Go GeoWild with Pokemon GO!

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Grade Level	6
Duration	2 class periods

National Standards	AZ Standards	Arizona Social Science Standards
GEOGRAPHY **Element 1. The World in Spatial Terms** 1. How to use maps and other geographic representations, geospatial technologies, and spatial thinking to understand and communicate information	**ELA** **Writing** **Production and Distribution of Writing** 6.W.4 Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience. **MATHEMATICS STANDARDS** **Statistics and Probability** **6.SP.A.1.** Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. **6.SP.B.4.** Display numerical data in plots on a number line, including dot plots, histograms, and box plots. **TECHNOLOGY** **Data and Analysis** 6.DA.CVT.1 Compare different computational tools used to collect, analyze and present data that is meaningful and useful.	**GEOGRAPHY** **The use of geographic representations and tools helps individuals understand their world.** 6.G1.1 Use and construct maps, graphs, and other representations to explain relationships between locations of places and regions.

SIOP Elements

Preparation Adapting content **Linking to background** Linking to past learning Strategies used	**Scaffolding** Modeling Guided practice **Independent practice** **Comprehensible input**	**Grouping Option** **Whole class** **Small groups** Partners **Independent**
Integrating Processes Reading **Writing** **Speaking** Listening	**Application** Hands on Meaningful Linked to objectives **Promotes engagement**	**Assessment** Individual **Group** **Written** Oral

Arizona English Language Proficiency Standards

Stage IV
Basic
Speaking & Listening

aps | aps foundation

ARIZONA GEOGRAPHIC ALLIANCE

Standard 2: The student will express orally his or her own thinking and ideas.
B-10: The students will communicate orally by preparing and presenting a report using functional text using complete sentences.
Writing
Standard 1: The student will express his or her thinking and ideas in a variety of writing genres.
B-6: writing a variety of functional text (*e.g., instructions, directions*) that addresses the audience, stated purpose and context.

Overview

Learning how geospatial technologies enriches our understanding of the world is an important concept in the 21st Century. While much data that is available may not be interesting to middle school students, students can become not only data gathers but analyzers by catching the Pokemon Go fever.

Purpose

In this lesson students will learn how to use geospatial technologies and Google Docs to gather, analyze and present information. Students will also answer a statistical question using a histogram.

NOTE: Students do not have to have a Pokemon GO account; however; they can add their own Pokemon data to the activity if you choose.

Key Vocabulary

statistical question: a question that anticipates variability (differences) in the data related to the question and accounts for it in the answers *For example, "How many Pokemon are there?" is not a statistical question, but "How many evolved Pokemon or fire-type Pokemon are in our community?" is a statistical question because one anticipates variability in types of Pokemon found within the community.*
numerical data: data that can be measured
histogram: a graph that displays data that is grouped into ranges (for instance, fire-type, grass-type, etc or 600XP-800XP) and then plotted as bars
geospatial technology: technologies used for visualization, measurement and analysis of earth's features such as GPS (global positioning systems) and GIS (geographical information systems)

Materials

- Google Map of local Pokemon finds (either digital or hard-copy)
- Computers/tablets/cell phones with wifi connection (or can be done on paper with adaptations)
- Local regional maps
- Color dots or markers
- Vocabulary Cards
- Vocabulary Test with Answer Key
- Pokemon GO! Statistical Analysis
- Pokemon GO Presentation Rubric

Objectives

The student will be able to:

1. interpret a Google Map to identify data.
2. recognize and develop a statistical question.
3. construct a histogram to display numerical data.
4. use Google Slides to synthesize data and to produce relevant information for a target audience.
5. present orally information.

Procedures

Prerequisite Knowledge: Students can identify man-made/human and natural/physical features.

SESSION ONE

Engage:
a. Ask students, "What would happen if aliens invaded Earth? What would we do? Would we get rid of them? Welcome them? Capture and study them?"
b. Explain that "aliens" have infact invaded many places on Earth and that we are currently tracking them using GIS and Google Maps.
c. Show this short (2 min) video: http://www.pokemon.com/us/pokemon-video-games/pokemon-go/
d. Discuss experiences, knowledge, and possible impact of Pokemon GO. **(Preparation: Linking to Background)** *NOTE: If not familiar, Pokemon GO is a virtual reality-type game that allows people to track, capture and battle Pokemon*

monsters in their own neighborhood with other people using Google Maps and GIS. The game took the world by storm and has elevated needs for safety rules, has promoted interaction with people in the community and healthy outdoor gaming, and has dramatically invigorated a high interest in maps and spatial data. The innovators of Pokemon GO extended the game to include data on geology, vegetation, and hydrology by placing different types of Pokemon in it's "natural" habitat such as putting water –type Pokemon near actual lakes, streams, and the ocean (Lankinen, 2016).

Explore:

a. Write these headings on the white board: Pokemon Sightings, Types of Pokemon, and Locations of Pokemon in relation to Natural and Man-made Features.

b. Have small groups examine (for the headings written on the white board) the Phoenix Area Pokemon Google Map https://www.google.com/maps/d/viewer?mid=1ssGVwO3HWAApbgK4vI4iCEbokaU (or one for your community) either electronically or printed out on paper. **(Application: Promotes Engagement; Grouping Option: Small Groups)**

c. Have students share out ideas and record them on the whiteboard.

d. Then ask, "What kinds of questions do you have related to the data?" Record the questions students brainstormed on white board as well.

Explain:

a. Explain the vocabulary terms "numerical data" and "statistical question" and add them to a Word Wall to refer to throughout the lesson.

b. Review the questions on the white board. Which of these questions were statistical questions?

c. As a whole group, brainstorm additional statistical questions that the can be answered using the map. **(Application: Promotes Engagement; Grouping Option: Whole Group)**

d. Explain that in their small groups, they will determine a statistical question they want to answer. They will do this using Google Sheets (similar to MicroSoft Excel) to collect and chart data from a local Pokemon GO map.
NOTE: This can be done with out electronic devices as well by using chart paper and a hardcopy of the online map.

e. Show students a completed Google Sheet so they can visualize what is wanted. **(Scaffolding: Comprehensible input)**
https://docs.google.com/spreadsheets/d/1DO09TZPMVLAxnKXSJhuAH_Bx5FZOtQlwEr-8lsdcDzs/edit?usp=sharing

f. Now show students how to create their own Google Sheet by modifying the data on this sheet to match their collected data (video on how to create Google Sheets can be found at: (3.49 min) https://www.youtube.com/watch?v=QTgvX5MLPC8 Allow time for data input into their sheet.

g. Explain the vocabulary term "histogram" and add the word to the Word Wall. Show the "How to Make a Histogram using Google Sheets" video (2.25 min) https://www.youtube.com/watch?v=MFrpRzcUR8w **(Scaffolding: Comprehensible input)**

h. Brainstorm Pokemon data that should be displayed using a histogram. Data collected could be distance from the school, XP level, number of Pokemon based on different types (water, ground, fire, etc), etc.

i. Have groups think about their Statistical Question. How can it be displayed using a Histogram? Share out.

j. Have groups build histograms in Google Sheets.

SESSION TWO

Elaborate:

a. Explain that the students now need to present their Pokemon GO data findings. Distribute the Pokemon GO! Statistical Analysis worksheet. Explain that in their small groups, each group will create a Google Slide Show to present their findings. Each group (or student) will create a 7-Slide presentation that will include:

- (slide 1) Title Page
- (slides 2-6) (more than one topic on a slide)
  - Pokemon GO map used
  - Data collected
  - Histogram
  - Explanation of data selection
  - Analysis and evalation presented
  - Possible "next step" statistical question they would like to investigate
- (slide 7) Sources Page

(Application: Promotes Engagement; Grouping Option: Independent or Small Group) (Integrated Processes: Writing)
Note: If electronic devices are not available for each group or individual students, this can be done on paper as a scrapbook or journal type of activity.

b. Share Pokemon GO Presentation Rubric so studients understand how the slide show and its oral presentation will be scored.

c. Allow time for development of presentation.

Evaluate:

a. Have students grouped so that no more than one student from the previous small groups is in the new

group. Have each student in the group share their slide show with the new group.
b. Peers will evaluate each other using the Pokemon GO Presentation Rubric. **(Integrated Processes: Speaking, Listening)**
c. So how does Pokemon Go work? How does it use Geospatial Technology? Conclude the day with introducing the vocabulary term "geospatial technology." View the 6 min video and discuss. https://www.youtube.com/watch?v=sSVfBTbMADE (stop at 3:40).

Assessment

Student mastery will be considered:

- 80% or higher on the Pokemon GO Presentation Rubric.
- 100% completion on the Pokemon GO! Statistical Analysis
- 80% or higher on the Vocabulary Test

Extensions

Students can collect their own data based on their statistical question and compare/contrast their data to the data provided (from Mesa/Tempe, Arizona).

Students can develop their own Google Map using class data and share it online within a local community.

Students can create a Google Form and ask friends/family to collect additional data that they can analyze – comparing Pokemon Go! data from different communities.

Other math concepts (for other grade levels or math standards) can be integrated such as developing bar graphs or circle graphs rather than histograms.

Sources

Background Information: A. Lankinen, 2016. The Mystery of Pokemon GO Maps is Solved – and It's Not Just About the Street Maps. http://www.spatineo.com/2016/07/mystery-pokemon-go-maps-solved-not-just-street-maps/

Pokemon Google Map Phoenix Metropolitan Area, https://www.google.com/maps/d/viewer?mid=1ssGVwO3HWAApbgK4vI4iCEbokaU

Google Sheet Example to Modify: https://docs.google.com/spreadsheets/d/1DO09TZPMVLAxnKXSJhuAH_Bx5FZOtQlwEr-8lsdcDzs/edit?usp=sharing

How to Create a Google Sheet: (3.49 min) https://www.youtube.com/watch?v=QTgvX5MLPC8

How to Make a Histogram Using Google Sheets (2.25 min) https://www.youtube.com/watch?v=MFrpRzcUR8w

For Help Making a Scatter Plot: https://support.google.com/docs/answer/190718?hl=en&ref_topic=1361474

How is Pokemon Go Related to Geography and Math? (GeoSpatial Technology)(7.15 min) https://www.youtube.com/watch?v=sSVfBTbMADE