A black background with a black square

Description automatically generated with medium confidenceCreating a Scientist’s Notebook

**Activity Ideas**



**What to do:** Select a format (e.g., spiral notebook, composition book, lined paper, digital file) for students to use when recording their questions, observations, findings, and ideas during a science project. Consider the prompts suggested in the grid below or write your own to encourage young scientists to wonder and reflect. If you like, use the blank template at the end of this tool to create a grid for students to use.

**Why it matters:** Scientists record data and observations to help them analyze and reflect on what they see during a scientific exploration. The skill of gathering and organizing information is useful in many areas of work and life.

**Tip:** Reviewing students’ notebooks is a wonderful way to do an informal assessment!

# Before the Project

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| **Name/Topic of Project:** NASA GLOBE Observer Clouds |
| **What question is the project trying to answer or explore?**  How do clouds affect Earth’s atmosphere? |
| **How will you help try to answer the question?**  I’ll go outside and look at clouds. I’ll look at how much of the sky is covered by clouds, the shape of the clouds, and the color of the sky. I’ll talk about my observations with others in my group, and we’ll report our data to the scientists who lead this citizen science project. |
| **Background research notes:**   * Clouds are made of tiny water drops or ice crystals. They form from water in the sky. * Clouds are important for many reasons. They make shade to keep us cool during the day. They reflect heat at night to make the ground warmer. They make rain and snow. * There are different kinds of clouds. Cirrus clouds look thin and wispy. Cumulus clouds are big and fluffy. Stratus clouds look like sheets that cover the sky. * Scientists categorize clouds by locations and shape. Clouds can be high in the sky, low, or in the middle. * We practiced using the cloud cover estimation tool from a website. It showed us pictures of clouds in the sky and we had to estimate what percentage of the sky was covered. It doesn’t have to be exact because the project uses ranges, like 25-50 percent, but you want to try to get close. It was a little tricky at first, but Ms. Johnson helped us. It’s kind of like when we learned about fractions. You imagine the entire picture is the whole and then you have to figure out what part of the whole the clouds are. Like if the picture of the sky is half covered by clouds, that’s 1/2, or 50 percent. By the end, I got really good at it! |

# During the Project

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| **Data collection/observation notes:**   * 07/24/2023: I went outside with my class at 11:15 this morning. The sky was really blue. We saw a lot of cumulus clouds. They look kind of like cotton balls. We reported that the sky was 40 percent covered by clouds. Ms. Johnson took pictures on her phone and sent them on the app. * 07/25/2023: We went back outside after lunch. It was 12:30. It’s another hot summer day. The sky was blue and we saw cumulus clouds covering 30 percent of the sky. * 07/26/2023: It was raining today, so we didn’t go outside. But we did look out the windows to see if we could see any clouds. The sky looked totally grey. Ms. Johnson said they were probably nimbostratus clouds. I guess I have more kinds of clouds to learn about! Since we couldn’t go outside, we looked at some pictures online instead. * 07/27/2023: The rain is gone! We could go outside again today. The sky was blue and I saw big, fluffy cumulus clouds. After observing for a while, we decided they were covering about 45 percent of the sky because it seemed like a little less than half. * 07/28/2023: It’s Friday and we got to go outside again! I love summer camp. I saw cirrus clouds when we went out this morning. Cirrus clouds look cool because they’re wispy and kind of curly. We estimated that they were covering 20 percent of the sky. |

# After the Project

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| **What did you like about the topic/project?**  I really liked getting to go outside and look at clouds. It was fun when we got to lie down in the grass and look up at the sky. Sometimes the clouds looked like things, like one time I thought a cloud looked like a dog. I liked getting to have class discussions to decide what type of clouds they were and how much of the sky they covered. It’s also cool that we helped scientists by putting our data in the app. |
| **What did you find challenging about the topic/project?**  I didn’t always know what type of clouds they were. I guess there are a lot of kinds. At first, I thought there were just cumulus, stratus, and cirrus, but then Ms. Johnson taught us about other kinds, like nimbostratus. |
| **Describe one thing you learned.**  Clouds are important. I never really thought about them much before, but now I know that they are important to our planet because they make rain and snow, make shade that helps keep us cool when it’s hot like it is now in summer, and reflect heat to make the ground warmer at night. I also learned that there are lots of different kinds of clouds and it’s important to observe the shape and location to tell what kind they are. |
| **What questions do you still have about the project/topic?**   * What are all the types of clouds and what do they do? * How are clouds made? * Why are clouds white? * How much do clouds weigh? How do they stay in the sky instead of falling? |

# Before the Project

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| **Name/Topic of Project:** |
| **What question is the project trying to answer?** |
| **How will you help try to answer the question?** |
| **Background research notes:** |

# During the Project

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| **Data collection/observation notes:** |

# After the Project

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| **What did you like about the topic/project?** |
| **What did you find challenging about the topic/project?** |
| **Describe one thing you learned.** |
| **What questions do you still have about the project/topic?** |

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