Park Biodiversity Data Collection and Interpretation (6-12)

Science and Mathematics

***Summary*:** Students partner with a local park to create and use biodiversity surveys and data collection to record and publish interpretive species material for park visitors.

Service and Learning Activities

Preparation: Invite park staff to the classroom to talk to students about the park, show maps, and share any existing interpretive information. Brainstorm data collection methods that could be used at the study site. (Examples: take pictures, draw, count, and/or collect specimens.) Instruct quadrant and/or transect method of counting species diversity. (Count how many different species within the quadrant or touching the transect line every ten meters.) Brainstorm most appropriate method for data collection at study site. Practice species diversity method of choice. (Student teams select and set up study sites, conduct survey to create an "answer key," rotate teams through each other's sites. Compare data collected, brainstorm obvious discrepant data. Refine and define a "standard" data collection technique.) Share recorded data and method of recording. Brainstorm "best" way of data recording, analysis, and display. Establish standard method of recording and display (tables, charts, pictographs, etc.). Brainstorm and design an assessment rubric measuring procedure mastery, and data recording, analysis and display mastery. Assess mastery of survey techniques and data recording/display. Have students to set up the assessment sites and "answer keys". Brainstorm and decide on alternative data collection strategies to be used at the site. (Examples: plant press, narrative description, sketch, photograph, capture/release procedures, etc.) Teach skills as necessary. Prepare for field trip. All students collect species diversity data. Allow students to decide what other data collection technique they will conduct on site. Students might also choose a "target" population (plants, insects, birds, etc.).

Action: Field Trip(s) Study site data collection. Students create displays of species diversity data and create portfolios of additional data (preserved plants, narrative descriptions, sketches, digital images, etc.). Students make flyers or brochures for park visitors.

Reflection: Journaling: What did you learn about collecting species diversity data? How will this project benefit the visitors to the park? How could this project be improved? What are some next steps? What were the greatest challenges in doing this project? What impact(s) did the project have on those serving and served?

Demonstration: Displays and interpretive material (interpretive materials may include data displays, species reports, digital images, pressed plants, illustrations, brochures, flyers, etc.) are shared with other classes and given to the park to inform visitors. Students can also create and present poems, public service announcements, songs, artwork, lessons, videos, skits, displays, or murals to teach other students or the larger community about the project, the need(s) it addresses, and the impact of their efforts.

Standards

Science: The student

SC.G.1.4 Understands the competitive, interdependent, cyclic nature of living things in the environment.

SC.H.1.4 Uses scientific processes and habits of mind to solve problems.

Mathematics: The student

MA.E.1.4 Understands and uses the tools of data analysis for managing information.

MA.E.3.4 Uses statistical methods to make inferences and valid arguments about real-world situations.

Language Arts: The student

LA.B.1.4 Uses writing processes effectively.

LA.B.2.4 Writes to communicate ideas and information effectively.

Academic Objectives

- Collect and analyze species data using science and Mathematics skills
- Use science, Mathematics and language arts skills to create displays and interpretive material from the collected data

***Assessment(s)*:** Student-created assessment rubric, data portfolios, survey techniques and data recording/display mastery assessment

Service Objectives

- Provide interpretive species data displays and materials for a local park

***Assessment(s)*:** Data portfolios, pressed plant specimens (herbarium), species diversity data displays