MAKE TRAX

Step 3

Technology and Field Work

Duration of Lesson: 50 minutes

Students will:

- Identify types of walking hazards.
- Learn about Global Positioning Systems (GPS) and how to use GPS receivers.
- Learn to take digital photographs.
- Form teams and assign roles for the field activity.

Equipment and Materials

- Computers with Internet access—1 per 3-5 students.
- Global Positioning System (GPS) receivers (optional: see the Note in Lesson 1)—1 per 3-5 students.
- 4 Ways to Map Route Conditions table.
- Digital cameras with capacity to upload photos to computer—1 per 3-5 students.
- What To Look For handout.
- Guide for Taking Photos handout.
- Printer.

Resources:

www.loc.gov/rr/scitech/mysteries/global.html
What is GPS?

Advance Preparation

Set the exact time (can use Internet resources or a cellular phone to get exact time) and date on all GPS receivers (if being used) and digital cameras. The time and date must be the same on both the camera and the GPS receiver to synchronize digital photographs to GPS location data.

Go to www.geocaching.com
and have some fun! Geocaching is a treasure hunt game played with GPS receivers by people all over the world. The basic idea is to locate hidden outdoor containers, called geocaches, and then share your experiences online.

Activities: 45 minutes

10 minutes

1. Explain Global Positioning Systems (GPS) and give examples of daily use of GPS technology (e.g., on-board directions while driving), or tell students to go to http://loc.gov/rr/scitech/mysteries/global.html and find this information.
2. Provide GPS receivers (if being used) to student teams and demonstrate how to use the receiver. If you will not be using GPS, explain how students will identify the location of conditions they observe during their field activity (e.g. street addresses). Consult "4 Ways to Map Route Conditions" for alternatives.

10 minutes

3. Distribute the What to Look For handout to students and discuss:
   - Types of problems they will look for during the field activity.
   - What conditions are most dangerous.
   - Examples of hazards they have observed while walking.
4. Tell students:
   - Solutions to hazards may not be simple.
   - They need experts to help them identify solutions.
   - Keep the handout and use it during their field activity.

10 minutes

5. Distribute a digital camera to each small group.
6. Explain and demonstrate camera use, including the zoom and wide-angle features.
7. Tell students:
   - Good photos provide as much information as possible and include the object of interest and its surroundings.
   - They will write a field note about each photo to explain the hazard they have photographed.

10 minutes

8. Tell students:
   - They will capture GPS data (or address information) at the same time they take a photo.
   - Set the clocks on their GPS receivers (if using) and camera to exactly the same time.
   - Use the Internet to get the correct time.
   - Practice using the GPS receiver (if using) and camera together. Note: students may need to go outside to get a GPS signal.

5 minutes

9. Gather students and review maps of walking routes from the last session.
10. Remind students that a short note should be written about each photo they take.
    - Provide an example of a field note (e.g. if a photo is taken of an unsafe street crossing, describe why it is unsafe in the note).
11. Ask the small groups to pick a:
    - Map holder and note-taker
    - Photographer
    - Navigator (to use the GPS receiver or write down street addresses of each photo)
    - Timekeeper

Review: 5 minutes

1. Review the field activity roles (ask students to raise their hand as you call out the roles).
2. Tell the students they will code and analyze the field data when they return to the classroom.
3. Explain the field work activity that will occur next session:
   - Small groups will walk the route (they picked) with an adult partner.
   - They will take photos, write a short note explaining the problem in the photo, and capture location information with the GPS receiver. [Or, they will write down address information].
   - They will return to the classroom at the designated time.