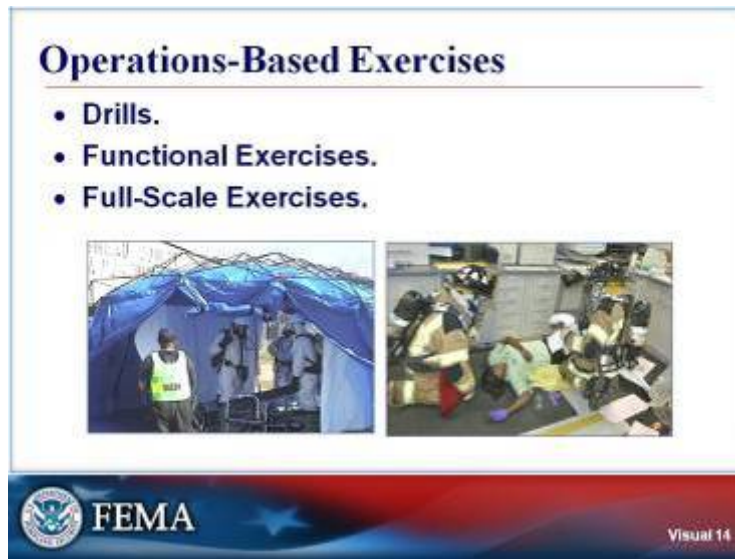
 **FEMA**  Visual 13

Instructor Notes: Present the following key points.

An earthquake tabletop exercise should include situations that challenge the procedures in your EOP and help identify shortfalls or areas for improvement.

The exercise should include:

- **Secondary hazards** (e.g., fallen furniture and equipment, broken glass and debris, hazardous material spills, fire, communications breakdowns, transportation system breakdowns, and power outages).
- **Unusual circumstances** (e.g., an earthquake during an assembly or when students are between classes).
- **Cascading events** that increase the complexity of the incident over time, such as casualties, area residents arriving to use the school as a shelter, or parents attempting to circumvent reunification procedures.



Instructor Notes: Present the following key points.

Operations-based exercises validate plans and procedures, clarify roles and responsibilities, and identify resource gaps in an operational environment.

Types of operations-based exercises include the following:


- **Drills** are designed to be limited in focus and scope, and usually test a single, specific operation or function within a single entity. Examples include a school evacuation drill or a medical team drill.
- **Functional exercises** test specific plan functions, generally one function at a time. They focus on coordination and command between agency coordination centers, but do not involve “boots on the ground” (first responders or emergency officials responding to an incident in real time). Examples of functional exercises include:
 - Shelter in place and student care (overnight retention).
 - Student accounting.
 - Parent/student reunification.
 - Medical treatment.
 - Emergency public information.
 - Logistics.
- **Full-scale exercises** are multiagency, multijurisdictional, multidiscipline exercises involving full support systems (e.g., district central offices, district and community EOCs, school command posts). These exercises are “boots on the ground” responses that actually move resources, and are very resource intensive. Such exercises also have considerable safety implications.

Additional information about drills will be provided on the next few visuals.

Display
Visual 15

Drills

- Practice and perfect a single emergency response.
- Concentrate the efforts of a single function (e.g., evacuation or mobilizing the district command team).
- Provide “hands on” field experience.



FEMA

Visual 15

Instructor Notes: Present the following key points.

Drills provide a means to practice and perfect a single emergency response. They concentrate the efforts of a single function, such as evacuation or mobilizing the district command team, and provide “hands on” field experience.

Features of a drill include:

- Coordination and supervision.
- Instant feedback.
- Narrow focus.
- Realistic environment.

**Display
Visual 16**

Types of Earthquake Drills

- Mobilizing teams.
- Implementing a buddy system.
- Issuing student identification.
- Evacuating the school building.
- Containing hazardous materials spills.
- Extinguishing small fires.
- Using emergency communications.
- Shutting off utilities.

FEMA Visual 16

Instructor Notes: Present the following key points.

Most drills will focus on priority actions that are required immediately after an earthquake.

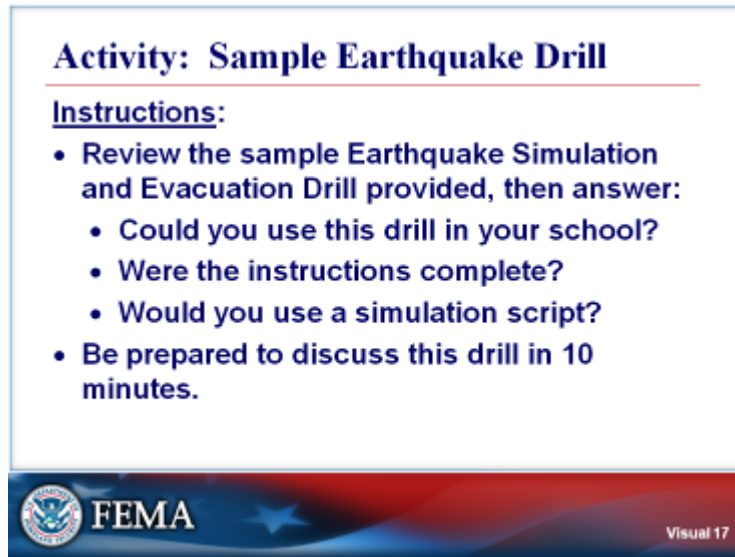
Examples of earthquake drills include:

- Mobilizing teams.
- Implementing a buddy system.
- Issuing student identification.
- Evacuating the school building.
- Containing hazardous materials spills.
- Extinguishing small fires.
- Using emergency communications.
- Shutting off utilities.*

*Note: Some utilities must be turned back on by the utility company. Coordination with the school Facility Department is extremely important.

The list is not all-inclusive. Other types of drills could be important, depending on circumstances at individual schools.

Display
Visual 17



Activity: Sample Earthquake Drill

Instructions:

- Review the sample Earthquake Simulation and Evacuation Drill provided, then answer:
 - Could you use this drill in your school?
 - Were the instructions complete?
 - Would you use a simulation script?
- Be prepared to discuss this drill in 10 minutes.

FEMA Visual 17

Instructor Notes: Conduct the following activity.

Purpose: This activity will enable the participants to review a detailed school earthquake evacuation drill.

Estimated Time: 15 minutes (10 minutes activity + 5 minutes debrief)

Instructions:

1. Read through the Earthquake Simulation and Evacuation Drill in the Student Manual, including: Content Concepts, Objectives, Procedure, Learning Links, Reminders, Vocabulary, Earthquake Simulation Script, and Drill and Evacuation Checklist.
2. Answer the questions listed on the visual.
3. Be prepared to discuss the drill in 10 minutes.

Debrief:

After 10 minutes, ask:

Could you use this drill in your school?

Were the instructions complete?

Would you use a simulation script?

Acknowledge the responses. Note that the participants will have an opportunity to adapt this drill, and implement their own suggestions, in the second part of this activity.

Earthquake Simulation and Evacuation Drill

Source: Earthquake Safety Activities for Children and Teachers (FEMA-527)

Content Concepts

1. Students can cope with hazards during evacuation.
2. Students are first responsible for their own safety, but also can help if others are injured.
3. After an earthquake, students can cope with the disturbed environment and their own emotional reactions.

Objectives

Students will:

- Identify hazards they might find during evacuation.
- Describe ways of helping others who are injured during earthquakes.
- Describe feelings they might have and dangers they might face after an earthquake.

Learning Links

- **Language Arts:** Writing and reading hazard descriptions, discussing hazards and coping strategies, discussing and writing (older children) about what happens after an earthquake.
- **Social Studies:** Practicing Drop, Cover, and Hold and evacuation procedures, discussing responsibility for one's own safety in an emergency, and what can be done for others.

Procedure

1. Review classroom earthquake drill procedures with students and have them practice the Drop, Cover, and Hold routine. Do the drill with or without using the simulation script.
2. Take the class to the cafeteria and school library and discuss quake-safe actions to take in each of these settings. Have the children demonstrate those actions.
3. Tell students that during an earthquake it's important to stay where they are and take immediate quake-safe action. After the ground stops shaking, it is time to evacuate the building. Explain some of the hazards that may exist even after the major quake has passed, including aftershocks, fires, live electrical wires, and fumes.
4. Walk the class through your regular fire drill route to an open area outdoors that you have chosen in advance. Ask students to make mental notes as they go along of things that might become hazards during an earthquake, and share their ideas when you reach your designated site. Write each appropriate suggestion on an index card. The list of possible hazards may include:
 - a. power failure (Is there emergency lighting available?)
 - b. halls or stairways cluttered with debris (Are there lockers or trophy cabinets along hallways that could fall and block your path?)
 - c. smoke in the hallway
 - d. an exit door that jams and will not open
 - e. an aftershock (Students should stop walking immediately and begin Drop, Cover, and Hold.)
 - f. bricks, glass, and debris outside the doorway
 - g. electrical wires fallen on the ground

Earthquake Simulation and Evacuation Drill (Continued)

Procedure (Continued)

5. Return to the classroom. Hand one of the students an index card with a description of a hazard. Discuss this hazard and its impact on evacuation. Continue handing out the cards, one at a time, until all the hazards have been discussed. Give students an opportunity to express ideas about how they can cope with the hazards and evacuate safely.

Reminders

For the Teacher

- Take cover.
- Talk calmly to students.
- Give instructions for evacuation or other emergency.

When No Shelter Is Available

Move to an inside wall. Kneel next to the wall, facing away from windows. Bend head close to knees, cover sides of head with elbows, and clasp hands behind neck. If a coat is available, hold it over your head for protection from flying glass, and ceiling debris.

Earthquake Safety Reminders for Students

If you're inside:

- Stay inside.
- Take cover immediately under a table, desk, or counter.
- Keep quiet and listen for instructions.
- Remain in safe position for at least 60 seconds, or until the shaking has stopped and your teacher tells you to leave your shelter.

If you're outside:

- Stay outside.
- Go to an open area away from hazards.
- Keep quiet and listen for instructions.

If you are in a school bus or a car when the quake starts shaking:

- The driver should stop as soon as possible away from buildings, power lines, bridges, and highway overpasses and underpasses.
- Passengers should stay in the vehicle and hold on (cars and buses have "shock" absorbers).

Vocabulary

evacuation – Evacuation is the act of emptying completely. When we evacuate a building, we want to leave it quickly, quietly, and safely.

foreshock – A foreshock is an earthquake which comes before the main quake and is less severe.

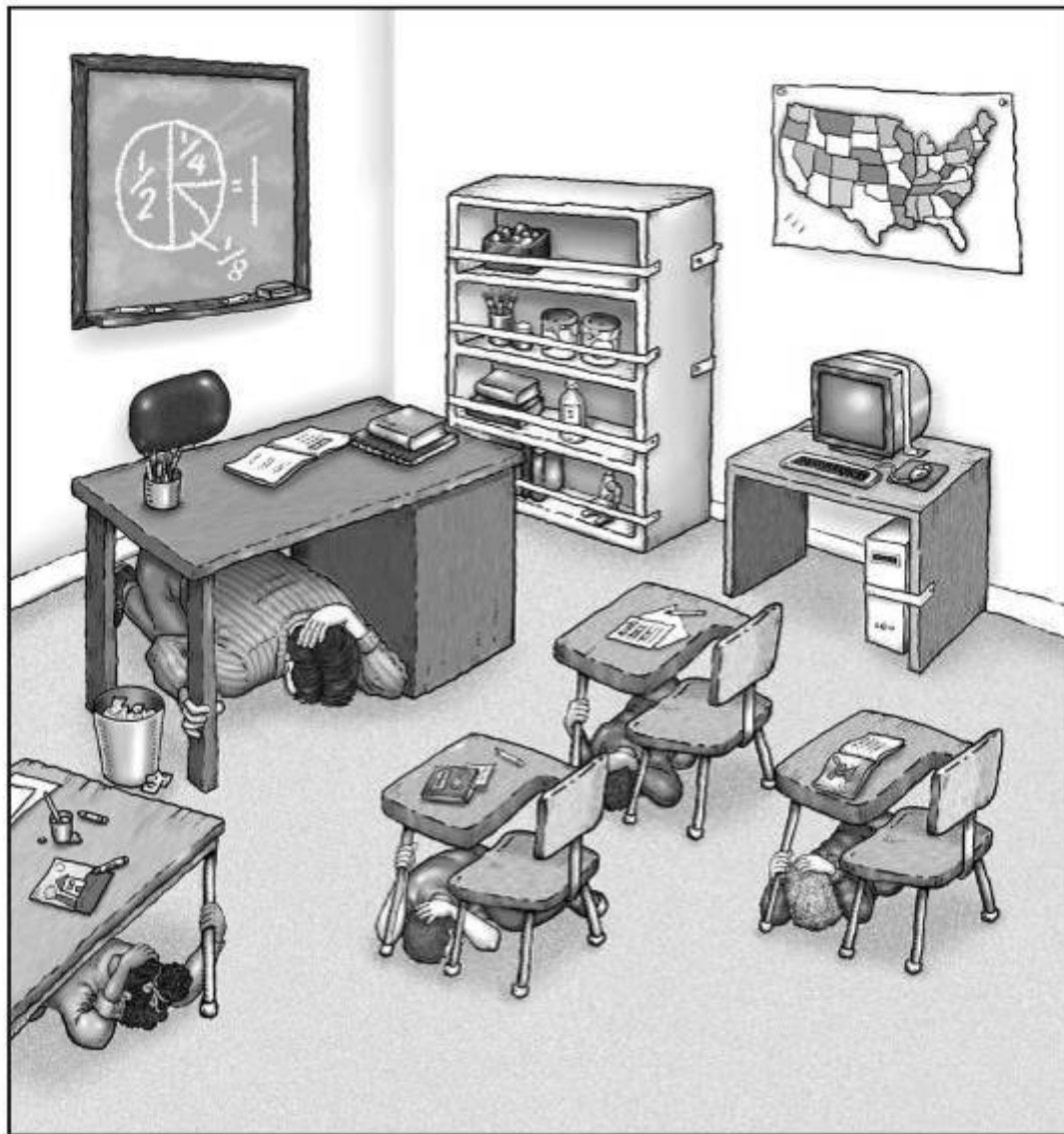
aftershock – An aftershock is an earthquake which follows a major quake and is less severe.

Earthquake Simulation and Evacuation Drill (Continued)

Drop, Cover, and Hold Routine

Drop, Cover, and Hold

Take cover under a sturdy desk or table, hold on to the desk or table leg so that the desk or table stays on top of you, and keep your head down until the shaking stops.



Earthquake Simulation and Evacuation Drill (Continued)

Earthquake Simulation Script

Imagine that you hear a low, rumbling, roaring sound. The noise builds, getting louder and louder, for a few seconds. Then, Wham! There's a terrific jolt. You feel like someone suddenly slammed on the brakes in the car, or like a truck just rammed into the side of the building.

The floor seems to be moving beneath you. It's hard to stand up, or even stay in your seat. If you do stand up, you might feel like you're riding a raft down a fast river. When you walk, it's like trying to walk on a trampoline or a waterbed. You hear someone say, "Earthquake! Drop, Cover, and Hold!"

I want all of you at your desks to take cover as quickly and quietly as you can, right now. Please listen very carefully.

The shaking and commotion may last about 60 seconds or a little longer. We'll have our timer count off the seconds for as long as this earthquake lasts. [The timer may begin counting softly now.]

The building is creaking and rattling. Books are falling from the bookcase. Hanging lamps and plants are swaying. Suddenly a pot falls to the floor and smashes, and the plant spills. A window pane just shattered, and glass is falling to the floor. The table is sliding, too.

Be sure to stay in the drop, cover, and hold position under your desk. If your desk is moving, grab the legs and move with it.

You hear noises outside. Dogs are barking. Cats are meowing. A baby is crying. People are shouting and screaming. The shaking is making church bells ring. You hear crashing sounds, from brick chimneys and other loose parts of the building falling to the ground. Trees outside are swaying and scraping against the walls.

Inside the room, pictures are moving on their nails. Oh! That one just fell off the wall and crashed to the floor. The desk drawers are sliding open. The lights begin to flicker on and off... they just went out! Now the door swings back and forth on its hinges. Bang! It slams shut. There's silence now. Just as suddenly as the noise and shaking began, the room grows quiet. [The timer can stop counting now.]

Please, everyone, get back in your seats. It is important to remain very quiet and wait for instructions. When it is safe to leave the building, I am going to lead you outside to an open space. Stay together, and be ready to take cover again at any moment, because the shaking may start again. Sometimes other quakes, called aftershocks, occur after the damaging earthquake has stopped.


Source: HELP: Hands-on Earthquake Learning Package, California Edition (1983). Environmental Volunteers, Inc.

Earthquake Simulation and Evacuation Drill (Continued)

Drill and Evacuation Checklist

- Did everyone know what to do when told to Drop, Cover, and Hold?
- Did everyone follow the procedure correctly?
- In the classroom, the library, or the cafeteria, was there enough space for all the students under desks, tables, or counters?
- In the gym or in the hallways, were students able to take shelter away from windows, light fixtures, trophy cases, and other hazards?
- Do students know how to protect themselves if they are on the playground during an earthquake? If they are in a school bus or a car?
- Did everyone remain quietly in their safe positions for at least 60 seconds
- Did students with special needs participate in the drill and evacuation?
- Did we remember to take our emergency kit and class roster when we evacuated the classroom?
- Did everyone go to the safe outdoor area in an orderly way?
- If we had to change our evacuation route to get to the safe area, did we make wise decisions?

**Display
Visual 18**



Activity: Adapting the Earthquake Drill

Instructions:

- Adapt the Earthquake Simulation and Evacuation Drill for use in your school:
 - In a classroom.
 - In the cafeteria, auditorium, or library.
 - On a school bus.
 - At an outside location.
- Be prepared to review or to run the adapted drill in 30 minutes.

Instructor Notes: Conduct the following activity.

Preparation: This is an optional activity and can be conducted if time permits. The activity may be to only discuss the changes made to the drill or to actually run the drill, as revised. Divide the class into groups and assign each group a different location or situation that suits the needs of your school. Sample locations include:

- A classroom.
- The cafeteria or auditorium.
- On the bus.
- An outside location.

Purpose: This activity will enable the participants to adapt the earthquake simulation and evacuation drill reviewed in the previous activity to a different location or situation.

Estimated Time: 45 minutes (30 minutes activity + 15 minutes debrief)

Instructions:

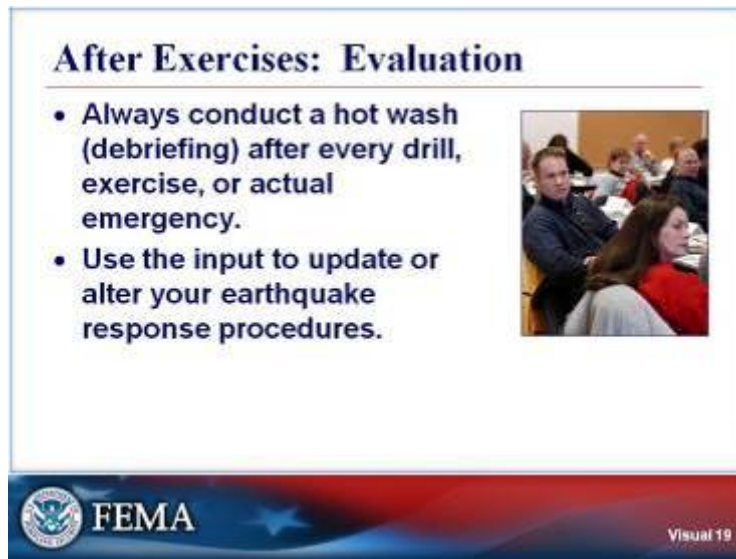
1. Work in your assigned groups.
2. Revise the Earthquake Simulation and Evacuation Drill from the previous activity, including the procedure, script, and checklist, to fit the new location or situation assigned by the instructor.
3. Be prepared to discuss or run your revised drill in 30 minutes.

Debrief:

After 30 minutes, ask each group to run their revised drill (if time permits). If time is short, ask each group to summarize their changes to the activity.


If necessary, provide the following example. If the location of the drill is changed to the library, the required changes would include:



- Identifying who will “run” the activity (e.g., the librarian, or a classroom teacher who is in the library with students).
- Revising the simulation script to be relevant to library setting instead of classroom setting.
- Adapting the objectives to include:
 - Identifying the need to quickly locate a desk/table under which to take cover when the earthquake begins.
 - Evacuating the building using a different route than the one they would have followed from their classroom.



After Exercises: Evaluation

- Always conduct a hot wash (debriefing) after every drill, exercise, or actual emergency.
- Use the input to update or alter your earthquake response procedures.



 **FEMA**  Visual 19

Instructor Notes: Present the following key points.

After an exercise, it is important to evaluate the performance during a debriefing session.

A debriefing, also known as a “hot wash,” gives all who participated in a drill, exercise, or actual emergency the opportunity to discuss results and suggest improvements.

Hot wash input can be used to update or alter your school’s earthquake response procedures.

Suggestions for collecting debrief input are provided, beginning on the next page.

Tips for Evaluating Exercise Performance

Overall Tips

- Follow the HSEEP Exercise Evaluation Guidelines that help evaluators compare the exercise objectives to the actual observations and results.
- Schedule an After-Action Review (AAR) as soon after the incident as possible.
- Keep it short and focused.
- Focus on WHAT, not WHO.
- Establish clear ground rules: encourage candor and openness (this is dialog—not lecture or debate); focus on items that can be fixed; keep all discussions confidential.
- Use a skilled facilitator to conduct the AAR.

AAR Process Steps

Use the following questions to facilitate the AAR process:

1. What did we set out to do?
 - Establish the facts.
 - Determine purpose of the mission and definition of success.
 - Identify the skills from the Target Capabilities List (TCL) on which the exercise was to focus (e.g., communications, mass care, onsite incident management).
 - Identify key tasks involved.
 - Specify conditions under which each task may need to be performed (weather, topography, time restrictions, etc.).
 - Define acceptable standards for success (explain what “Right” looks like).
2. What actually happened?
 - Continue to establish the facts.
 - Participants should come to agreement on what actually happened.
 - Pool multiple perspectives to build a shared picture of what happened.
3. Why did it happen?
 - Analyze cause and effect.
 - Focus on WHAT, not WHO.
 - Provide progressive refinement for drawing out explanations of what occurred. This will lead into developing possible solutions.
4. What are we going to do better next time?
 - Solutions will arise naturally once problems are identified and understood.
 - Focus on items you can fix, rather than external forces outside of your control.
 - Identify areas where groups are performing well and that should be sustained. This will help repeat success and create a balanced approach to the AAR.
 - Areas To Sustain/Maintain Strengths:
 - Areas To Improve Weaknesses:

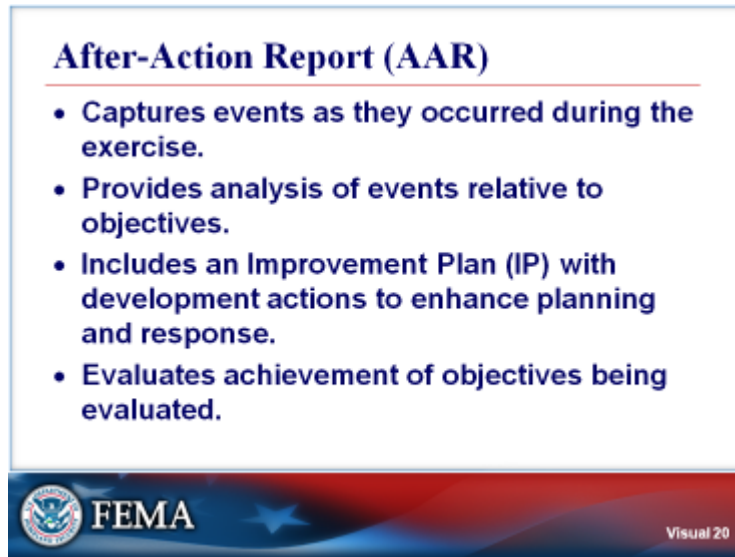
Tips for Evaluating Exercise Performance (Continued)

AAR Process Steps (Continued)

5. Are there lessons learned that should be shared immediately?
 - Identify the process for sharing lessons learned.
 - Option 1: Document the Issue, Discussion, Recommendation
 - Option 2: Document the Concept of the Operation, Results, Trends, Recommendation
 - Determine and describe the most notable successes from the incident.
 - Determine and describe the most difficult challenges faced and how they were overcome.

6. What followup is needed?
 - Be specific about actions, timelines, and responsibilities.
 - What changes, additions, or deletions are recommended to SOPs, plans, or training?
 - What issues were not resolved to your satisfaction and need further review?

**Display
Visual 20**



After-Action Report (AAR)

- Captures events as they occurred during the exercise.
- Provides analysis of events relative to objectives.
- Includes an Improvement Plan (IP) with development actions to enhance planning and response.
- Evaluates achievement of objectives being evaluated.

FEMA Visual 20

Instructor Notes: Present the following key points.

Part of the post-exercise evaluation involves the development of an After-Action Report (AAR).

The AAR is a formal reporting process that:

- Captures events as they occurred during the exercise.
- Provides analysis of events relative to objectives.
- Includes an Improvement Plan (IP) with development actions to enhance planning and response.
- Evaluates achievement of objectives being evaluated.

The After-Action Report content guidelines are designed to support both discussion-based and operations-based exercises.

The AAR begins with the following elements:

- Title Page
- Administrative Handling Instructions
- Contents
- Executive Summary

Section 1: Exercise Overview includes identifying information such as the exercise name, date, and duration.

Section 2: Exercise Design Summary includes overarching exercise purpose and goals; capabilities, activities, and tasks identified for demonstration; exercise objectives; summary of designed initiation event(s) and/or key scenario events; and planned simulations.

AAR Elements (Continued)

Due to the nature of certain discussion-based exercises, including seminars and workshops, Section 3: Analysis of Capabilities, may be abbreviated and additional sections may be added including:

- Overview of speaker presentations.
- Summary of discussion points, results, and recommendations.

Section 4 is the Conclusion.

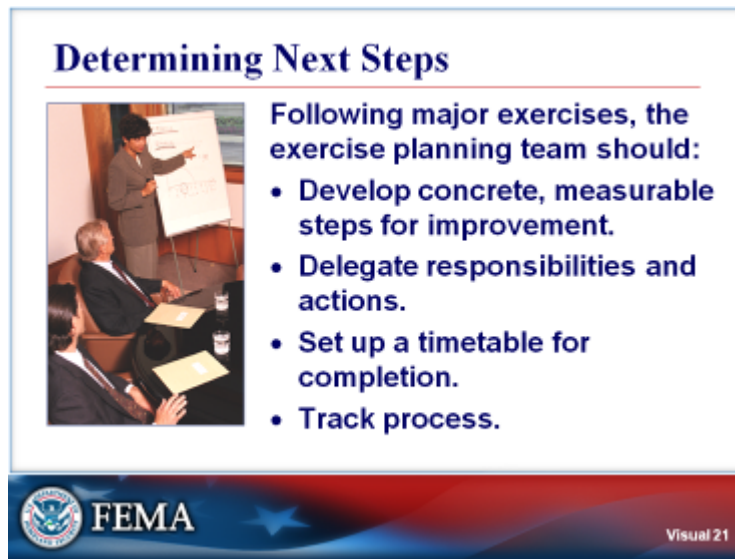
Any applicable appendixes should also be added to the AAR, such as:

- Appendix A: Improvement Plan
- Appendix B: Lessons Learned (Optional)
- Appendix C: Participant Feedback Summary (Optional)
- Appendix D: Exercise Events Summary Table (Optional)
- Appendix E: Performance Ratings (Optional)
- Appendix F: Acronyms

The Improvement Plan is formatted in table format and includes a column for each of the elements listed on the visual. The initial draft IP is created as Appendix A in the AAR. This draft includes only the first two columns: Capability and Observation Title.

An After-Action Conference is then conducted to complete the remaining IP columns and the fully completed IP is published with the AAR. The final IP includes an identified responsible party for the implementation of the corrective action and timelines for completion of the corrective action.

Display
Visual 21



Determining Next Steps

Following major exercises, the exercise planning team should:

- Develop concrete, measurable steps for improvement.
- Delegate responsibilities and actions.
- Set up a timetable for completion.
- Track process.

FEMA Visual 21

Instructor Notes: Present the following key points.



After an exercise, the exercise planning team should complete the following actions in order to determine the next steps:

- Develop concrete, measurable steps for improvement.
- Delegate responsibilities and actions.
- Set up a timetable for completion.
- Track process.

Display
Visual 22

Track and Implement Corrective Actions

- Track corrective actions.
- Review feedback, AARs, and IPs.
- Assess progress.
- Analyze information to identify needs.
- Continue tracking and implementation as part of a corrective action program.



Visual 22

Instructor Notes: Present the following key points.

The final step in the HSEEP process is to track and implement corrective actions identified in the After-Action Report (AAR) and Improvement Plan (IP).

Guidelines for this step include:

- Track corrective actions to completion.
- Review exercise feedback, AARs, and IPs.
- Assess progress.
- Incorporate analysis and information into the process to identify the need for additional equipment, training, exercises, coordination, plans, or procedures.
- Continue tracking and implementation as part of a corrective action program.

Display
Visual 23



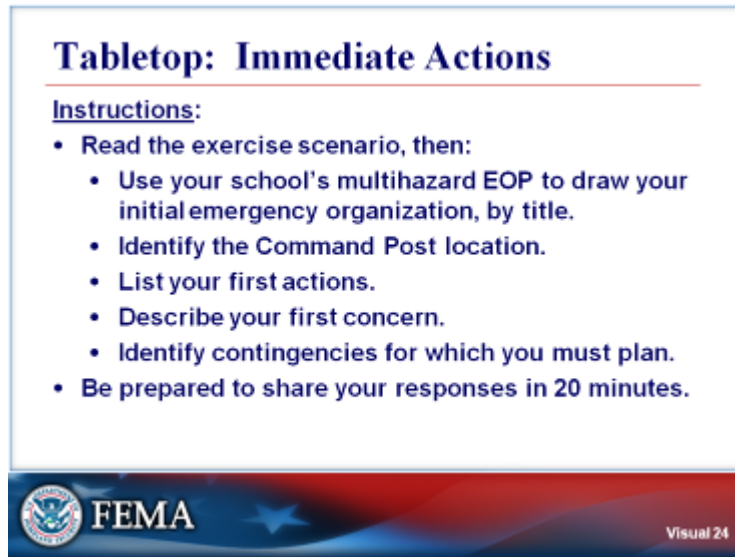
Instructor Notes: Present the following key points.

Exercises should be conducted on a regular basis, according to a Multi-Year Training and Exercise Plan.

When developing this plan:

- Use a cycle of increasingly complex exercises.
- Build upon lessons learned from previous exercises or actual incidents.

Display
Visual 24



Tabletop: Immediate Actions

Instructions:

- Read the exercise scenario, then:
 - Use your school's multihazard EOP to draw your initial emergency organization, by title.
 - Identify the Command Post location.
 - List your first actions.
 - Describe your first concern.
 - Identify contingencies for which you must plan.
- Be prepared to share your responses in 20 minutes.

FEMA Visual 24

Instructor Notes: Conduct the activity as follows.

Purpose: The purpose of this activity is to plan the immediate actions to take during an earthquake response. The activity is divided into three parts: Immediate Actions, Update #1, and Update #2.

Estimated Time (for Part 1): 30 minutes (20 minutes activity + 10 minutes debrief)

Instructions:

1. Review the scenario:

Hillside School is located in a suburb of a major city. In addition to the principal, the school has 46 faculty members, 2 full-time counselors, a nurse, 3 secretaries, 7 cafeteria workers, and 3 custodians. On any given day, 8 to 10 parent-volunteers are also in the building.

This morning at 9:45 a.m., your community was struck by a severe earthquake. The earthquake has caused extensive damage to a large part of the community. All utilities are out. The school is currently lit by emergency lighting only. The area around the school office appears to have sustained only minor damage. Damage to the remainder of the building is undetermined as yet, but one custodian has radioed that a storage area wall has collapsed. You know from experience to expect multiple aftershocks, some of which may be severe. You also know from attending meetings with local officials that, in the event of a severe quake, it could take up to 2 days before first responders reach the school. You must organize to help yourselves and protect the students.

2. Complete the tasks listed in the visual.
3. Be prepared to share your responses in 20 minutes.

Debrief:

After 20 minutes, ask:

What is your initial emergency organization, by title?

Where is your Command Post location?

What are your first actions?

What is your first concern?

For what contingencies must you plan?

Allow volunteers from different groups to answer each question. Acknowledge the responses. If not mentioned, add the suggested responses below.

1. You will use ICS to establish your management structure and manage this incident. Draw your initial emergency organization, by title, in the space below.

Focus on the rationale behind the groups' organization charts. At a minimum, the groups' organization charts should include an Incident Commander, a Safety Officer, and Section Chiefs. Point out that it is better to keep the span of control small.

2. Identify your Command Post location for this incident.

Because you are unsure of the amount of damage and the risk of additional damage resulting from aftershocks, the Command Post should not be located inside the building. The groups should provide a specific location based on safety factors, proximity to the building, etc.

3. List the first actions you will take.

Size up the situation! Is everyone out of the building and out of harm's way? How many people have been injured? How seriously? What resources are available to help? What is the condition of the building? What else could go wrong if an aftershock occurs? After an aftershock (depending on the magnitude), it is important to start the process over with another accountability and situational awareness report.

4. Describe your first concern in this situation.

The groups' first concern should be the safety of the students, faculty, staff, and others on campus. Ensure that all who are able to evacuate do and that student accounting procedures are proceeding.

5. Identify contingencies for which you must plan.

An aftershock is likely to be first on the groups' lists. Assuming that all who are ambulatory have been evacuated to a place that is at a safe distance from the building, other contingencies might include the possibility that:


- There are multiple serious injuries and/or fatalities.
- The school's water supply has been disrupted.
- Parents begin arriving to pick up their children.

Display
Visual 25

Tabletop: Update #1

Instructions:

- Read the update to the scenario, then:
 - How does the new information change your plan?
 - Choose the location of the medical area.
 - Describe how you will communicate with first responders and others who need information.
 - Given staffing and known damage, identify contingencies to include in planning.
 - Describe what you would need if any students stay overnight.
- Be prepared to share your responses in 20 minutes.



Instructor Notes: Conduct the activity as follows.

Purpose: The purpose of this part of the activity is to plan to take action for contingencies that may occur as the earthquake response continues.

Estimated Time (for Part 2): 30 minutes (20 minutes activity + 10 minutes debrief)

Instructions:

1. Review the update to the scenario.

The area has experienced several aftershocks of moderate intensity. The aftershocks have caused additional collapse in the gymnasium area. Those who could evacuate the building have assembled in the designated area, and student accountability procedures are underway.

The gymnasium has collapsed, and a class that was in the gymnasium at the time has not evacuated. There has been no communication with either the students or their teacher as of this point. Several students were injured when they were struck by falling debris. One teacher was struck by flying glass and is seriously injured. A custodian has suffered what appears to be a heart attack. Several students who are asthmatic are reporting difficulty breathing, and the school nurse left the building without bringing student medications. These injuries and illnesses are overwhelming the staff members who are assigned to the Medical Group.

There are no reports of fires as of yet. The phone system is out because of the electricity interruption. You can see that a water main two blocks from the school has ruptured. Damage to the community that is visible from the campus looks severe.

Instructions: (Continued)

2. Complete the tasks listed in the visual.
3. Be prepared to share your responses in 20 minutes.

Debrief:

After 20 minutes, ask:

How does the new information change your plan?

Where is the location of the medical area?

How will you communicate with first responders and others who need information?

Given staffing and known damage, what contingencies must you include in planning?

What would you need if any students stay overnight?

Allow volunteers from different groups to answer each question. Acknowledge the responses. If not mentioned, add the suggested responses below.

1. Describe how this new information changes your planning.

The groups now know that there have been injuries and that some may be severe. Additional personnel must be assigned to assist the Medical Group, and a system for triaging the victims should be established. If necessary, the Medical Group should be divided into a Triage Group and a Treatment Group to maintain an adequate span of control.

Given the fact that the gymnasium has collapsed, establishing search and rescue would be too dangerous for the rescuers. No search and rescue effort should be attempted at this time.

Proper deployment of resources may be another factor. What are the incident needs? Are there needs that are, as yet, unmet?

Water conservation is another factor. The groups know that there is a broken water main. Medical uses should be the first priority for the available water. Drinking should be the second priority. Hygiene uses are a much lower priority at this time.

2. Determine where to locate the medical area.

The medical treatment area should be located away from the damage, uphill and upwind from any possible airborne hazards, and in an area that affords privacy to the victims.

Debrief: (Continued)

3. Describe how you will communicate with first responders and others who need information about your situation.

There will be numerous emergency calls throughout the affected area, and the schools may not be able to reach response agencies immediately. Communication with the media and with parents may be impossible at this time. Parents should know critical information about what to do in this situation, including what to do if the school is unable to notify them.

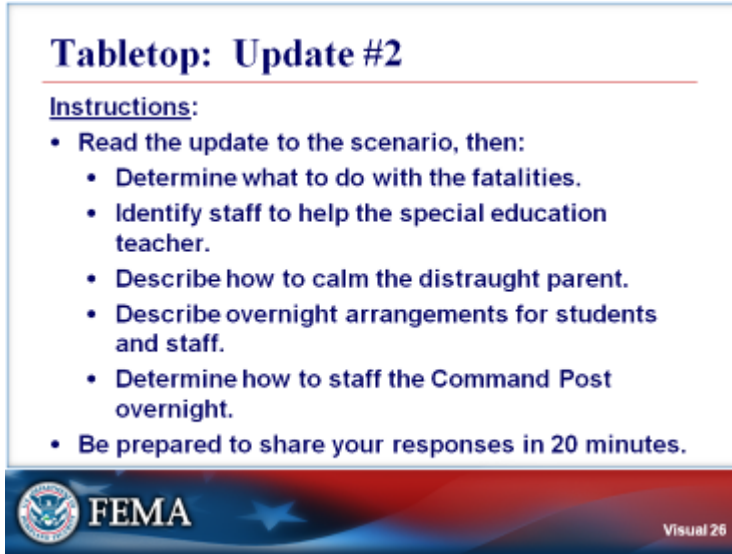
4. Given staffing and the known damage, identify contingencies to include in planning.

Some contingencies that should be mentioned include the possibilities that:

- **There are (or will be) one or more fatalities.**
- **There will not be enough water to meet even minimal needs.**
- **Some children will need to be accommodated overnight.**

5. Describe what you would need if any students stay overnight.

Food, blankets, and items to occupy the students.



Tabletop: Update #2

Instructions:

- Read the update to the scenario, then:
 - Determine what to do with the fatalities.
 - Identify staff to help the special education teacher.
 - Describe how to calm the distraught parent.
 - Describe overnight arrangements for students and staff.
 - Determine how to staff the Command Post overnight.
- Be prepared to share your responses in 20 minutes.

FEMA Visual 26

Instructor Notes: Conduct the activity as follows.

Purpose: The purpose of this part of the activity is to plan to take action for more contingencies that may occur as the earthquake response continues.

Estimated Time (for Part 3): 30 minutes (20 minutes activity + 10 minutes debrief)

Instructions:

1. Review the update to the scenario.

It is getting late in the day, and aftershocks are continuing. A few parents have arrived but because of the obvious damage in some areas of the community, it is becoming apparent that at least some students will have to spend the night.

An aftershock has caused further collapse of the building, including the area designated as the pickup point for parent/student reunification. A few parents have arrived and are unsure about what to do. One mother has a child trapped in the gymnasium collapse, and she is crying hysterically.

The custodian has died, as has one of the asthmatic students. The teacher who was injured is unconscious and has only a faint pulse. Also, there is still no word on the students and teacher who are in the collapsed gymnasium. Friends of the trapped students are crying.

The aftershocks have caused panic among the special education students who are not entirely aware of everything that is going on and why. Their teacher has sent an aide to the Command Post asking for assistance—quickly. You have contacted the 9-1-1 dispatcher, but all response personnel are currently deployed in other areas. The dispatcher is unsure when trained responders will arrive.

Instructions: (Continued)

2. Complete the tasks listed in the visual.
3. Be prepared to share your responses in 20 minutes.

Debrief:

After 20 minutes, ask:

What will you do with the fatalities?

What staff member(s) will help the special education teacher?

How will you calm the distraught parent?

What overnight arrangements will you make for students and staff?

How will you staff the Command Post overnight?

Allow volunteers from different groups to answer each question. Acknowledge the responses. If not mentioned, add the suggested responses below.

1. Determine what to do with the fatalities.

The remains of the deceased should be moved to an area where they will be out of sight from staff and students and covered completely with a blanket or tarp. A member of the staff should ensure that no one enters the area until professional help arrives.

2. Identify staff to help the special education teacher.

The Planning Section Chief should maintain a list of available staff. (If there is no Planning Section Chief assigned, this responsibility rests with the Incident Commander.)

3. Describe how to calm the distraught parent.

Separate the parent from others where she can be calmed.

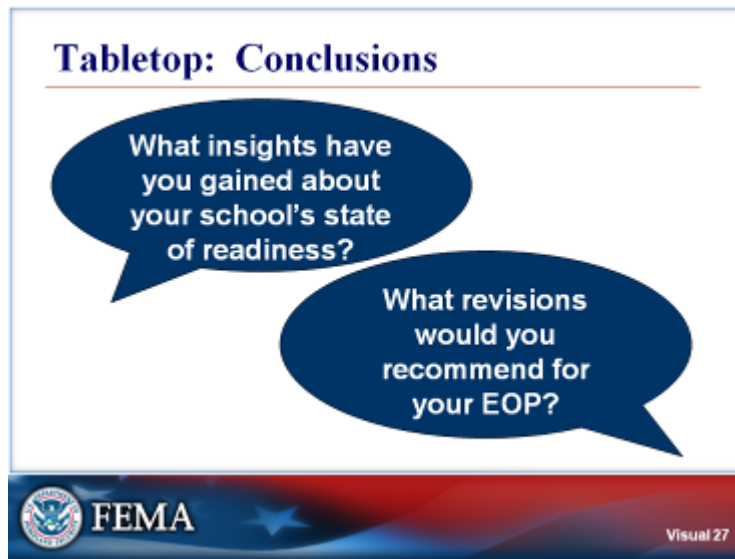
4. Describe overnight arrangements for students and staff.

Keep the students in the assembly area and within their class structures but try to spread them out so that they can lie down. If blankets are available, distribute blankets to the students. Teachers should sleep in shifts, with one buddy always being awake throughout the night.

5. Determine how to staff the Command Post overnight.

To allow the Incident Commander to rest, command should be transferred to the individual who is designated in the school plan as next in the line of succession. When transferring command, the outgoing Incident Commander must ensure that the incoming Incident Commander receives a complete report of the situation status.

Display
Visual 27



Instructor Notes: Present the following key points.

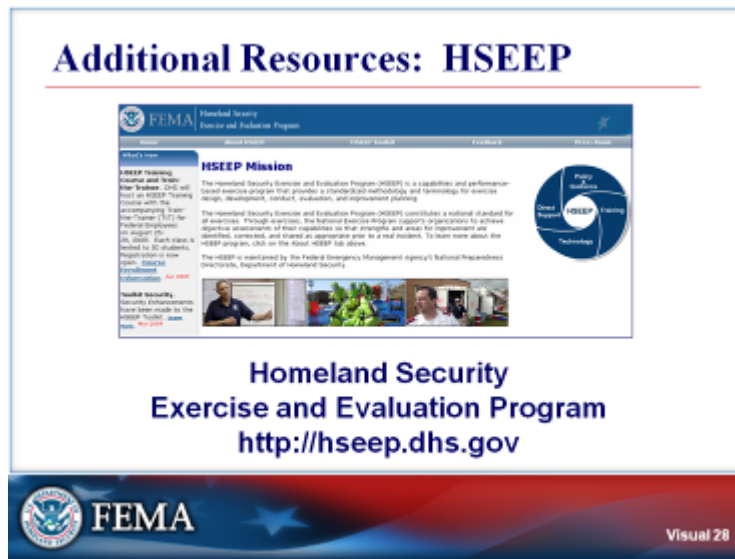
To conclude the tabletop exercise, ask:

What insights have you gained about your school's state of readiness?

What revisions would you recommend for your EOP?

Acknowledge the responses. If not mentioned, add any observations or suggestions from your own experience and understanding of the school's EOP.

Display
Visual 28



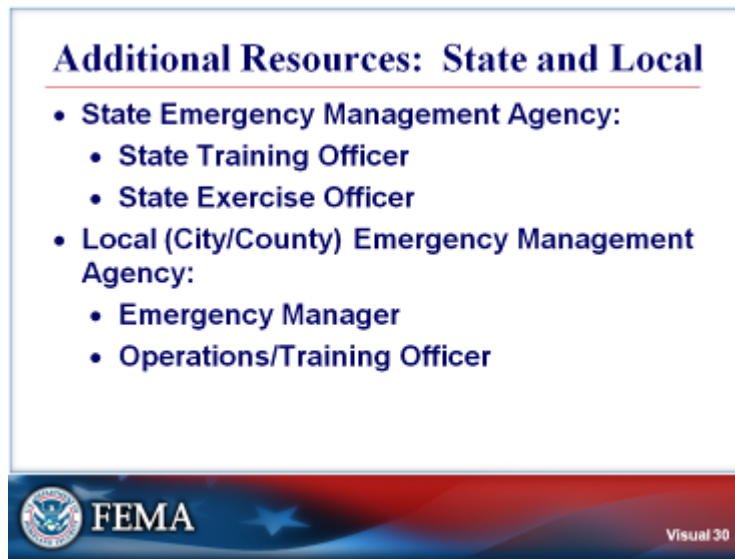
Instructor Notes: Present the following key points.

The Homeland Security Exercise and Evaluation Program (HSEEP) is a capabilities- and performance-based exercise program that provides a standardized methodology and terminology for exercise design, development, conduct, evaluation, and improvement planning.

The HSEEP Web site contains documents relating to the development of training and exercises to evaluate your school's EOP, including:

- **HSEEP Policy and Guidance:** An overview of HSEEP guidance, including HSEEP 101, Volume I: HSEEP Overview and Exercise Program Management, Volume II: Exercise Planning and Conduct, Volume III: Exercise Evaluation and Improvement Planning Exercise Evaluation Guides (EEG), Volume IV Library: Sample Exercise Materials, and HSEEP Prevention Exercises
- **HSEEP Compliance Job Aid**
- **Training and Exercise Planning Workshop User's Handbook**
- **HSEEP AAR-IP Template 2007**
- **Draft template for a Multi-Year Training and Exercise Plan**
- **HSEEP Toolkit:** An interactive, online collection of systems and tools for exercise scheduling, design, development, conduct, evaluation, and improvement planning.

Display
Visual 30



Additional Resources: State and Local

- **State Emergency Management Agency:**
 - State Training Officer
 - State Exercise Officer
- **Local (City/County) Emergency Management Agency:**
 - Emergency Manager
 - Operations/Training Officer

FEMA Visual 30

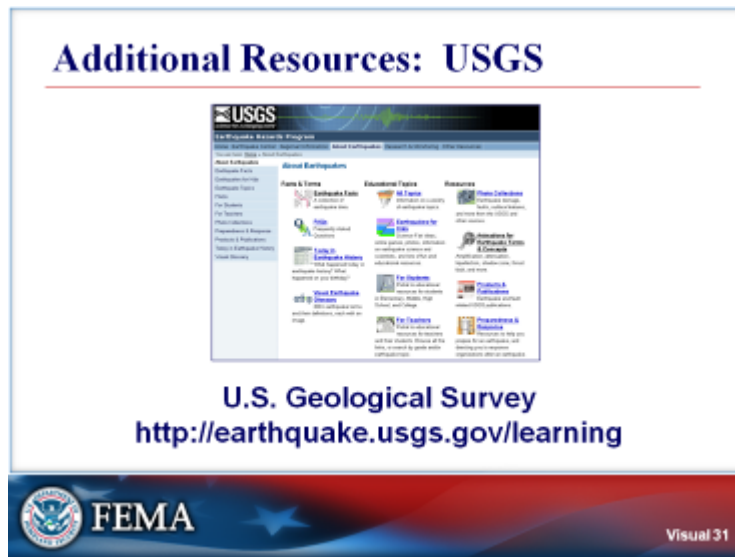
Instructor Notes: Present the following key points.

Contact your State Emergency Management Agency to request assistance from the State Training Officer or State Exercise Officer.

The city or county Emergency Management Agency is another valuable resource. Contact the Emergency Manager or Operations/Training Officer for assistance.

These resources can provide information about earthquake hazards in your area and community emergency response procedures that may affect your school.

Display
Visual 31



Instructor Notes: Present the following key points.

The U.S. Geological Survey (USGS) Web site provides numerous training resources.

Site resources include earthquake terminology (including animations that can be downloaded) and a PowerPoint presentation explaining earthquakes.

Other resources include:

- **For Teachers** is a portal that includes educational resources for teachers and their students. Browse all the links, or search by grade and/or earthquake topic. It includes links to lesson plans, interactive Web sites, learning activities, and more.
- **Earthquake for Kids** contains information specifically targeted toward younger children.
- **For Students** includes resources for students in elementary, middle, and high school, and in college.
- **Learning Links** is a database of educational materials related to earthquakes and plate tectonics that includes lesson plans, interactive Web sites, learning activities, and more.

Additional Resources: Resource Centers

- **Arkansas Center for Earthquake Education and Technology Transfer:**
<http://quake.ualr.edu/schools/>
- **Mid-America Earthquake Center:**
http://mae.ce.uiuc.edu/K-12/teacher_resources.html
- **Public Earthquake Resource Center:**
<http://www.ceri.memphis.edu/perc/>

The slide features three logos: the Arkansas Center for Earthquake Education and Technology Transfer logo, the Mid-America Earthquake Center logo, and the Public Earthquake Resource Center logo. At the bottom of the slide is the FEMA logo and the text 'Visual 32'.

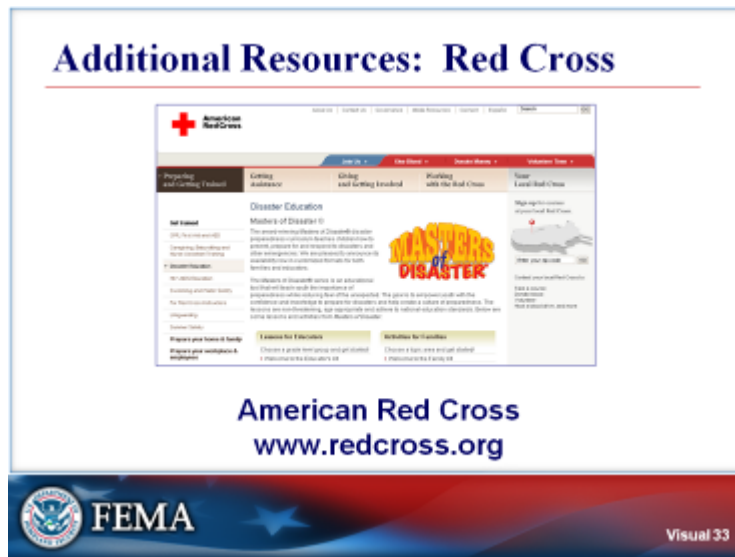
Instructor Notes: Present the following key points.

The **Arkansas Center for Earthquake Education and Technology Transfer** site provides a wide variety of earthquake education and preparedness resources. It includes lesson plans for all age groups, including preschool. The site also has a review page for their extensive, downloadable school teacher and administrator preparedness and mitigation guidebook.

The **Mid-America Earthquake Center** site provides links to earthquake informational sites, lesson plans, and activities. This site compiles several sources of information to assist teachers. Resources include detailed lesson plans for elementary, middle, and high school on what an earthquake is, how to prepare, and what to do during an earthquake. This site includes information about the New Madrid earthquake and the Mississippi valley.

The **Public Earthquake Resource Center (PERC)** is an education and outreach program developed by the Center for Earthquake Research and Information (CERI) at the University of Memphis. The site contains K-12 resources for children to explore and resources for teachers, including links to lesson plans and activities.

Display Visual 33



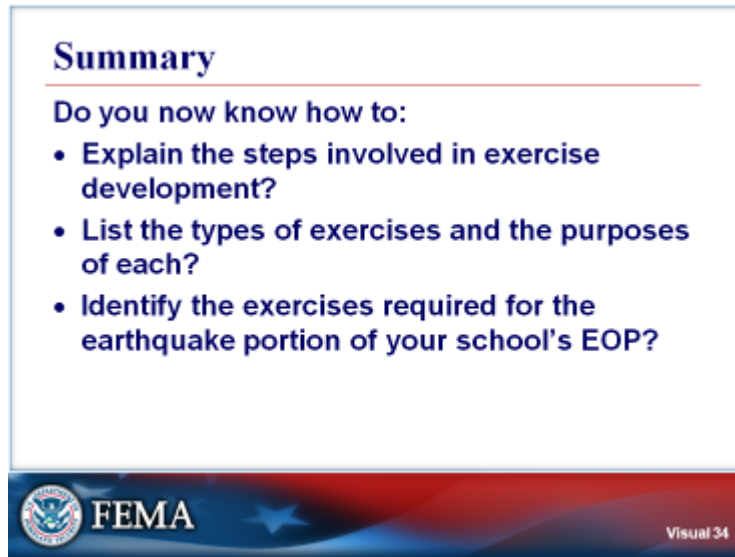
Instructor Notes: Present the following key points.

The American Red Cross Web site includes a "Tools for Teachers and Parents" page, with valuable disaster-related resources.

- **Masters of Disaster** is a curriculum for teachers to use to integrate hazard safety into regular academic lesson plans in math, science, social studies, and language arts. The curriculum is available in three complete kits for teachers of Grades K-2, Grades 3-5, and Grades 6-8. The site also includes materials for Grades 9-12 on the topics of "Facing Fear" and "In the Aftermath." The materials are available through your local Red Cross chapter.
- **Be Ready 1-2-3** is an 8-page workbook (with an accompanying Instructor Guide) that helps children ages 5-8 learn about earthquakes through activities and demonstrations led by an "expert," Disaster Dog. This publication is available online (in English, Spanish, or Vietnamese) or in print through your local Red Cross chapter (stock number A5017).

Topic	Unit Summary
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Display
Visual 34



Summary

Do you now know how to:

- Explain the steps involved in exercise development?
- List the types of exercises and the purposes of each?
- Identify the exercises required for the earthquake portion of your school's EOP?

FEMA Visual 34

Instructor Notes: Present the following key points.

This unit reviewed training and exercises to test an earthquake response plan.

Ask:

Are you now able to:

- Explain the steps involved in exercise development?
- List the types of exercises and the purposes of each?
- Identify the exercises required for the earthquake portion of your school's Emergency Operations Plan (EOP)?

Facilitate a discussion and answer any questions before concluding the training.

Course Summary

Course Summary

Unit Objectives

At the end of this unit, the participants should be able to implement the course goal and objectives.

Scope

- Unit Introduction
 - Course Review
 - Course Conclusion
-

Methodology

The instructor will introduce this unit by reviewing the major topics covered in this course. During this section of the unit, the instructor will allow time for participants to discuss lessons learned and ask any remaining questions.

Next, the participants will provide written feedback about the course by filling out the course evaluation form. Finally, the instructor will thank the participants for their time and attention and adjourn the class.

Course Summary

Time Plan

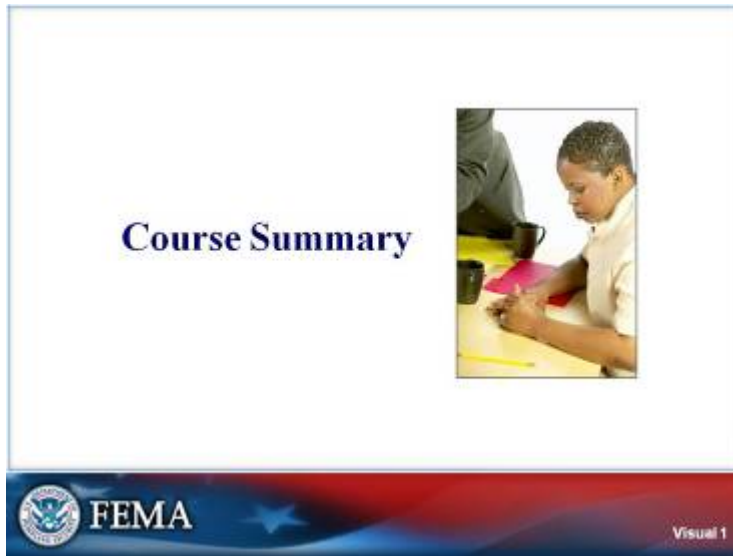
A suggested time plan for this unit is shown below. More or less time may be required, based on the experience level of the group.

Topic	Time
Unit Introduction	5 minutes
Course Review	5 minutes
Course Conclusion	5 minutes
Total Time	15 minutes

Topic

Unit Introduction

Display
Visual 1



Instructor Notes: Present the following key points.

This unit summarizes the course content and offers participants an opportunity to ask remaining questions.

Display
Visual 2



Instructor Notes: Present the following key points.

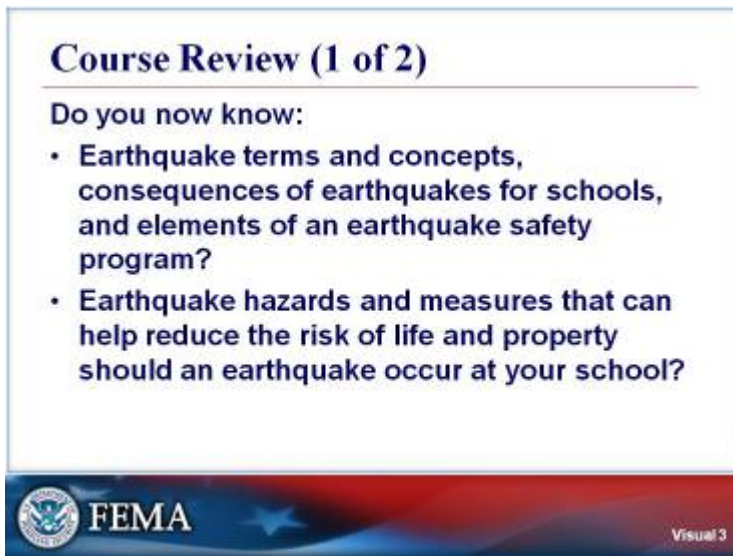
The goal of this course was to prepare school staff and administrators for an earthquake at their school location.

The course was designed to describe the effects of an earthquake; explain how to mitigate those effects; state the key elements of an earthquake plan for preparedness, response, and recovery; and outline the procedures for training and exercises related to that emergency plan.

Ask participants: **Was the course goal achieved?**

Acknowledge the responses.

Display
Visual 3



Instructor Notes: Present the following key points.

Ask participants: **Do you now know earthquake terms and concepts, consequences of earthquakes for schools, and elements of an earthquake safety program?**

Acknowledge the responses and answer any questions. Note that the Earthquake Basics unit, covered this topic and prepared the participants to:

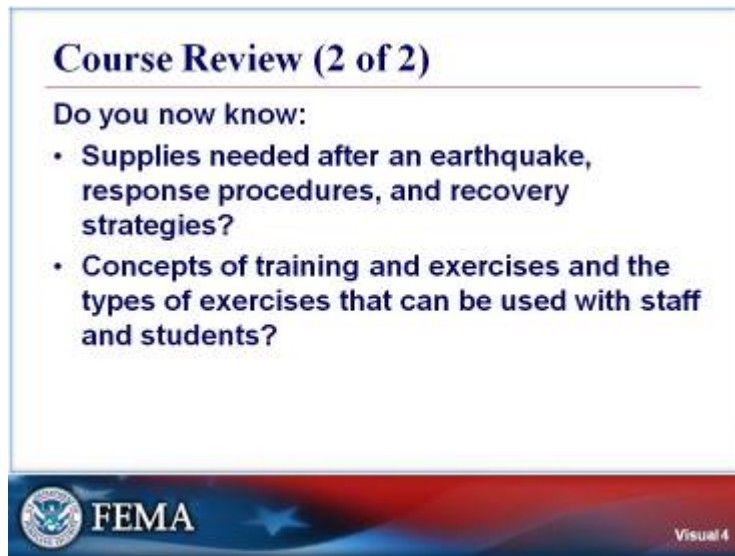
- Describe how an earthquake occurs.
- Describe possible consequences of an earthquake at their school.
- Identify the actions that are included in an earthquake safety program.

Ask participants: **Do you now know earthquake hazards and measures that can help reduce the risk of life and property should an earthquake occur at your school?**

Acknowledge the responses and answer any questions. Note that the Earthquake Mitigation unit covered this topic and prepared the participants to:

- Identify the earthquake hazards in and around their school.
- Identify mitigation measures that can be taken.

Topic**Course Review (Continued)**

**Display
Visual 4**

Instructor Notes: Present the following key points.

Ask participants: **Do you now know the supplies needed after an earthquake, response procedures, and recovery strategies?**

Acknowledge the responses and answer any questions. Note that the Earthquake Planning unit covered this topic and prepared the participants to:

- Explain how earthquake preparedness fits within their school's multihazard plan.
- Identify supplies and equipment needed to prepare students, classrooms, and the entire school.
- Describe response priorities and procedures.
- Describe recovery techniques.

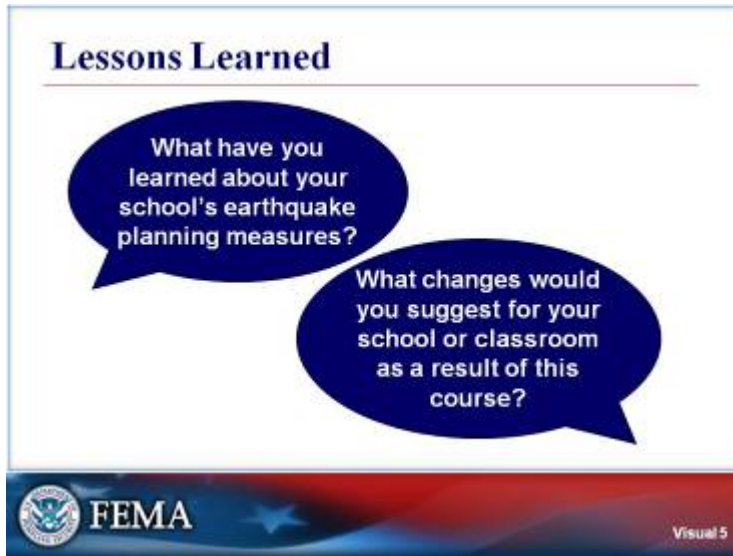
Ask participants: **Do you now know concepts of training and exercises and the types of exercises that can be used with staff and students?**

Acknowledge the responses and answer any questions. Note that the Training and Exercises unit covered this topic and prepared the participants to:

- Explain the steps involved in exercise development.
- List the types of exercises and the purposes of each.
- Identify the exercises required for the earthquake portion of their school's Emergency Operations Plan (EOP).

Address any remaining questions before proceeding.

**Display
Visual 5**



Instructor Notes: Present the following key points.

Ask participants: **What have you learned about your school's earthquake planning measures?**

Acknowledge the responses. Refer to the list of participant expectations created during the Course Introduction. Facilitate a brief discussion of the expectations that were met and note that the Web resources presented throughout the course can provide additional information.

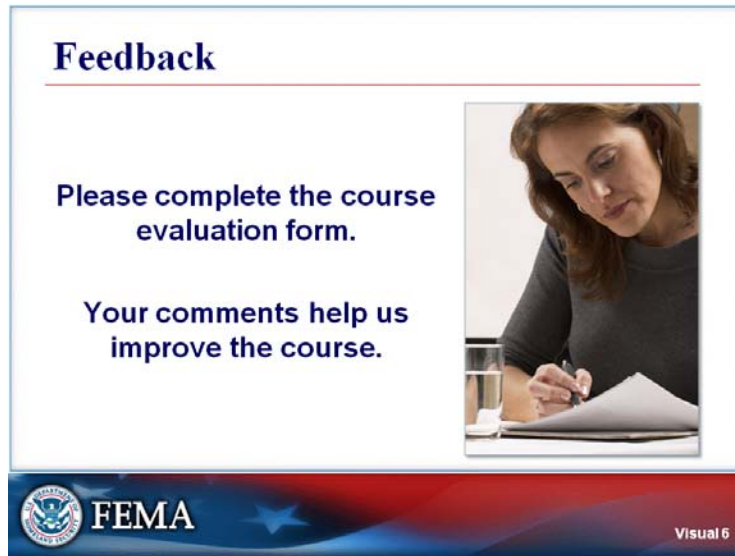
Ask participants: **What changes would you suggest for your school or classroom as a result of this course?**

Acknowledge the responses. Possible responses include tasks related to identifying earthquake hazards, mitigating risks, preparation activities for those hazards that cannot be mitigated, training or exercises on earthquake procedures, and recovery strategies. Such actions are critical for the safety of school staff and students during and after an earthquake.

Topic

Course Conclusion

Display
Visual 6



Instructor Notes: Present the following key points.

Feedback is valuable when updating and/or revising this course. Please take the time to complete the course evaluation form.

Topic

Course Conclusion (Continued)

Display
Visual 7



Instructor Notes: Adjourn the class.

Thank the participants for attending the course and adjourn the class.