SCIENCE CAREER ADVENTURES

Mobile App Developer: Citizen Scientist Apps

NGSS Standard: MS-ESS1-1

Adventure Description:

In this adventure, you will think like a mobile app developer and design an app for the Natural History Museum that lets visitors become citizen scientists.

Activity

Step 1: Background on Solar Eclipses (10 minutes)

- Show Video: Citizen Scientist Apps.
- Explain to students that the Natural History Museum wants them to create an app that will teach website visitors about solar eclipses. The app should also let people input observations about changes that happen during a solar eclipse.
- Let students know that when people help scientists collect data, they are called citizen scientists.
- Show Handout: Solar Eclipse Map. As a class, discuss that this is a map of the locations of solar eclipses between years 2021-2040. Discuss how solar eclipses can happen all over the world and can happen in places where scientists are not always at.
- Ask students why they think a citizen scientist mobile app would be useful for helping scientists collect information about what happens during a solar eclipse. Prompt students to mention that many eclipses happen in remote or lower populated locations where a mobile app would come in handy. People all over the world can give scientists information on what is occurring during the eclipse when the scientist is not able to watch the eclipse.
- Next, explain to students that the app they create needs to include information about where people should go to watch an eclipse and when the eclipses will occur.
- Show Handout: During a Solar Eclipse. As a class discuss how the moon moves between the Earth and the sun to create the solar eclipse. Make sure that students see that the moon's shadow is falling on only a small part of the Earth.

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- Ask students what kind of changes might happen on Earth during a solar eclipse. Prompt students to mention changes in light and temperature during the eclipse if they do not do so on their own.
- Explain that both light and temperature slowly decrease as the moon moves until it is directly between the Earth and the sun. As the moon continues to move, light and temperature increase until the moon is no longer covering any part of the sun.
- Ask students what might happen on Earth during in a solar eclipse. As a class brainstorm ideas such as: changes in animal behavior, changes in bug behavior, changes in plant behavior, and changes in how the wind blows.
- Explain that today students will work as mobile app developers for the Natural History Museum to design a citizen science app that lets people learn about solar eclipses and submit observations about what happens during a solar eclipse.

Step 2: Designing a Citizen Science App (10–15 minutes)

- Explain to students that they will create a mobile app that visitors to the Natural History Museum website can use to learn about solar eclipses and input information about changes that happen during a solar eclipse.
- Provide students with Handout: Creating a Citizen Science App. As a class, read through the steps that students will take to design their app.
- Show Video: Wireframes. Discuss as a class the components of a wireframe.
- Ask students to work in pairs to create their Citizen Science App.
- As students are working, circulate through the class prompting for more information, asking questions such as:
- Where does the moon need to be for an eclipse?
- Why does it get (darker, cooler) on Earth?
- Why would that (animal, bug, plant, wind) change behavior because of the eclipse?
- Would the change happen all at once or gradually as the eclipse occurs?
- As you observe groups, record any additional questions that you may want to ask during presentations.

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Steps 3: Class Presentation and Discussion (10 minutes)

- Have each pair present their apps to the class.
- As each pair presents, prompt them for to share more information using the questions from Step 2 or any additional questions you recorded.
- After all groups have presented, ask students to think about any changes they would make based on what they learned from other groups.
- If there is time, allow groups to revise their apps to include their new ideas.

Materials List

Provided online:

- Video: Citizen Scientist Apps
- Handout: Solar Eclipse Map
- Handout: During a Solar Eclipse
- Handout: Creating a Citizen Science App
- Video: Wireframes

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