"I AM A BIOLOGIST" GPS LAB

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Target Grade Level

5th Grade

Prior Knowledge Needed for Activity
- Familiar with James Lewis Elementary playground.
- Working knowledge of GPS set up and procedures.
- Teacher should preset waypoints.
- Students should have a basic understanding of how to use a GPS.
- Students should have background knowledge on cave animals and adaptations. A basic understanding of science tools and life science terms. This lab is also designed to review life science concepts.

Management Issues:
- Teacher should have map and answer key during the lab, in order to assist activity and answer questions.
- The teacher will need to pre-arrange the organization to borrow GPS units from other ICE5 teachers.
- Teacher should organize specialized plans for students with physical needs.
- Some student groups might need the assistance of a calculator to help them figure answers, due to the time constraint of the lab.
- Depending on the needs of the class, the teacher might enlist parents or paras to help facilitate the activity.
- All groups will end at the same waypoint. The teacher might want to have a special treat or project for groups who finish early.
- Students should be grouped and specific tasks should be given.
- This GPS lab uses the school's playground; therefore, using the course might overlap with recess times.
- **Sample Email to send to colleagues**

> Good Morning!
>
> My class will be on an academic scavenger hunt today around on the playground. I have placed some zip lock bags with clues here and there. Please share with students that these bags are for a special project. Thanks for your help.
>
> Amanda Carey

- **Teacher Tips Day of Lab**
  - Check for mud (if mud is present; make students aware)
  - Secure clues with notes (see sample bag attachment)
  - Distribute and attach clue packets (zip lock bags) in proper waypoint locations.

GLEs

- **4.1.A.a (DOK 1)** - Among Organisms and Their Environment; Identify the ways a specific organism may interact with other organisms or with the environment (e.g., pollination, shelter, seed dispersal, camouflage, migration, hibernation, defensive mechanism)
- **4.3.C.b (DOK 2)**-Identify specialized structures and senses and describe how they help animals survive in their environment (e.g., antennae, body covering, teeth, beaks, whiskers, appendages)
- **4.3.C.c (DOK 1)**- Identify internal cues (e.g., hunger) and external cues (e.g., changes in the environment) that cause organisms to behave in certain ways (e.g., hunting, migration, hibernation)
- **.3.C.d (DOK 2)**- Predict which plant or animal will be able to survive in a specific environment based on its special structures of behaviors.
- **3.1.D.a (DOK 2)**– *Scope and Sequence – Classification of Plants and Animals;* Compare structures (e.g., wings vs. fins vs. legs; gills vs. lungs; feathers vs. hair vs. scales) that serve similar functions for animals belonging to different vertebrate classes
- **3.1.E.a-c(DOK 1)**- *Scope and Sequence – Classification of Plants and Animals;* Classify animals as vertebrates and invertebrates
- **3.1.E.a -d(DOK 1)**- *Scope and Sequence – Classification of Plants and Animals;* Classify vertebrates animals into classes (amphibians, birds, reptiles, mammals, fish) based on their characteristics.

Timeline:

- This lab is designed to be used as a review of life science and cave concepts. Including vocabulary.

Time Needed:

- 50 – 60 minutes

Depth of Knowledge

Science Level: 1 (All review questions require basic recall)
Math Level: 2 (Some math problems require multi steps in order to calculate answer.)

Materials

- 6 GPS units
- String
- 14 Gallon Zip lock bags
- Per Student
  - Clipboards
  - Writing Utensils
  - Student Handout

Vocabulary In Relation to GPS Questions

- Beaker: a flat-bottomed cylindrical container, usually with a pouring lip
- Behavioral Adaptation: Inherited behaviors that help animals survive.
- Biome: a complex biotic community characterized by distinctive plant and animal species and maintained under the climatic conditions of the region,
- Blind: Some cave animals are blind because they do not need eyesight to survive.
- Classify: To put things into groups
- Extinct: A species that has no members of its kind alive.
- Grasslands: an area, as a prairie, in which the natural vegetation consists largely of perennial grasses, characteristic of subhumid and semiarid climates.
- Habitat: A place in which an organism lives.
- Hearing: A sense that bats relay on to help them find food.
- Invertebrate: An animal without a backbone.
- Kingdom: The highest or most general group of organisms.
- Life: A Biologist studies life science.
- Linear Measurement: A ruler is used to measure linear measurement.
- Magnifying Glass: A tool using a lens that produces an enlarged image of an object.
- Microscope: A tool used with a magnifying lens or a combination of lenses for inspecting objects too small to be seen or too small to be seen distinctly and in detail by the unaided eye.
- Niche: The role that an organism has in an ecosystem.
- Predator: An animal that hunts other animals for food.
- Sinkhole: A hollow place in the ground where drainage collects.
- Sound: Echolocation helps cave animals survive by using sound waves.
- Structural Adaptations: changed body parts that help the organism survive in its ecosystem.
- Thermometer: an instrument for measuring temperature, often a sealed glass tube that contains a column of liquid, as mercury, that expands and contracts, or rises and falls, with temperature changes
- Troglobite: An animal that can only survive in a cave environment.
- Vertebrate: An animal with a backbone: (reptiles, amphibians, fish, mammals, birds)
- Weight: A scale or pan balance is used to measure weight.

Lesson Plan:

1. Explain to students that each group has a different and unique set of instructions. Remind them that it will not be helpful to follow other groups because the order of the stations is not the same for every group.
2. Share that each group will start at the same waypoint and given their first "clue". Model for students how to solve a clue and find the waypoint in their GPS unit.
    - Use the "find" command and scroll down until you find the listed waypoint number.
    - Explain that all waypoints are three digits and have a J preceding it. Also share that for some waypoints a zero will need to be added to find the correct waypoint in the GPS unit. (e.g., 56 will need a zero—056)
3. Continue to explain that once a group has reached the correct waypoint, they will need to find their group's clue inside the bag. Express the importance of locating the correct clue based on their group's name. (In order to complete the course, all groups must follow their set of clues). Share that if there is not a clue for your group in the bag, then they are at the wrong waypoint and need to go back to their last waypoint. Discuss as a class reasons why there might be an error. (e.g., selected wrong waypoint, miscalculated math component, selected wrong clue, etc.)
4. Have students start the lab and continue until all groups have reached the target final waypoint.
    - Extension: Have a special celebration and project waiting for groups who finish early.
5. After returning from the lab, reflect as class. Discussing how GPS technology works and review concepts reviewed within the clues.

GPS LAB
Waypoint: _____

Please
Do Not Touch!

GPS LAB
Waypoint: _____

Please
Do Not Touch!