GEORGIA | PEACH STATE PATHWAYS

Career, Technical, & Agricultural Education

HEALTHCARE SCIENCE

COURSE: 25.564 Emergency and Disaster Preparedness

UNIT: 7.1 Fire Safety

INTRODUCTION

Annotation:

This unit will cover the various origins and classes of fires. Hazardous material risk reduction, fire alarm activation, home and building evacuation, activating emergency services and the fire department will be covered.

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-5: FIRE CHEMISTRY. Students will understand the various origins of fires, classes of fires, and the correct means to extinguish each type of fire.

a. Explain the role that individuals play in fire safety.

b. Identify and reduce potential fire risks in the home, school, and workplace.

d. Understand minimum safety precautions, including safety equipment and utility control.

e. Identify locations of hazardous materials in the home and reduce the risk from hazardous materials in the home.

HS-EDP- 6: DISASTER MEDICAL ASSISTANCE. Students will demonstrate the ability to identify and treat injuries of victims in a disaster or emergency situation.

a. Apply splints to suspected fractures and sprains and **employ basic treatments for other wounds.**

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.

ELA11W3: The student uses research and technology to support writing.

ELA11SLV: The student participates in student-to-teacher, student-to-student, and group verbal interaction.

ELAALRC3: The student acquires new vocabulary in each content area and uses it correctly.

ELA11W2: The student demonstrates competence in a variety of genres.

ELAALRC4: The student establishes a context for information acquired by reading across subject areas.

National / Local Standards / Industry / ISTE:

UNDERSTANDINGS & GOALS

Enduring Understandings:

- Students will understand when and how to activate the services of the fire department.
- Students will remember the acronym *RACE* to use in case of a fire and the acronym *PASS* when using a fire extinguisher.
- Students will understand the importance of keeping areas in the home and workplace free of fire hazards.

Essential Questions:

- What is the importance of keeping hazardous materials stored properly?
- What is the importance of having smoke and carbon monoxide detectors in the home?
- What is a family meeting place, and why is it important to have one?
- What are ways to reduce the amount of damage a fire will do in a home?

Knowledge from this Unit:

- Students will know how to assist people from a place that is on fire as they themselves are exiting.
- Students will know how to activate emergency services and the fire department.
- Students will know how to identify hazardous materials.

Skills from this Unit:

- Student can identify exit routes, fire extinguishers, and fire alarms in non-familiar locations.
- Student can maintain a safe home and work environment.
- Student can activate emergency services and the fire department.

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
_x_ Observe students working with partners
__ 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
_x_ Application of skills to real-life situations/scenarios
_____ Post-test

Assessment(s) Title:

- Fire Safety Homework Assignment
- Public Education Group Project Proposal
- Public Education Grading Rubric
- Health Science Peer Evaluation

Assessment(s) Description/Directions:

- Fire Safety Homework Assignment: Hand out this worksheet to be completed at home. Point out to students that they must have a parent or guardian sign the assignment at the bottom of the page and that they can earn extra credit for discussing the assignment with additional family members.

- Public Education Group Project Proposal: Students will use worksheet to develop project and describe end results.
- Public Education Grading Rubric: distribute rubric to students at beginning of project so that expectations of project are clear.
- Health Science Peer Evaluation: distribute rubric to students at beginning of public education project. Explain that peer evaluation scores will account for 50% of the project grade.

Attachments for Assessment(s):

- Fire Safety Homework Assignment
- Public Education Group Project Proposal
- Public Education Grading Rubric
- Health Science Peer Evaluation

LEARNING EXPERIENCES

Sequence of Instruction

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

HS-EDP-5: FIRE CHEMISTRY. Students will understand the various origins of fires, classes of fires, and the correct means to extinguish each type of fire.

HS-EDP- 6: DISASTER MEDICAL ASSISTANCE. Students will demonstrate the ability to identify and treat injuries of victims in a disaster or emergency situation.

2. Review Essential Questions.

- What is the importance of keeping hazardous materials stored properly?
- What is the importance of having smoke and carbon monoxide detectors in the home?
- What is a family meeting place, and why is it important to have one?
- What are ways to reduce the amount of damage a fire will do in a home?

3. Identify and review the unit vocabulary.

- **Chemical burns** –burns caused by a chemical substance that touches skin.
- **Combustible**-capable of burning.
- **Conduction**- burns caused by heat that is transferred directly from one object to another.
- **PASS**-Acronym for using fire extinguisher-Pull, Aim Squeeze, Sweep
- **Convection**- burns caused by movement of a liquid or gas that transfers the heat.
- **RACE**-Acronym for what you should do incase of a fire.

- **Electrical**-burns caused by electricity that comes in contact with skin.
- **Radiation**- burns caused by a form of heat traveling across a space or through materials as electromagnetic waves.
- **Fire Triangle**-three items needed for fire to occur-heat, oxygen, fuel.
- **Solar**-burns caused from exposure to the sun.
- **Mechanical**- burn injuries that are caused by friction such as from ropes, carpet, or sports activities.
- **Thermal**- burn injuries caused by hot liquid or surface that touches skin.

Interest Approach - Mental Set

Ask class:

- How many of you have smoke detectors in your home?
- Do you think you need them to wake you up in a fire?
- Don't you think the smell of the smoke would wake you up? (smoke actually acts as an anesthetic and puts you into a deeper sleep).
- Wouldn't the light from the flames wake you up? (smoke is so thick that you don't see the flame).
- What about carbon monoxide detectors?
- Wouldn't the smell of the carbon monoxide tell you that there was a problem? (Carbon monoxide is odorless).
- Let students know that what they learn in this unit may very well save the life of a family member or friend someday, maybe even twenty years from now!

LESSON ONE

1. Ask class:

"How old were you when you started learning about fire safety?" Let students know that children are never too young to learn about fire safety and that hopefully they will pass along what they learn in this unit to their younger brothers, sisters, cousins, etc.

2. Go to computer lab and log onto

http://www.mcgruff.org/Advice/fire_safe.php?gclid=COeMtLWajpgCFRhhnAodulRyCw

Have students play "Be Fire Safe!" and "Fire Safety Puzzle and Paint" games to identify the fire hazards in the home and to show them games that they can share with their younger relatives and/or children for whom they baby-sit. (If you do not have access to computers, can just have class brainstorm about home fire hazards and write them on board).

3. As you return to classroom from computer lab (or if you have computers in your classroom, go out for a walk around the school), have students identify the locations of the fire extinguishers, fire alarms, and sprinkler heads. Have them discuss why they think they are placed in their given locations.
4. Begin Fire Safety slideshow presentation, showing **modules one and two**, having students take notes.
5. Wrap-Up Activity: Ask students to share one new thing that they learned today.

LESSON TWO

1. Ask class to review:
   - Number of fire deaths annually in the U.S.? (4,000-6,000)
   - Leading cause of fires in GA (kitchen)
   - Leading cause of fire deaths (alternative heating)
   - % of deaths that occur in homes without operational smoke detectors (80%)
   - Components of a fire triangle (oxygen, heat, fuel)

2. Continue Fire Safety slideshow presentation, beginning with module three and continuing through the end of module four, having students take notes.
3. Hand out Fire Escape Plan Grid. Have students draw the blueprint of their house or apartment. If they do not know the locations of their smoke detectors, tell them not to worry, they will find out as a part of their homework assignment tonight.
4. Hand out Fire Safety Homework Assignment and have students staple it to the Fire Escape Plan Grid. Go over the questions on the homework assignment.
5. Wrap-up Activity: Ask students to tell class one thing that they have learned that they can teach a peer today (such as how to test a smoke detector). Ask students to commit to teaching at least one friend a fire safety fact today.

LESSON THREE

****before class on day three, instructor will need to set up a lab space in another classroom or area in the building for evacuation practice:**

Choose a room in the school--preferably a room where the students have not been or with which they are not very familiar. It should be a room that can be made pitch-black or nearly pitch-black.

Clear room of any significant hazards such as objects that can fall or sharp cornered furniture. Set up "safe" obstacles such as soft upholstered furniture in the room. Have blindfolds and a stopwatch ready for this lab.

1. Ask class to review:

- Meaning and use of acronym PASS.
- Meaning and use of acronym RACE.
- Difference between smoke and carbon monoxide detectors.

2. Have students take out homework assignments. Either partner students randomly or allow students to choose a partner. Direct students to explain their findings to their partner, and then switch. Have the partners give feedback if anything is unclear in the fire escape plan. Collect for a homework grade.

3. Ask students: how would you get out of a room in the pitch black if you had never been there before? In your own room, you are very familiar with the layout, but what if you are in an unfamiliar location? Explain the left- or right- handed sweep method of evacuation. The individual gets down on his or her knees to stay below the smoke, finds a wall, and chooses EITHER the right OR the left hand, and then does NOT change hands. Use that hand to sweep up and down the wall as you crawl along the wall. You are feeling for either a window or a door handle. Sweep high enough to try to find one of these means of exits. If you keep contact with ONE hand on the wall at all times, you will eventually come to an exit and not wind up turning in circles.

4. **LAB:**

- Tell students they are to use either a left- or right- handed sweep to get themselves out of a room that is in a "burning building."
- Depending on size of class and amount of time, may choose to have students perform this task individually or in groups. If performing task in groups, suggest splitting groups by gender (***not*** allowing boys and girls to perform task at same time).
- Lead students into classroom and allow them to practice hand sweep to evacuate.
- After students have practiced, may use a blindfold. Lead students into classroom, spinning them around to lose orientation. Set timer and leave room. Students must evacuate room in less than two minutes (can adjust time depending on size of room). Let students repeat

until they meet the time requirement. Let students know that they will need to be able to do this for an assessment (exam) grade at the end of the unit.

5. Wrap-Up Activity: Return to classroom. Ask students to share their reflections on the lab. What were the challenges? How could they best prepare for an emergency when staying in an unfamiliar location? If staying in a hotel, what challenges would a wall sweep present? (many doors--you would need to know in advance which is the stairwell door as opposed to a room door--prepare for this by counting doors upon check in, know that there are x number of doors to the left of my door, then I'll hit the stairwell).

LESSON FOUR

1. Ask class: "Has anyone ever suffered a burn?" Give students the opportunity to share their burn injury anecdotes.

2. Ask class: "How do you think you should treat a burn?"

3. Continue slide show presentation beginning with module five. Please add a number of pictures of burns to module five, being cautious not to violate copyright laws. Use your best judgment in determining how graphic of pictures to choose. Discuss each picture, the degree of the burn, what the probable cause of the burn could have been (if the actual cause is not known), and the proper treatment for each burn. Have students take notes on the degrees of burns and the proper treatment of each.

4. Show students examples of various forms of burn gels and/or an aloe plant.

5. Explain the Rule of 9's to students:

- You can estimate the body surface area on an adult that has been burned by using multiples of 9. (Draw a picture of a person on the board or use a classroom poster).
- An adult who has been burned, the percent of the body involved can be calculated as follows: (Have students guess before you write in the correct percentages).

Head = 9%
Chest (front) = 9%
Abdomen (front) = 9%
Upper/mid/low back and buttocks = 18%
Each arm = 9%
Each palm = 1%
Groin = 1%
Each leg = 18% total (front = 9%, back = 9%)

6. Ask students: "Why would the rule of 9's be important in pre-hospital care?" (Standardized way to estimate fairly accurately and communicate of extent of injury to hospital staff).

7. Wrap-Up Activity: Call out combination of body parts ("one arm and one palm") and have students call back percentage of body area burned. Increase difficulty of calculations with each problem.

LESSON FIVE/SIX/SEVEN/EIGHT/NINE (suggest timing this over a weekend to give students extra planning time): Public Education Project

LESSON FIVE

1. Ask students: "Have you taken an opportunity this week to share what you have learned with others?" (Ask students to provide examples of "teachable moments.")

2. Tell students that they are going to create a Public Service Campaign for the school to educate your peers, other teachers, faculty, and staff about fire safety. (Optional: show modules six and seven of slide show presentation prior to introducing this project).

3. Divide students into groups of 3-4 students. Have class brainstorm topics about which they would like to educate the school. (Note: can target this toward local middle or elementary school instead if school agrees). Topics might include Home Fire Safety, Wilderness Fire Safety, Winter Fire Safety, Prevention of Youth Fire Setting, Hotel Fire Safety, Hazardous Material Storage, treating burns, etc.

4. Ask students to get into their groups and think about the best way to educate others about their topics. What is the most important information they want to convey? What would be the best way to get the information out? Tell them they can use any form of communication they choose as long as it is approved by necessary parties.

Suggestions:

- create a pamphlet to be distributed to students
- create a page to be added to school website
- create posters to be hung in school cafeteria or hallways
- create 3-D display to be placed into a school display case
- create a lesson plan and teach it to a health class
- create a lesson plan and teach it to a class at the elementary or middle school
- create a series of public service announcements to be read over the school PA system

5. Hand out the Public Education Group Project Proposal/Grading Rubric and the Health Science Peer Evaluation Form. Go over each of the rubrics so that students understand how they will be evaluated.

6. Have students discuss and answer questions on the sheet as they determine how they will approach the project. Circulate through class as students are discussing project.

7. Wrap-Up Activity: have one spokesperson from each group tell class what their plan of action is for the project.

Day Two and Three of Project (Lesson SIX and SEVEN):

1. Allow student groups time to work on their projects. If desired, go to the media center and/or a computer lab and have each group research information and statistics about topics. Ensure that each group has plan to obtain proper permission as needed to carry out projects.

2. Wrap-Up: Have each group give status report to class. Have other groups ask questions if gaps are noted in project.

Day Four and Five (LESSON EIGHT and NINE)

1. Implement projects in a variety of ways. If a group has decided to do a series of Public Service announcements, have them practice this for the class prior to going "live." If a group has put together a lesson plan, have them run the lesson past the rest of the class to get feedback before implementing the lesson plan. Have each group present their project as fully as possible before putting into the public eye.

2. Give groups time to brainstorm last minute ideas for improvement. Some groups may use this class time to implement their final project (putting items in display case, distributing brochures, etc.) Other groups will have to use out-of-class time to finalize their projects.

3. Remind students that once they have implemented their final project, to complete the Public Education Group Project Proposal worksheet and peer evaluation forms and turn them into the instructor.

4. Wrap-Up Activity: ask students to share with class any changes they are planning to make as a result of today's class, share any concerns they have, or any last-minute challenges they are facing.

LESSON TEN

1. Ask students what responses they have heard so far to the projects they have implemented in the school building. Ask students if they can think of any other specific areas of fire safety that have not yet been covered in the lessons to date.

2. Tell students that today's lesson will cover very specific areas of fire safety such as candle safety, fireworks safety, campus fire safety, winter holiday safety, etc.

3. Divide students into small groups of 4-5 each. Give each group a handout (fact sheets for **Fireworks Safety Fact Sheet, Candle Safety Tips, Aged Wiring Study Fact Sheet, Campus Fire**

Safety Tips, Winter Holiday Safety attached). Have students read handout and prepare a presentation for the rest of the class. Remind students that they are *not* to read from the handout. Rather, they should prepare something memorable and catchy such as a jingle, skit, commercial, or rap song.

Note: five attachments are provided, but *many* more topics and fact sheets are available at www.nfpa.org . Look for sheets that are 1-2 pages; some reports are 60+ pages!

4. Give students 15 minutes to prepare presentations and then have each group present to class.

5. Wrap-up Activity: Call on volunteers (or randomly call on students) and ask them to name one thing they learned about each topic.

Attachments for Learning Experiences:

- Fireworks Safety Fact Sheet
- Candle Safety Tips
- Aged Wiring Study Fact Sheet
- Campus Fire Safety Tips
- Winter Holiday Safety

Notes & Reflections:

- There is a ***tremendous*** amount of free material on fire safety online. Many insurance companies will send free literature and materials if you call them. If hosting a safety fair at your school, call the insurance companies!
- Many fire departments will loan you fire safety videos. Even high-schoolers enjoy watching videos aimed at younger audiences.

CULMINATING PERFORMANCE TASK (Optional)

Culminating Unit Performance Task Title:

Timed Room Evacuation Drill

Culminating Unit Performance Task Description/Directions/Differentiated

- Choose a room in the school--preferably a room where the students have not been or with which they are not very familiar. It should be a room that can be made pitch-black or nearly pitch-black. Clear room of any significant hazards such as objects that can fall or sharp cornered furniture. Set up "safe" obstacles such as soft upholstered furniture in the room. Tell students they are to use either a left- or right- handed sweep to get themselves out of a room that is in a "burning building."
- Depending on size of class and amount of time, may choose to have students perform this task individually or in groups. If performing task in groups, suggest splitting groups by gender (***not*** allowing boys and girls to perform task at same time).
- Blindfold students and lead them into classroom, spinning them around to lose orientation. Set timer and leave room. Students must evacuate room in less than two minutes (can adjust time depending on size of room). Let students repeat until they meet the time requirement.

Attachments for Culminating Performance Task

UNIT RESOURCES

Web Resources:

http://www.mcgruff.org/Advice/fire_safe.php?gclid=COeMtLWajpgCFRhhnAodulRyCw

http://www.usfa.dhs.gov/citizens/

http://www.nfpa.org

Attachment(s):

Fire Safety Slideshow Presentation. NOTE: Please add pictures of burns to **module five**, being cautious not to violate copyright laws. Use your best judgment in determining how graphic of pictures to choose. Discuss each picture, the degree of the burn, what the probable cause of the burn could have been (if you don't know the actual cause), and the proper treatment for each burn.

Materials & Equipment:

- Poster board
- art supplies
- Blindfolds
- stopwatch or other timers
- Equipment for Public Education projects may vary.

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		