Careers in Transportation Curriculum Project

Teaching Guide

For

High School
Transportation and Emergencies

2010

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*Nothing included at publication for pilot sites; please add and share with us.

Acknowledgements

We wish to thank the following individuals who were a source of support for this project.

Module Summary

Overview of Module

This career-development module is designed to provide high school students with a basic understanding of the relationship between technology (particularly geospatial technologies) and emergency preparedness. Principally, the module will help students develop an understanding of the application of GPS and mapping technologies to emergency response. Students will be taught basic concepts of GPS, including how GPS allows emergency responders to locate an incident. Students will design improvements to emergency response routes as well as to evacuation routes for natural disasters. Students will use GIS information to identify natural resources in times of crisis. They will also explore careers in fields related to disaster planning and in transportation as it relates to emergency preparedness.

Primary Career Cluster: Transportation, Distribution, and Logistics

Primary Career-Cluster Pathways: Health, Safety, and Environmental Management, Transportation Operations, and Transportation Systems / Infrastructure Planning, Management

Related Occupations: Dispatcher, Environmental Manager or Engineer, Health or Safety Manager, Traffic Manager, Urban or Regional Planner

Recommended Grade Level: High School

Recommended Subject Areas: Geography, Geospatial Technology, Power and Transportation, Public Safety, and Technological Systems

TDL Cluster Knowledge and Skills and Performance Elements Addressed

- TRC03.01 Formulate ideas, proposals and solution to transportation-, distribution-, and/or logistics-related problems in order to ensure effective and efficient delivery of products or services to targeted consumers.
- TRC04.02.01 Execute procedures involved in using Geographic Information System / Global Positions System (GIS/GPS) applications to perform various work functions.
- TRC06.09.02 Identify opportunities for improvement of performance related to the problems found in assessment of health, safety, and environmental issues.
- TRC09.02.01: Research and match career opportunities based upon their fit with personal career goals.

National Learning Standards

International Technology Education Association (ITEA), Standards for Technological Literacy (STL)

- Standard 2--Students will develop an understanding of the core concepts of technology.
- Standard 3--Students will develop an understanding of the relationships among technologies and the connections between technology and other fields of study.

- Standard 6--Students will develop an understanding of the role of society in the development and use of technology.
- Standard 9--Students will develop an understanding of engineering design.
- Standard 11--Students will develop abilities to apply the design process.
- Standard 12--Students will develop abilities to use and maintain technological products and systems.
- Standard 17--Students will develop an understanding of and be able to select and use information and communication technologies.
- Standard 18--Students will develop an understanding of and be able to select and use transportation technologies.

National Geography Standards: The World in Spatial Terms
- Standard 1 Understand how to use maps and other geographic representations, tools, and technologies to acquire, process, and report information from a spatial perspective.
- Standard 2 Understand how to use mental maps to organize information about people, places, and environments in a spatial context.
- Standard 3 Understand how to analyze the spatial organization of people, places, and environments on Earth's surface.

Virginia Standards of Learning

English Standards

- 10.1 The student will participate in and report on small-group learning activities.
  a) Assume responsibility for specific group tasks.
  b) Participate in the preparation of an outline or summary of the group activity.
  c) Include all group members in oral presentation.
  d) Use grammatically correct language, including vocabulary appropriate to the topic, audience, and purpose.

- 10.11 The student will collect, evaluate, organize, and present information.
  a) Organize information from a variety of sources.
  b) Develop the central idea or focus.
  c) Verify the accuracy and usefulness of information.
  d) Credit sources for both quoted and paraphrased ideas.
  e) Present information in an appropriate format, such as an oral presentation, written report, or visual product.
  f) Use technology to access information, organize ideas, and develop writing.

- 11.4 The student will read and analyze a variety of informational materials.
  a) Use information from texts to clarify or refine understanding of academic concepts.
  b) Read and follow directions to complete an application for college admission, for a scholarship, or for employment.
  c) Apply concepts and use vocabulary in informational and technical materials to complete a task.
  d) Generalize ideas from selections to make predictions about other texts.
  e) Analyze information from a text to draw conclusions.

History and Social Science Standards

- CE.12 The student will demonstrate knowledge of career opportunities by
    a) identifying talents, interests, and aspirations that influence career choice;
    b) identifying attitudes and behaviors that strengthen the individual work ethic and promote career success;
    c) identifying skills and education that careers require;
    d) examining the impact of technological change on career opportunities.

- WG.1   The student will use maps, globes, photographs, and pictures in order to
    a) obtain geographical information and apply the concepts of location, scale, and orientation;
    b) develop and refine his or her mental maps of world regions;
    c) create and compare political, physical, and thematic maps;
    d) analyze and explain how different cultures develop different perspectives on the world and its problems;
    e) recognize different map projections and explain the concept of distortion.

Mathematics Standards

- AFDA.6 The student will calculate probabilities. Key concepts include:
    a) conditional probability
    b) dependent and independent events
    c) addition and multiplication rules
    d) counting techniques (permutations and combinations)
    e) Law of Large Numbers

Science Standards

- PH.1 The student will plan and conduct investigations in which
    a) the components of a system are defined;
    b) instruments are selected and used to extend observations and measurements of mass, volume, temperature, heat exchange, energy transformations, motion, fields, and electric charge;
    c) information is recorded and presented in an organized format;
    d) appropriate technology including computers, graphing calculators, and probeware, is used for gathering and analyzing data and communicating results.

Objectives

What I Want Students to Know	What I Want Students to be Able to Do
• Students will develop an understanding of GPS and GIS technologies. • Students will develop an understanding of the different roles of emergency response vehicles and the roles of emergency response systems and workers. • Students will develop an understanding of how GPS works with roadside-assistance organizations.	• Develop basic map-reading skills. • Identify the technical and scientific means that allow GPS devices to function properly. • Explain how GPS devices are used to locate a person or place. • Write a report profiling a job associated with emergency response vehicles. • Design a cost-management plan for a

• Develop an understanding of economic constraints on public health services. • Develop an understanding of the various careers in health-care institutions.	health-care institution. • Develop a plan, using GPS/GIS technologies, to improve emergency vehicle response time. • Develop a plan, using GPS/GIS technologies, for community evacuation routes during an emergency. • Use GIS information to locate natural resources during a crisis.

Measurement Criteria
• Use maps and GPS/GIS technologies to plan routes
• Identify the scientific and technological properties of GPS/GIS technologies
• Use Internet and other materials to conduct research and write reports
• Identification of the full range of careers in transportation that are related to emergency preparedness
• Describe how GIS information is used to identify and locate resources

Teacher Notes
There are no specific notes included in this module by the author. However, if there are some overall notes that you feel should be added in this section, please let us know

If you are a field test teacher you may have additional ideas that you can add to the module. We are especially interested in additional lesson activities, resources and assessment strategies you can contribute.   We request you make these suggestions so that other teachers will have more options and information to assist in the delivery of this content.

If you only have time to complete some of the lessons, that is okay; we still would like feedback on those lessons you complete.

Time Required to Complete Module (Estimated): 26   50-minute class periods to complete all of the 5 lessons; however, you may elect to use only one of the lessons and the time estimated for that lesson is on the plan.

Materials Needed
• Computers with Internet access, word-processing software, presentation software such as PowerPoint, geospatial and mapping software such as ArcGIS, and design or drawing software such as CADD (optional)
• Handheld GPS devices
• Poster board, rulers, scissors, glue, various other drawing materials

Websites
• AAA Tidewater Virginia. *http://www.aaatidewaterva.com/?zip=23434*.

- American Red Cross, Find Shelter and Supplies. http://www.redcross.org/portal/site/en/menuitem.d8aaecf214c576bf971e4cfe43181aa0/?vgnextoid=4fd51a53f1c37110VgnVCM1000003481a10aRCRD&vgnextfmt=default.
- The Architecture of Safety: Hospital Design. http://www.healthdesign.org/resources/pubs/articles/documents/Joseph_2007_architectureofsafety.pdf.
- Creating Evacuation Routes. http://www.redcross.org.uk/standard.asp?id=85098.
- The Critical Role of District Hospitals: Providing Poor Communities with Timely, Cost-Effective Care. http://www.dcp2.org/file/78/DCPP-DistrictHospitals.pdf.
- Dispatch Disasters. http://www.emergencydispatch.org/articles/dispatchdisasters1.htm.
- Emergency Supply Planning. http://create.usc.edu/research/58251.pdf.
- Emergency Support Functions. www.vaemergency.com/library/plans/local_eop/ESF1TransportationLOC.doc.
- EMT and Paramedic Frequently Asked Questions. http://www.nyc.gov/html/fdny/html/community/emt_medic_faq.shtml.
- EMT Career—Interview with Paul Walsh. http://www.jobmonkey.com/firefighting/emt-careers.html.
- Evacuation Plans and Procedures. http://www.osha.gov/SLTC/etools/evacuation/evac.html.
- Evacuation Routes. http://www.jfsc.ndu.edu/current_students/local_resources/hurricane_guide/evacuation_routes.asp.
- Exit Routes, Emergency Action Plans, Fire Prevention Plans, and Fire Protection. http://www.cme.hsc.usf.edu/coph/oti/Powerpoints/10%20hour%20General%20Industry/Sample%20Lesson%20Plan%20Egress%20and%20Fire.pdf.
- GPS History, Chronology, and Budgets. http://www.rand.org/pubs/monograph_reports/MR614/MR614.appb.pdf.
- Groundbreaking Research Provides a "Report Card" for Urban Areas' Emergency Evacuation Capability. http://www.highways.org/Press_Releases/release10-12-06.htm.
- Health Care Facilities—Hospital. http://www.wbdg.org/design/hospital.php.
- History of the Global Positioning System—GPS. http://inventors.about.com/od/gstartinventions/a/gps.htm.
- Hospital Design Tips: Hospital Design, Construction, Maintenance, Operation and Smooth Running Guidelines and Tips for the Health Industry. http://www.hospitaldesigntips.com/.
- Hospital Implements High-Tech Emergency Response System. http://www.informationweek.com/news/personal_tech/gps/showArticle.jhtml?articleID=208800864.
- How Does Roadside Assistance Insurance Work? http://www.ehow.com/how-does_4696105_roadside-assistance-insurance-work.html.

- How Hospital Design Saves Lives.
  http://www.businessweek.com/innovate/content/aug2006/id20060815_289604.htm.
- How to Create an Urban Emergency Evacuation Kit for Work.
  http://www.wikihow.com/Create-an-Urban-Emergency-Evacuation-Kit-for-Work.
- How to Create Evacuation Plans This Hurricane Season.
  http://www.ehow.com/how_2310660_evacuation-plans-this-hurricane-season.html.
- Hurricane Evacuation Zones Tool Template.
  http://www.csc.noaa.gov/hez_tool/index.html.
- Natural Resources Defense Council (NRDC).
  http://www.supereco.com/company/natural-resources-defense-council-nrdc/.
- Neighborhood Traffic Operations: Arterial Traffic Calming Program.
  http://www.seattle.gov/transportation/ntcp_arterial.htm.
- Nursing Home. http://www.wbdg.org/design/nursing_home.php.
- OnStar. http://www.onstar.com/us_english/jsp/index.jsp.
- PMC Emergency Workers Will Use TomTom GPS Devices.
  http://www.wickedlocal.com/concord/news/business/x1307071235/PMC-emergency-workers-will-use-TomTom-GPS-devices.
- PRTC's Emergency Service Plan: Passenger Guide for Snow and Other Emergency Conditions. http://www.prtctransit.org/myprtc/esp.php.
- Report on the Dispatching of Emergency Service Providers: An Examination of the Depth of the Problem. http://www.dps.state.vt.us/dispatching_2004.pdf.
- Up Your Sustainability. http://www.hobbyfarms.com/home-and-barn/increase-sustainability.aspx.
- VDOT Hurricane Evacuation Guide.
  http://www.virginiadot.org/travel/hurricane_defauLT.asp.
- VDOT Hurrican Evacuation Route.
  http://www.virginiadot.org/travel/resources/hurricaneEvacuation1_routes.pdf.
- VDOT Safety Service Patrol. http://www.virginiadot.org/travel/safetypatrol.asp.
- VDOT Projects and Studies. http://www.virginiadot.org/projects/default.asp.
- Virginia Department of Emergency Management. http://www.vdem.state.va.us/.
- Virginia Department of Emergency Management, About.
  http://www.vaemergency.com/about/index.cfm.
- Virginia Department of Forestry, Natural Disaster Response.
  http://www.dof.virginia.gov/fire/emergency-duties.shtml.
- Virginia Locality GIS/Mapping Web Sites.
  http://www.vdem.state.va.us/programs/gis/links/index.cfm.
- Virtual Tour of Some [Hospital] Interior Designs.
  http://www.onedreamdesign.com/humanspace/vt.shtml.
- Wireless Carriers' Secrecy Causes Static for Enhanced 911 Service.
  http://www.eweek.com/c/a/Mobile-and-Wireless/Wireless-Carriers-Secrecy-Causes-Static-for-Enhanced-911-Service/.

Lesson 1	The Benefits of GPS When Local Emergencies Occur

Time Estimate: 3 50 minute periods

Objectives

1. Explore the various capabilities of basic GPS devices.
2. Examine the various problems that emergency rescuers experience when trying to locate accident victims.
3. Write a report based on the responses of an emergency worker who works in an emergency room, fire house, or dispatch office as to the benefits of GPS in real emergency situations.

Materials & Resources

- Computers with Internet access
- *Websites*:
  - GPS History, Chronology, and Budgets.
    http://www.rand.org/pubs/monograph_reports/MR614/MR614.appb.pdf.
  - History of the Global Positioning System—GPS.
    http://inventors.about.com/od/gstartinventions/a/gps.htm.
  - Hospital Implements High-Tech Emergency Response System.
    http://www.informationweek.com/news/personal_tech/gps/showArticle.jhtml?articleID=208800864.
  - PMC Emergency Workers Will Use TomTom GPS Devices.
    http://www.wickedlocal.com/concord/news/business/x1307071235/PMC-emergency-workers-will-use-TomTom-GPS-devices.
  - Wireless Carriers' Secrecy Causes Static for Enhanced 911 Service.
    http://www.eweek.com/c/a/Mobile-and-Wireless/Wireless-Carriers-Secrecy-Causes-Static-for-Enhanced-911-Service/.
  - Virginia Department of Emergency Management. http://www.vdem.state.va.us/.

Agenda

Step	Minutes	Activity
1	25-30	Have students compose questions to ask an emergency worker about how GPS is used in emergency situations, what efficiencies can be gained by using GPS, and the jobs, vehicles, and dispatch centers involved with emergency-response work.
2	75-90	Take students to visit a fire house, emergency room, or police station where they could speak with some of the emergency personnel, examine the equipment, and ask questions about the efficiency of operations before and after the use of GPS. (Or, host an emergency worker in the classroom to speak to the students)
3	50-60	Instruct students to write a three- to five-page report on the various ways that GPS devices can help emergency workers save time locating victims, reduce procedural costs, and reduce resources required to complete a rescue. The report should meet standards of composition.

Lesson 2	How Do I Get Roadside Assistance in Times of Emergency

Time Estimate: 4 50 minute periods

Objectives

1. Explore the various services that are provided by a typical roadside assistance organization.
2. Investigate the benefits of automated roadside assistance systems such as OnStar, with which customers can have their automobile monitored for roadside problems.
3. Create and act out a skit that demonstrates the dialogue and process involved in acquiring roadside assistance in an emergency.

Materials & Resources

- Computers with Internet access and word-processing software.
- *Websites:*
  - AAA Tidewater Virginia. http://www.aaatidewaterva.com/?zip=23434.
  - Dispatch Disasters. http://www.emergencydispatch.org/articles/dispatchdisasters1.htm.
  - EMT and Paramedic Frequently Asked Questions. http://www.nyc.gov/html/fdny/html/community/emt_medic_faq.shtml.
  - EMT Career—Interview with Paul Walsh. http://www.jobmonkey.com/firefighting/emt-careers.html.
  - How Does Roadside Assistance Insurance Work? http://www.ehow.com/how-does_4696105_roadside-assistance-insurance-work.html.
  - OnStar. http://www.onstar.com/us_english/jsp/index.jsp.
  - Report on the Dispatching of Emergency Service Providers: An Examination of the Depth of the Problem. http://www.dps.state.vt.us/dispatching_2004.pdf.
  - VDOT Safety Service Patrol. http://www.virginiadot.org/travel/safetypatrol.asp.

Agenda

Step	Minutes	Activity
1	50-60	Have students investigate the options that people have when seeking roadside assistance. Make sure they include organizations such as the American Automobile Associations (AAA) and OnStar.
2	50-60	Direct students to write a two-page report on the benefits and features of automated roadside assistance and the ways in which GPS can play a role. The report should include a chart of features and the relationships of the features to GPS technologies. The report must meet standards for composition.
3	100-120	Direct small groups of students to create and act out a five-minute skit of a mock accident scene or roadside emergency in which they simulate, using an automated roadside assistance device, calling for assistance. The skit should demonstrate an understanding of GPS technologies, and it should include, at minimum, actors in the roles of victims, responders, and dispatchers.

Lesson 3	A New Path for Emergency Vehicles

Time Estimate: 5 50 minute periods

Objectives

1. Explore the transportation routes that emergency vehicles use in the event of national emergencies.
2. Identify the problems that emergency vehicles have in mobilizing and traveling to emergency and disaster locations.
3. Devise a plan for helping emergency vehicles, equipment, and personnel to reach victims of national disasters more quickly and efficiently.

Materials & Resources

- Computers with Internet access, and geospatial and mapping software such as AroGIS
- Poster board, rulers, various other drawing materials
- *Websites:*
    - Emergency Supply Planning. http://create.usc.edu/research/58251.pdf.
    - Evacuation Plans and Procedures. http://www.osha.gov/SLTC/etools/evacuation/evac.html.
    - Exit Routes, Emergency Action Plans, Fire Prevention Plans, and Fire Protection. http://www.cme.hsc.usf.edu/coph/oti/Powerpoints/10%20hour%20General%20Industry/Sample%20Lesson%20Plan%20Egress%20and%20Fire.pdf.
    - How to Create an Urban Emergency Evacuation Kit for Work. http://www.wikihow.com/Create-an-Urban-Emergency-Evacuation-Kit-for-Work.
    - Neighborhood Traffic Operations: Arterial Traffic Calming Program. http://www.seattle.gov/transportation/ntcp_arterial.htm.
    - PRTC's Emergency Service Plan: Passenger Guide for Snow and Other Emergency Conditions. http://www.prtctransit.org/myprtc/esp.php.
    - VDOT Projects and Studies. http://www.virginiadot.org/projects/default.asp.
    - Virginia Locality GIS/Mapping Web Sites. http://www.vdem.state.va.us/programs/gis/links/index.cfm.
- .

Agenda

Step	Minutes	Activity
1	50-60	Have students research the rescue efforts of emergency personnel when previous major disasters occurred, such as earthquakes, hurricanes, and floods.
2	50-60	Direct students to document how the rescue efforts were carried out during disasters and how vehicles, equipment, and personnel were mobilized for assistance.
3	50-60	Have students select a natural disaster that occurred in the past and examine the logistical problems that the emergency personnel had in getting

		vehicles and equipment in place for rescue.
4	50-60	Instruct students to use geospatial technology and software to track the natural disaster event. Identify the various parts of the country from where emergency workers volunteered to assist operations.
5	50-60	Have students use the gathered information to devise a plan that would have improved the emergency response and its effectiveness. Have students display their plan through charts and maps generated, using geospatial software, and instruct them to incorporate at least three modes of transportation to be used during operations.

Lesson 4	Exploring the Resources Available for Natural Disaster Victims

Time Estimate: 5 ½ to 6 50 minute periods

Objectives

1. Identify the organizations and the people who supply survival resources when natural disasters occur.
2. Investigate the means by which these organizations acquire their resources to help victims of natural disasters.
3. Determine whether the current available resources are sufficient to meet the needs of victims of a major natural disaster.
4. Devise a plan to help rescue organizations increase their supply of available resources to aid disaster victims.

Materials & Resources

- Computers with Internet access, and geospatial and mapping software such as AroGIS
- Poster board, rulers, various other drawing materials
- *Websites:*
  - Emergency Support Functions. www.vaemergency.com/library/plans/local_eop/ESF1TransportationLOC.doc.
  - Natural Resources Defense Council (NRDC). http://www.supereco.com/company/natural-resources-defense-council-nrdc/.
  - American Red Cross, Find Shelter and Supplies. http://www.redcross.org/portal/site/en/menuitem.d8aaecf214c576bf971e4cfe43181aa0/?vgnextoid=4fd51a53f1c37110VgnVCM1000003481a10aRCRD&vgnextfmt=default.
  - Up Your Sustainability. http://www.hobbyfarms.com/home-and-barn/increase-sustainability.aspx.
  - Virginia Department of Emergency Management, About. http://www.vaemergency.com/about/index.cfm.
  - Virginia Department of Forestry, Natural Disaster Response. http://www.dof.virginia.gov/fire/emergency-duties.shtml

Agenda

Step	Minutes	Activity
1	50-60	Instruct students to document various types and locations of natural disasters that have occurred in the past in the U.S., using geospatial software.
2	50-60	Direct students to research the rescue and emergency-relief organizations that were most important in these natural disasters.
3	50-60	Direct students to identify the most important resources these organizations have, assess the amount of these resources currently on hand, and determine the methods by which these resources would be transported to victims of future natural disasters.
4	50-60	Direct students to display the following data in chart or table format: The locations where natural disasters typically occur in the U.S.; the current

		availability of resources for those locations (both general resources and resources needed for specific types of disasters); and the number of people that would be affected by such disasters. Have students determine whether additional emergency-resource depots are necessary, based on the displayed data, and, if they are necessary, have students determine where they should be placed.
5	75-90	Instruct groups of students to use the information they have gathered to create a map of the United States that displays the general populations of areas affected by past disasters, the resources available to assist disaster victims in these areas, the locations where students would place additional emergency-resource depots, and the modes of transportation that would be used to move the resources to victims.

Lesson 5	Exploring and Improving Evacuation Routes

Time Estimate: 9 50 minute periods

Objectives

1. Apply the features of geospatial software and mapping applications.
2. Identify the locations of walkways (sidewalks and pedestrian trails) in your local community.
3. Examine deficiencies with the existing walkways in your local community.
4. Create a plan for improving the existing walkways in the local community.

Materials & Resources

- Computers with Internet access, and geospatial and mapping software such as AroGIS
- Poster board, rulers, various other drawing materials
- GIS data sets from ERSI (Environmental Systems Research Institute)
- *Websites:*
    - Creating Evacuation Routes. http://www.redcross.org.uk/standard.asp?id=85098.
    - Emergency Supply Planning. http://create.usc.edu/research/58251.pdf.
    - Evacuation Routes. http://www.jfsc.ndu.edu/current_students/local_resources/hurricane_guide/evacuation_routes.asp.
    - Exit Routes, Emergency Action Plans, Fire Prevention Plans, and Fire Protection. http://www.cme.hsc.usf.edu/coph/oti/Powerpoints/10%20hour%20General%20Industry/Sample%20Lesson%20Plan%20Egress%20and%20Fire.pdf.
    - Groundbreaking Research Provides a "Report Card" for Urban Areas' Emergency Evacuation Capability. http://www.highways.org/Press_Releases/release10-12-06.htm.
    - How to Create Evacuation Plans This Hurricane Season. http://www.ehow.com/how_2310660_evacuation-plans-this-hurricane-season.html.
    - Hurricane Evacuation Zones Tool Template. http://www.csc.noaa.gov/hez_tool/index.html.
    - Neighborhood Traffic Operations: Arterial Traffic Calming Program. http://www.seattle.gov/transportation/ntcp_arterial.htm.
    - PRTC's Emergency Service Plan: Passenger Guide for Snow and Other Emergency Conditions. http://www.prtctransit.org/myprtc/esp.php.
    - VDOT Hurricane Evacuation Guide. http://www.virginiadot.org/travel/hurricane_defauLT.asp.
    - VDOT Hurricane Evacuation Route. http://www.virginiadot.org/travel/resources/hurricaneEvacuation1_routes.pdf.

Agenda

Step	Minutes	Activity
1	50-60	Direct students to identify and examine roadways that are used for emergency evacuation routes for five major cities.
2	100-120	Instruct students to document the population size of these cities and estimate the time it would take for everyone in the city to be evacuated,

		based on the current road systems and transportation availability.
3	75-90	Direct students to list ways to modify the evacuation routes or to change how people leave the city so that evacuation could be completed more quickly. A list of modifications could include intelligent stop lights, dedicated emergency traffic lanes, rerouting one-way streets, reconstructing roads, and building new roads. This list should allow for student creativity and have at least three modifications.
4	240	Instruct students to devise a plan that outlines how they would move people more effectively to a safe location by changing evacuation routes and procedures. The plan should be displayed on a series of maps created using geospatial software. Have students display the plan on a series of maps created by using geospatial software. The maps should show the differences between the previous route/plan and the revised plan.

Teacher

Assessment Material

If you have additional ideas for assessment of these lesson objectives that you can share, we would appreciate it if you would add these to this module.

Final Evaluation Criteria
- Used maps and GPS/GIS technologies to plan routes
- Identified the scientific and technological properties of GPS/GIS technologies
- Used Internet and other materials to conduct research and write reports
- Identified the full range of careers in transportation that are related to emergency preparedness
- Described how GIS information is used to identify and locate resources

Score Sheet for Assessment on each Lesson's Activities is in on the next page.

Rubric for Presentation also attached.

Grading Score Sheet for Lesson Activities

Student Name:	Scoring			
Activity and Rubric	1	2	3	4
Lesson 1, Activity 1 Five questions should examine efficiencies gained through the use of GPS technologies and five questions should examine emergency workers' jobs, emergency vehicles, and/or dispatch centers.				
Lesson 1, Activity 3 Report should address the three areas of rescue operations: time, resources, and money. (Report should adhere to standards of English composition.)				
Lesson 2, Activity 2 Report should summarize the options available to people seeking roadside assistance and the role of GPS, including a chart of features and the relationship of those features to GPS technologies. (Report should adhere to standards of English composition.)				
Lesson 2, Activity 3 Skit should include a mock accident scene or roadside emergency, demonstrate an understanding of GPS technologies, and encompass, at minimum, actors in the roles of victims, responders, and dispatchers.				
Lesson 3, Activity 5 Emergency vehicle plan should be displayed through charts and maps generated using geospatial software and incorporate at least three modes of transportation.				
Lesson 4, Activity 2 Emergency resource planning chart should include all the major population centers in one region of the U.S.				
Lesson 4, Activity 5 Map should identify possible locations, types of resources, and transportation modes used to move the resources to the area as needed.				
Lesson 5, Activity 4 Evacuation route plan should be displayed through a series of maps identifying five major evacuation routes and outline ways to move people more efficiently.				
Total points				**/32**

Scoring Legend: 1 – Poor 2 – Average 3 – Above Average 4 – Excellent

Student Presentation Rubric

	1	2	3	4	Total
Organization	Student presents information without any logical sequence, and audience cannot follow presentation.	Student presents information in disjointed sequence, and audience has difficulty following presentation.	Student presents information in logical sequence, and audience can follow presentation.	Student presents information in logical, interesting sequence, and audience can easily follow presentation.	
Subject Knowledge	Student does not have grasp of subject and cannot answer questions about it.	Student is somewhat familiar with subject and can answer only rudimentary questions.	Student is knowledgeable about subject and can answer all questions but fails to elaborate.	Student demonstrates full knowledge of subject (more than required) by answering all questions with explanations and elaboration.	
Graphics	Student uses superfluous graphics or no graphics.	Student occasionally uses graphics that rarely support text and presentation.	Student uses graphics that relate to text and presentation.	Student uses graphics that explain and reinforce text and presentation.	
Mechanics	Presentation has four or more misspellings and/or grammatical errors.	Presentation has three misspellings and/or grammatical errors.	Presentation has no more than two misspellings and/or grammatical errors.	Presentation has no misspellings or grammatical errors.	
Eye Contact	Student uses no eye contact and reads all of report.	Student occasionally uses eye contact but still reads most of report.	Student maintains eye contact most of the time but frequently returns to notes.	Student maintains eye contact with audience and seldom returns to notes.	
Elocution	Student mumbles, pronounces terms incorrectly, and speaks so quietly that audience members in the back of room cannot hear presentation.	Student enunciates indistinctly, pronounces some terms incorrectly, and speaks so quietly that some audience members have difficulty hearing presentation.	Student enunciates clearly, pronounces most words correctly, and speaks loudly enough for most audience members to hear presentation.	Student enunciates quite clearly, pronounces all words correctly and precisely, and speaks so that all audience members can easily hear presentation.	
				Total points	

Adapted from *Evaluating Student Presentations,* Information Technology Evaluation Services, NC Department of Public Instruction.

A P P E N D I X

If you have additional resources such as handouts, websites, videos, texts, etc. that would enhance the lessons we would appreciate you sharing these with us by including copies of the information or references for locating in the appendix. Also, please indicate in the appropriate lessons where and how these can be utilized.