GEORGIA | PEACH STATE PATHWAYS

Career, Technical, & Agricultural Education

HEALTHCARE SCIENCE

COURSE: 25.564 Emergency and Disaster Preparedness

UNIT: 17.1 Debris Removal and Victim Extrication

INTRODUCTION

Annotation:

This unit will introduce students to the components of search and rescue. Students will examine situations that require assessing the scene, removal of debris, extrication of victims, and communication with other rescuers. Safety will be emphasized throughout the lesson. Students will practice and demonstrate skills related to debris removal and victim extrication.

Grade(s):

X	9th
X	10th
X	11th
X	12th

Time: Ten 50 minute periods

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Students with Disabilities:

For students with disabilities, the instructor should refer to the student's IEP to be sure that the accommodations specified are being provided. Instructors should also familiarize themselves with the provisions of Behavior Intervention Plans that may be part of a student's IEP. Frequent consultation with a student's special education instructor will be beneficial in providing appropriate differentiation.

FOCUS STANDARDS

GPS Focus Standards:

HS-EDP-7 Students will analyze the components of an effective search and rescue operation (size-up, search, and rescue) including the methods/techniques that rescuers can use to locate and safely remove victims.

a. Identify size-up requirements for potential search and rescue situations.

b. Describe the most common techniques for searching a structure.

c. Distinguish between simple and complex access.

d. Demonstrate the use of safe techniques for debris removal and victim extrication, including but not limited to: the use of fulcrums and leverage, cribbing techniques, and victim transportation maneuvers.

e. Describe methods to protect rescuers during search and rescue operations.

f. Understand the role that maps and Global Positioning Systems (GPS) play in search and rescue operation.

g. Demonstrate proper communication with both emergency dispatch (911) and other rescuers.

GPS Academic Standards:

ELA11C1. The student demonstrates understanding and control of the rules of the English language, realizing that usage involves the appropriate application of conventions and grammar in both written and spoken formats.

National / Local Standards / Industry / ISTE:

UNDERSTANDINGS & GOALS

Enduring Understandings:

Disasters can cause a number of problems that have to resolved, some of which need to be resolved immediately and others that require long-term solutions. Management of debris is one such issue. Students will understand what types of debris may be created after different types of disasters. Students will understand the government's role in debris removal. Students will understand how to remove debris appropriately from personal property and/or contact the appropriate resources for assistance with debris removal. Students will understand cribbing techniques.

Essential Questions:

- What are different types of debris and how is each handled?
- What is the government's role in debris removal?
- What is cribbing and when should it be used?

Knowledge from this Unit:

- Student knows the different categories of debris and how each is handled.
- Student knows the government's role in debris removal as well as personal responsibilities.
- Student knows how to implement techniques for extricating a when and how to initiate cribbing techniques.

Skills from this Unit:

- Student can take action to remove debris appropriately from personal property and/or contact the appropriate resources for assistance with debris removal.
- Student can use cribbing techniques for debris removal or victim extrication.
- Student can safely extricate victims.
- Student can use a handheld GPS to mark coordinates and set landmarks.

ASSESSMENT(S)

Assessment Method Type:

_____ Pre-test
_____ Objective assessment - multiple-choice, true- false, etc.
__ Quizzes/Tests
__ Unit test
_X_ Group project
_____ Individual project
_____ Self-assessment - May include practice quizzes, games, simulations, checklists, etc.
__ Self-check rubrics
__ Self-check during writing/planning process
__ Journal reflections on concepts, personal experiences and impact on one's life
__ Reflect on evaluations of work from teachers, business partners, and competition judges
__ Academic prompts
__ Practice quizzes/tests
_X_ Subjective assessment/Informal observations
__ Essay tests
__ Observe students working with partners
_X_ Observe students role playing
_____ Peer-assessment
__ Peer editing & commentary of products/projects/presentations using rubrics
__ Peer editing and/or critiquing
_____ Dialogue and Discussion
__ Student/teacher conferences
__ Partner and small group discussions
__ Whole group discussions
__ Interaction with/feedback from community members/speakers and business partners
_____ Constructed Responses
__ Chart good reading/writing/listening/speaking habits
__ Application of skills to real-life situations/scenarios
_____ Post-test

Assessment(s) Title:

- Mock Drill
- Poster and Public Service Announcement Audience Evaluation

Assessment(s) Description/Directions:

Mock Drill: Set up another classroom as if a tornado has struck the building. Overturn tables, chairs, furniture. Have student "victims" play roles (ask drama teacher if drama students would like to be mock victims). Have students hiding in individual voids and at least one mannequin underneath an item that requires cribbing. Use a light object such as folding table but place sign on it that indicates it is too heavy to lift by hand. Have signs on victims that indicate need for different carries/drags (legs crushed, can sit but not stand, etc).

Public Service Announcement Audience Evaluation: distribute when project is assigned so that students know expectations and know that peers will be evaluating project.

Attachments for Assessment(s):

LEARNING EXPERIENCES

Sequence of Instruction

1. Identify the Standards. Standards should be posted in the classroom for each lesson.

HS-EDP-7. Students will analyze the components of an effective search and rescue operation (size-up, search, and rescue) including the methods/techniques that rescuers can use to locate and safely remove victims.

ELA11C1. The student demonstrates understanding and control of the rules of the English language, realizing that usage involves the appropriate application of conventions and grammar in both written and spoken formats.

2. Review Essential Questions.

- What are different types of debris and how is each handled?
- What is the government's role in debris removal?
- What is cribbing and when should it be used?

3. Identify and review the unit vocabulary.

(Debris vocabulary to be introduced during lesson one; remaining vocabulary can be pre-assigned by having students define terms).

- Construction and demolition (C & D)
- Debris
- Cribbing
- Critical Spacing
- Disaster Debris
- Electronic waste
- Fulcrums
- Global Positioning System
- Household hazardous waste
- Leverage
- Municipal solid waste

- Vegetative debris
- White goods

4. Assessment Activity.

Pre-assign unit by having students read unit chapter in textbook for homework.

LESSON ONE

1. Write definition for "Disaster Debris" on board (see below). Ask students to imagine significant flooding that lasts days or weeks. Ask them what debris might be left behind when the water recedes. Write down student answers on board.

2. Take student answers and place into categories below, adding any items students missed. Have students copy final categories into their notes:

Disaster Debris: waster materials created as the result of a manmade or natural disaster, such as an earthquake, flood, hurricane, or terrorist attack.

May include:

- **Construction and demolition (C & D) debris**: building materials (which may include asbestos-containing materials), drywall, lumber, carpet, furniture, mattresses, and plumbing.
- **Electronic waste**: computers, televisions, printers, stereos, DVD players, telephones.
- **Household hazardous waste**: oil, pesticides, paints, cleaning agents.
- **Municipal solid waste**: general household trash and personal belongings.
- **Vegetative debris**: trees, branches, shrubs, and logs.
- **White goods**: refrigerators, freezers, washers, dryers, stoves, water heaters, dishwashers, air conditioners.

3. Ask students how they think each category of waste might be disposed of/managed (vegetative debris can be chipped, composted or burned; metals can be recycled; C & D waste can be partially recycled; household hazardous wastes can be separated and disposed of in specially designed landfills or incinerated; refrigerators/freezers can be emptied of spoiled foods and reused or recycled).

4. Explain government vs. personal responsibility in debris removal--see information at http://www.fema.gov/news/newsrelease.fema?id=47444

5. Wrap-up Activity: Have students look around the classroom and identify items that would fall into the different classifications of debris.

LESSON TWO

1. Warm-up activity: Ask students if they think that humans contribute to any natural disasters through their actions.

2. Show brief video about how mudslides work at http://videos.howstuffworks.com/howstuffworks/228-how-mudslides-work-video.htm

3. Show landslide slideshow.

4. As a group project, have students create a poster or PSA for communities at risk of landslides. You may want to split the groups and have some do posters and some do PSAs. This way the focus can be on both preparation and events after the occurrence of a landslide producing disaster. The poster will probably take a little longer to create, so plan when you would like for students to present, or have a group present each day.

For a poster presentation, they should include the following information, what can cause a landslide, health risks if it occurs, what can they do to prepare for a landslide, signs that might indicate that a landslide may occur, what they can do after a landslide, where kind of help may be available, who they should call. Give students the poster rubric and assignment.

For a PSA, assign students into groups of 3-4 and assign each group a topic from the list created-Landslide due to an earthquake, landslide due to a tornado, landslide due to a volcano erupting, landslide due to excessive rain after fire burned all of the trees from a mountainside, landslide due to the breaking of a dam, mudslide due to collapse of a bridge, landslide due to rapid melting of ice in arctic region. Have students visit the FEMA website to gather information about their topic (or print out information ahead of time if computer access limited).

3. Have each group create a 60 second Public Service Announcement telling the community what steps to take in the face of this emergency. This announcement would be broadcast on the television and radio as the emergency was taking place. Give each group 25-30 minutes to put together their announcements.

4. Have groups present announcement to class. Peers should evaluate announcements using attached form.

5. Wrap-Up Activity: Allow groups to review evaluations and discuss suggestions for improvement.

Attachments for Learning Experiences: PSA Audience Evaluation Form (Note: three per page, cut into slips to save paper. Can also use for a peer review before the final presentations if time allows).

6. Wrap-up activity: brainstorm what other "natural" disasters may be caused in part by human actions. Discuss.

Attachments for Learning Experiences: Landslide slideshow

Notes & Reflections: for a create-a-landslide activity, visit http://school.discoveryeducation.com/lessonplans/programs/landslides/

LESSON THREE

1. Warm-up Activity: ask students what they would do if a friend was trapped under a heavy item such as a piece of fallen concrete or furniture. Have them brainstorm potential solutions.

2. Draw a fulcrum and lever on the board. Use the Lever and Fulcrum lecture notes (attached) to explain the classes of levers and the Law of Equilibrium.

3. Have students use building blocks, rulers, yardsticks, and model cars (or other items such as soup cans) to experiment with different positioning of their fulcrums and levers. Have student draw their findings on a sheet of paper.

4. Wrap-Up Activity: discuss findings from activity. Instruct students to wear closed-toe shoes for cribbing exercise tomorrow.

Attachments for Learning Experiences: Lever and Fulcrum lecture notes, cribbing video.

LESSON FOUR

Set up before class: place full-body mannequin or CPR dummy under sheet of light plywood or upside-down folding table.

1. Warm-up Activity: ask students if they are familiar with term "cribbing" (many may think of this in relation to horses). Explain the purpose of cribbing in victim extrication

2. Show cribbing video (attached).

3. Have students wear protective gloves and practice cribbing with cribbing blocks.

4. Wrap-Up Activity: brainstorm the potential dangers of victim extrication and discuss the importance of safety over speed.

Attachments for Learning Experiences: Cribbing Video

LESSON FIVE

1. Warm-up Activity: Discuss different types of GPS units (handheld, cell phone, car, etc).

3. Show students how to use handheld GPS unit (general directions at http://www.ehow.com/how_7010_handheld-gps-system.html or can get directions specific to brand of unit).

4. Allow students to practice plotting coordinates and setting landmarks.

5. Wrap-up Activity: brainstorm reasons that GPS units should not be the only tool used

> Note from http://www.ehow.com/about_4696588_handheld-gps-systems.html
>
> Relying solely on a handheld GPS receiver when hiking or biking in vast areas can be dangerous. These devices should be used only as one part of a larger navigation plan. When planning any outdoor activity that carries the risk of getting lost, outdoorsmen should always bring a printed map and compass in case the handheld GPS receiver malfunctions, becomes damaged, or runs out of battery power.

LESSON SIX

NOTE: Set up for this activity takes approximately an hour, but the GPS coordinates can be erased and reused every year. Select three known points on campus (flagpole, for example) and note the coordinates. Select three unremarkable places on campus (in front of a specific plaque, for example) and note the coordinates. Each location should be at least 100 yards from each other location. At each location, post a sign on where to proceed (can laminate signs and reuse each year). At the flagpole, mark the coordinates of the next location and tell students to note where it is. At that location, tell them to proceed to a known location (baseball pitching mound) and mark the coordinates. Goal is to have students be able to find coordinates of unknown location and mark coordinates of known locations. Have students write down their findings. Optional: Place prize at end location for first team to arrive.

1. Warm-up Activity: Review key points of GPS usage from previous lesson.
2. GPS Scavenger Hunt. Tell students to start at the first location (flagpole) and mark its coordinates. At each location, they will find instructions on where to proceed next.
3. Wrap-up Activity: Review findings with class.

LESSON SEVEN

1. Warm-up Activity: Ask students to imagine they are searching for a victim in a variety of locations (an area where there is heavy debris, flooded city, dense forest, etc). How would they determine how far apart teams should place themselves? What factors would play a role (weather, terrain, visibility, use of radios, etc).
2. **Critical Spacing Exercise** (attached).
3. Wrap-up Activity: debrief teams after activity; discuss what went well and what needed improvement.

Attachments for Learning Experiences: Critical Spacing Exercise Directions

LESSON EIGHT

1. Warm-up Activity: Review categories of debris from lesson one.
2. Discuss timeline of Hurricane Katrina--can find detailed timeline at http://news.nationalgeographic.com/news/2005/09/0914_050914_katrina_timeline.html
3. Have students read article on debris removal (attached) and complete guided reading handout (attached).
3. Wrap-up Activity: Ask students to imagine Katrina occurring in their town. What would the evacuation plan be? Do students have an out-of-town emergency contact?

Attachments for Learning Experiences: Katrina Debris Report and Guided Reading

LESSON NINE

1. Ask students what types of debris they would find on any given day on campus.

2. Give students gloves and trash bags and have them go on a campus clean-up, separating any different classifications of waste they find. Optional: ask other teachers if they have waste to be picked up ahead of time. Have students estimate the weight of each type of waste they find. Discard or recycle appropriately.
3. Wrap-up Activity: discuss what wastes were found by each team.

LESSON TEN

Set up another classroom as if a tornado has struck the building. Overturn tables, chairs, furniture. Have student "victims" play roles (ask drama teacher if drama students would like to be mock victims). Have students hiding in individual voids and at least one mannequin underneath an item that requires cribbing. Use a light object such as folding table but place sign on it that indicates it is too heavy to lift by hand. Have signs on victims that indicate need for different carries/drags (legs crushed, can sit but not stand, etc).

1. Warm-up Activity: Let students know they will be participating in a mock disaster search and rescue scenario. Assign teams and give students time to discuss their roles (team leader, etc.) If available, have students put on protective gloves, goggles, and helmets. Remind students to use different lifts and carries as needed.
2. Send teams into the classroom to extricate victims.
3. Wrap-Up Activity: debrief teams to discuss what went well and what needed improvement.

Attachments for Learning Experiences:

Notes & Reflections:.

CULMINATING PERFORMANCE TASK (Optional)

Culminating Unit Performance Task Title:

Culminating Unit Performance Task Description/Directions/Differentiated

Attachments for Culminating Performance Task

UNIT RESOURCES

Web Resources:

www.nhtsa.gov

www.citizencorps.gov/cert/

http://www.fema.gov/

http://fas.org/sgp/crs/misc/RL33477.pdf

http://science.howstuffworks.com/landslide4.htm

http://assets.opencrs.com/rpts/RL33477_20060616.pdf

Attachment(s):

Materials & Equipment:

- Work gloves
- Lever
- Cribbing blocks
- Building blocks
- Rulers
- Yardsticks
- Model cars (or other items such as soup cans)

What 21st Century Technology was used in this unit:

x	Slide Show Software		Graphing Software		Audio File(s)
	Interactive Whiteboard		Calculator		Graphic Organizer
	Student Response System		Desktop Publishing		Image File(s)
	Web Design Software		Blog		Video
	Animation Software		Wiki		Electronic Game or Puzzle Maker
	Email		Website		