GPS Treasure Hunt

Summary
In this activity students will learn step by step how to use a GPS, then they will go on a treasure hunt to learn how to use a GPS to find waypoints.

Objectives
- Students will use GPS technology to find waypoints
- Students will be able to describe latitude and longitude
- Students will discuss how technology has had an impact on society

Materials (one set of materials per group)
- Handheld GPS unit (one per group)
- Various treasure items to hide (treasure chest, toys)
- GPS in the classroom powerpoint
- GPS instructions handouts (one per group)

Making Connections
This connects with lesson #2 that focused on mapping and using latitude and longitude to find and plot a position (waypoint).

Teacher Prep for Activity (20 minutes)
1. Turn on handheld GPS
2. Review the GPS in the classroom powerpoint
3. Follow instructions in the powerpoint and use the manual for your particular model for setting a waypoint
4. Hide various items around your campus, while you are at the hiding spot, plug in the waypoint
5. Arrange for at least one adult per group to help guide them as a team leader
6. Print GPS instructions for each group and one for each teacher/team leader

Background
GPS is a new type of technology that is used for both marine and terrestrial science and navigation. More traditional techniques of ocean navigation include using the stars or a compass. While on a modern research vessel scientist use GPS to find specific locations or waypoints on their voyage.
Vocabulary
GPS stands for Global Positioning System uses satellites to find a specific location

Latitude represents a location north or south of the equator, ranging from 0 at the equator, 90 °N or + 90 °S (horizontal lines on map)

Longitude represents a location east or west, ranging from 0° at the prime meridian to +180°E or -180 °W (vertical lines on map)

Waypoint is a reference point in physical space used for purpose of navigation

Procedure
1. Set up GPS waypoints prior to class and keep the location of the waypoints secret
2. Show the class the powerpoint, which includes:
   a. Review of parts of map (latitude, longitude, title, name, scale, compass rose)
   b. Uses of GPS in science
   c. Step by Step lesson on how to use a GPS
3. Pass out the GPS’s (one per group if possible)
4. Pass out instructions
5. Review the steps of how to use a GPS again (this will work with the ELMO)
6. Take the students outside, review the instructions again before they start their GPS treasure hunt lesson
7. Remind students to ask the teacher/group leader if they have any questions
8. Once the students find the treasure have them come back to class
9. Discuss as a class how they used the GPS to find the treasure.
10. Ask the students what they think the impact of this type of new technology had on society.

Assessments
Class discussion after lesson
Ability to navigate to treasure with GPS

Resources
GPS instruction manual that comes with the handheld GPS
For example the GARMIN GPSMAP 76CSX Handheld GPS is a user friendly model
The GARMIN website has manuals available online
http://www.garmin.com/garmin/cms/site/au/

Extension Activities
Students could do the activity again but this time you could teach them how to plug in their own waypoints. Then they could hide the treasure for other students or other classes.

Take the GPS with you on field excursions and have them set waypoints and map.
How to find a waypoint with a handheld GPS

GROUP 1
1. Turn on the GPS by holding down the red button * Make sure the strap is around your wrist
2. Press the PAGE button twice to get to your main page
3. Wait for the satellites to detect your location (you have to be outside) it will show your latitude and longitude when the satellites are ready
4. Press the PAGE button to look through the (6) pages
5. Press the NAV button
6. Make sure that GO TO POINT is highlighted and press the ENTER button
7. Make sure the WAYPOINTS is highlighted and press ENTER
8. Select the waypoint with the name _____________________________ press ENTER
9. Make sure the GO TO button is highlighted and press Enter
10. Press PAGE to get to the compass screen
11. Follow the arrow, the GPS will beep and flash a message ARRIVING AT DESTINATION when you are close to your waypoint
12. Collect the item at your waypoint
13. Bring it back to class (make sure it has your group # on it)
14. Turn off the GPS when you are done by holding down the red button

GROUP 2
1. Turn on the GPS by holding down the red button * Make sure the strap is around your wrist
2. Press the PAGE button twice to get to your main page
3. Wait for the satellites to detect your location (you have to be outside) it will show your latitude and longitude when the satellites are ready
4. Press the PAGE button to look through the (6) pages
5. Press the NAV button
6. Make sure that GO TO POINT is highlighted and press the ENTER button
7. Make sure the WAYPOINTS is highlighted and press ENTER
8. Select the waypoint with the name _____________________________ press ENTER
9. Make sure the GO TO button is highlighted and press Enter
10. Press PAGE to get to the compass screen
11. Follow the arrow, the GPS will beep and flash a message ARRIVING AT DESTINATION when you are close to your waypoint
12. Collect the item at your waypoint
13. Bring it back to class (make sure it has your group # on it)
14. Turn off the GPS when you are done by holding down the red button

CONGRATULATIONS GROUP # 1!!!
YOU FOUND YOUR WAYPOINT! BRING THE ITEM BACK TO CLASS!

CONGRATULATIONS GROUP # 2!!!
YOU FOUND YOUR WAYPOINT! BRING THE ITEM BACK TO CLASS!
How to find a waypoint with a handheld GPS

GROUP 3

1. Turn on the GPS by holding down the red button * Make sure the strap is around your wrist
2. Press the PAGE button twice to get to your main page
3. Wait for the satellites to detect your location (you have to be outside) it will show your latitude and longitude when the satellites are ready
4. Press the PAGE button to look through the (6) pages
5. Press the NAV button
6. Make sure that GO TO POINT is highlighted and press the ENTER button
7. Make sure the WAYPOINTS is highlighted and press ENTER
8. Select the waypoint with the name ______________________________ press ENTER
9. Make sure the GO TO button is highlighted and press Enter
10. Press PAGE to get to the compass screen
11. Follow the arrow, the GPS will beep and flash a message ARRIVING AT DESTINATION when you are close to your waypoint
12. Collect the item at your waypoint
13. Bring it back to class (make sure it has your group # on it)
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GROUP 4

1. Turn on the GPS by holding down the red button * Make sure the strap is around your wrist
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4. Press the PAGE button to look through the (6) pages
5. Press the NAV button
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7. Make sure the WAYPOINTS is highlighted and press ENTER
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10. Press PAGE to get to the compass screen
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12. Collect the item at your waypoint
13. Bring it back to class (make sure it has your group # on it)
14. Turn off the GPS when you are done by holding down the red button

CONGRATULATIONS GROUP # 3!!!
YOU FOUND YOUR WAYPOINT! BRING THE ITEM BACK TO CLASS!

CONGRATULATIONS GROUP # 4!!!
YOU FOUND YOUR WAYPOINT! BRING THE ITEM BACK TO CLASS!
How to find a waypoint with a handheld GPS

GROUP 5

1. Turn on the GPS by holding down the red button * Make sure the strap is around your wrist
2. Press the PAGE button twice to get to your main page
3. Wait for the satellites to detect your location (you have to be outside) it will show your latitude and longitude when the satellites are ready
4. Press the PAGE button to look through the (6) pages
5. Press the NAV button
6. Make sure that GO TO POINT is highlighted and press the ENTER button
7. Make sure the WAYPOINTS is highlighted and press ENTER
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9. Make sure the GO TO button is highlighted and press Enter
10. Press PAGE to get to the compass screen
11. Follow the arrow, the GPS will beep and flash a message ARRIVING AT DESTINATION when you are close to your waypoint
12. Collect the item at your waypoint
13. Bring it back to class (make sure it has your group # on it)
14. Turn off the GPS when you are done by holding down the red button

CONGRATULATIONS GROUP #5 !!!
YOU FOUND YOUR WAYPOINT! BRING THE ITEM BACK TO CLASS!

CONGRATULATIONS GROUP # _____!!!
YOU FOUND YOUR WAYPOINT! BRING THE ITEM BACK TO CLASS!
How to find a waypoint with a handheld GPS

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How to find a waypoint with a handheld GPS

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