INVESTIGATE

10 | Taking Action

GRADE LEVEL

4-8

45-90 minutes

summary

Students analyze data from a beach scenario, plan a presentation and decide on actions for improving the health of the beach and present their projects.

objectives

- Analyze data to reach conclusions.
- Develop plans from those conclusions.
- Identify and role-play the participants in beach health scenarios.

prerequisite

Garbage Investigation and Beach Mysteries. This activity can be done in conjunction with Adopt-a-Beach™ to help students practice data analysis.

vocabulary

E. coli: bacteria (Escherichia coli) occurring in various strains, live as harmless inhabitants of the human lower intestine, are used in public health as indicators of fecal pollution, or produce a toxin causing intestinal illness

Bacteria: single-celled micro-organisms that live in soil, water, organic matter, or the bodies of plants and animal and are important because of their role in food webs and as a cause of disease

Stormwater: water that accumulates on the ground during a rain event

setting

INDOORS

subjects

Environmental Science, Math, Language Arts

standards

This Great Lakes in My World activity is aligned to the Common Core State Standards and to state learning standards in:

Illinois
Indiana
Michigan
Minnesota
New York
Ohio
Pennsylvania
Wisconsin

This alignment is available on your Great Lakes in My World CD in the "Standards" folder and on-line at http://www.greatlakes.org/ GLiMWstandards.

materials

- Data chart
- Pencils

background

Collecting data can be an interesting and worthwhile endeavor for students. However, the real interest and potential for critical thinking is in understanding what the data means. This activity allows students to practice analyzing and synthesizing data relating to beach health. When done in conjunction with Adopt-a-Beach™, this activity can serve as a way to get students to interpret data and understand how to look for trends and possible cause-and-effect relationships in information.

procedure

1. Give the students the following scenario: A local middle school has adopted a nearby beach. They have made four visits throughout the fall and spring looking at the shoreline and surrounding area, the type and amount of litter, and the presence of *E. coli* bacteria. They are ready to analyze their data and create an action plan to create positive change at their beach. Where should they start?

2. Give the students the data in the journal pages. Data on litter and water quality was collected each time, on separate charts. Have them compare the visits based on the data and use the journal questions to make note of their observations. As a class, discuss the data. *This may include noticing problems with overflowing trash cans, consistent seagull waste, and a possible sewage overflow on the second visit.*

3. Introduce the idea of taking action to help the beach. Divide students into groups and have each group pick one problem on which they will focus their attention. *Problems might include overflowing trash cans, consistent seagull waste, possible sewage overflows, lack of educational signage, stormwater runoff from the paved parking lot.* What type of project can students create that will address these issues?

4. Have students develop an action project to address the issue, including a presentation of results to each other in "roles" of city officials.

wrap-up

1. Have each group take turns presenting their action project while the other group role-plays the group hearing the results.

2. After both groups have presented, evaluate the presentations. Did the students prefer presenting or hearing the presentation? What did the other group do well? What could they do better? If your classroom were to really arrange a meeting, what other things should be considered?

extension

- Students take results from Adopt-a-Beach™ or Garbage Investigation and create an action plan to help their beach.
- Use this activity as a model for presenting actual data to community decision-makers.
- Have the class participate in the Alliance for the Great Lakes' ongoing Adopt-a-Beach™ program: www.greatlakes.org or the International Coastal Cleanup, which occurs on the third Saturday of every September: www.oceanconservancy.org.

assessment

Rubric on page 311

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(!) We value your thoughts and feedback on Great Lakes in My World. Please let us know about any oversights, errors or omissions you find, or if there are things you or your students particularly like.

Send your comments to: education@greatlakes.org

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FIRST NAME																		
LAST NAME																		

TaKing Action

Help! The following data has been collected at a beach nearby. The students who collected it need help figuring out what it all means.

The Results: In additional data, it was noted that the trash cans were overflowing, had no lids and there were no recycling containers. The trash cans are located near the beach entrance. There is no designated eating area. There are no signs about the problems that litter creates on a beach. The parking is on a paved lot 100 yards from the beach. There is no border between the parking lot and the beach sand. The local park district is responsible for maintaining this beach.

Litter Monitoring

	First Visit 9/22	Second Visit 10/14	Third Visit 4/22	Fourth Visit 5/14
Weather	Sunny	Rainy	Sunny, Windy	Partly Cloudy
Air temp	82	68	64	72
Beach users	51-200	1-50	51-200	51-200
Litter condition	Relatively clean	Not very clean	Dirty, lots of litter	Relatively clean
Trash Cans	Overflowing	--	Overflowing	--
Dogs	No dogs unleashed	Yes, all on leashes	Yes, some not leashed	Yes, some not leashed
Animal Waste	Seagull	Seagull	Seagull, Dog	Seagull
Water Smell Strange?	No	Yes, raw sewage	No	No
Restrooms	Very Clean	LocKed	LocKed	Dirty walls/ buildings
Cigarettes	124	74	223	62
Food Wrappers	79	112	57	123
Aluminum Cans	12	16	8	10
Glass Bottles	5	24	6	12

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journal ≡ pages

FIRST NAME

LAST NAME

Water Monitoring

	First Visit 9/22	Second Visit 10/14	Third Visit 4/22	Fourth Visit 5/14
Weather	Sunny	Rainy	Sunny, Windy	Partly Cloudy
Beach users	50-100	1-20	50-100	100-200
Toddlers	1-20	0	1-20	21-49
Gulls	1-20	1-20	21-49	1-20
Geese	0	1-20	0	0
Water Smell Strange?	No	Yes, raw sewage	No	No
Date of Last Precipitation	9/3	10/13	4/19	4/30
E. coli count	3 colonies	12 colonies	6 colonies	10 colonies
Other Coliform	14 colonies	32 colonies	11 colonies	17 colonies

Looking at the Data

[1] What observations can you make based on this data?

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[2] What problems might be indicated by the data?

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[3] What suggestions do you have for helping this beach become a healthier place?

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journal pages

FIRST NAME

LAST NAME

Helping Out

[4] What beach problem is your group working to solve?

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[5] What is your plan or "action project" for addressing this issue?

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[6] How will you present this "action project" to the class?

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Presentations

[7] Did you prefer presenting or hearing the presentation? Why?

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[8] What did your group do well?

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[9] What could your group have done better?

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