

Define and practice the steps of the scientific method

Matching

Match the description to the basic steps

Ask a Question

Form a Hypothesis

Test the Hypothesis

Analyze the Results

Draw Conclusions

Ordering

Place the different parts of Jennifer's experiment on plants in order starting with the question and ending with the conclusion

Jennifer has read that sound affects people and wonders if sound can also affect plants. She is curious to see if plants grow taller with music.

Jennifer hypothesizes that plants will grow taller with soothing classical music than other types of music

3

4

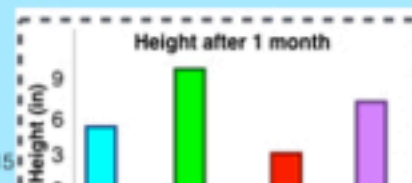
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6

Jennifer notices that the plants grew taller with the more soothing sounds of classical than the harder loud sounds of heavy metal.

Jennifer concludes that her hypothesis was supported because the plants grew higher with classical music than the other types.

er gets 12 plants. She in a room with al, 3 in a room with metal, 3 in a room with v, and 3 in a room with



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Students will analyze and apply

Writing a Hypothesis Practice

Directions: Choose which pieces are the best to create the hypothesis for the question and then drag and drop them into the hypothesis. Then rewrite the hypothesis that you created

Practice 2:

Question: Which **fertilizer** makes a **plant grow higher**?

If **we use different fertilizers**

then **Cow fertilizer**

we use different soils

we use different amounts

Type the hypothesis again

If we use different fertilizers, the plants grow higher.

Practice 3: Question: How does salt affect the growth of plants?

If **we use different amounts of salt**

then **a lot of salt**

we use different types of plants

we use different amounts of water

Type the hypothesis again

If we use different amounts of salt, the plants will not grow as tall.

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Analyze

Kevin wants to see if this special All Grow fertilizer is better than the generic fertilizer. He gets 3 pea plants, 3 corn plants, and 3 cucumber plants. He gives the pea plants the special All Grow fertilizer, the 3 corn plants the generic fertilizer, and the 3 cucumber plants no fertilizer. He gives the corn plants and pea plants 100 ml of water every day and the cucumber plants 200 ml of water every day. Once a week for 9 weeks he measures the height of the plants. At the end of 9 weeks he sees that the corn plants are the tallest and so concludes that the generic fertilizer is better than the All Grow fertilizer.

Analyze

Would Kevin's conclusion be accepted by other scientists? Why?

Add text here

How would you improve Kevin's experiment

Add text here

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Teacher directions and answer key provided

Practice

David noticed that when he ate chocolates they melted in his hand faster when his hands were slightly wet from sweat than when his hands were dry. He was curious to see if other liquids would affect how fast they would melt? He decided to test out four different liquids, water, milk, lemon-lime soda, and orange juice. He then timed how long it took them to melt. He thought the chocolate would melt faster in orange juice than the other liquids because it is more acidic. The results are below

	Water	Milk	Soda	Orange juice
Trial 1	75 seconds	30 seconds	120 seconds	150 seconds
Trial 2	80 seconds	25 seconds	122 seconds	153 seconds
Trial 3	72 seconds	27 seconds	118 seconds	144 seconds
Average	76 seconds	27 seconds	120 seconds	149 seconds

Identify

What was David's Question?

David wants to know how liquids affect the time it takes for chocolate to melt?

What was David's Hypothesis?

David hypothesizes that the orange juice will melt the chocolate faster.

What was his independent variable (the factor that was changed)?

David is changing the type of liquid

What was his dependent variable (the factor that was measured)?

David is measuring the time it takes for the chocolate to melt

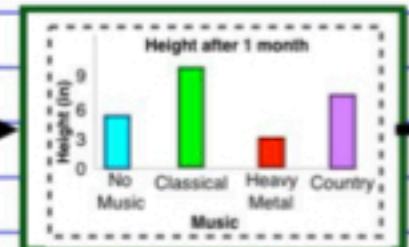
Ordering

Place the different parts of Jennifer's experiment on plants in order starting with the question and ending with the conclusion

Jennifer has read that sound affects people and wonders if sound can also affect plants. She is curious to see if plants grow taller with music.

Jennifer hypothesizes that plants will grow taller with soothing classical music than other types of music

Jennifer gets 12 plants. She puts 3 in a room with classical, 3 in a room with heavy metal, 3 in a room with country, and 3 in a room with no music. Everything is kept the same but the music type.



Jennifer notices that the plants grew taller with the more soothing sounds of classical than the harder loud sounds of heavy metal.

Jennifer concludes that her hypothesis was supported because the plants grew higher with classical music than the other types.

Teachers: click on the titles in the red box to download the digital notebook to their google drive

Teachers Guide

What You Will Need To Get Started:

1. Download link for the Google Resource

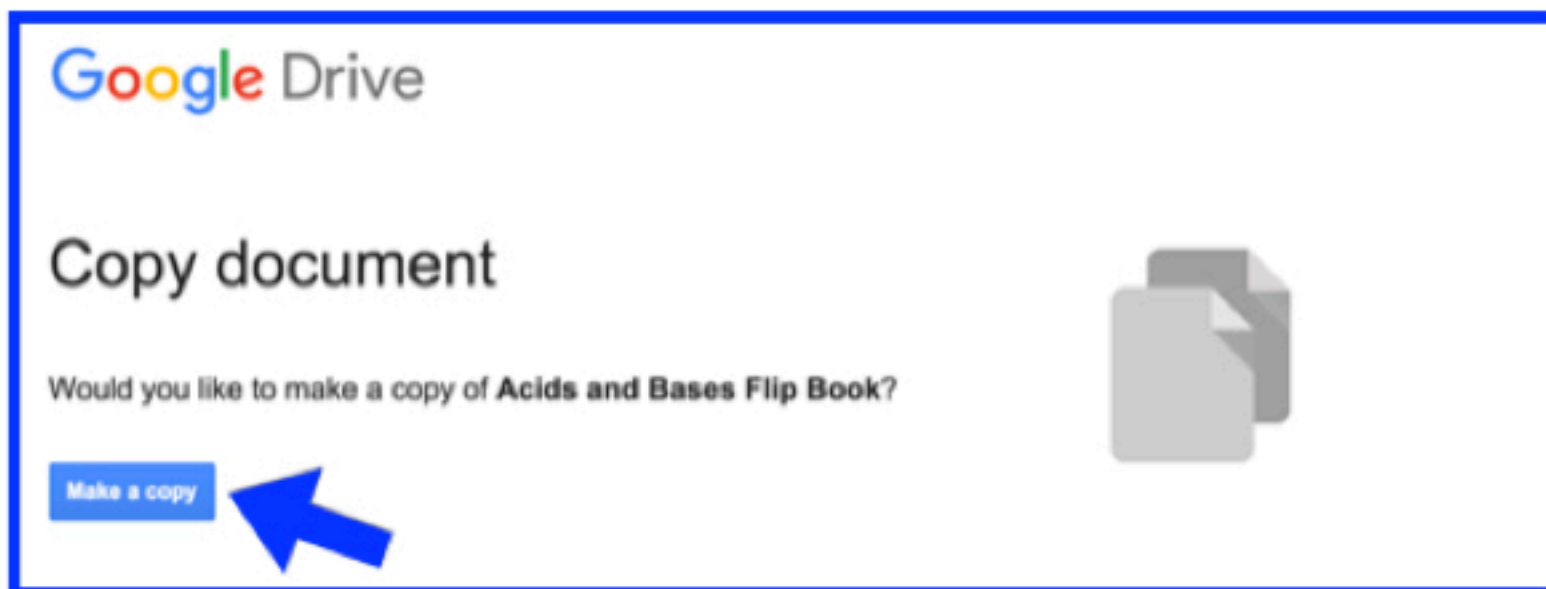
Cell Cycle Digital Interactive Notebook Student

Cell Cycle Digital Interactive Notebook Teacher

2. Access to the Internet and a Google Account (Free)

3. Google accounts or Microsoft OneDrive accounts for your students to save their work

4. Open the file on your Google Drive. The link will prompt you to make a copy



5. This new copy is now yours to edit and share with your students

6. Printer access if you choose to print the finished product as an actual flip book

Teacher directions on how to share with students in google classroom, microsoft one drive, or any other LMS

How to use this resource with your student:

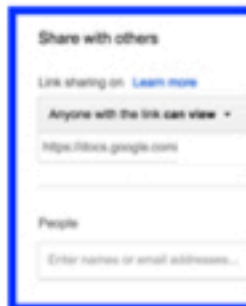
Google Directions:

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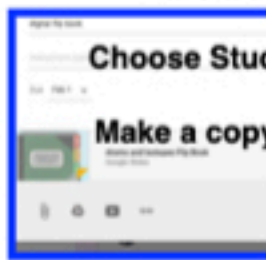
-Some options for this

- A. Give the students the link to your resource and make it "view only" this will allow students to make their own copies without affecting the original. To do this go to the blue SHARE button in the top right corner >get shareable link> choose people with a link can view > copy the link

- **Remember**, when sharing a link on an open class



- B. Use google resource to make a copy



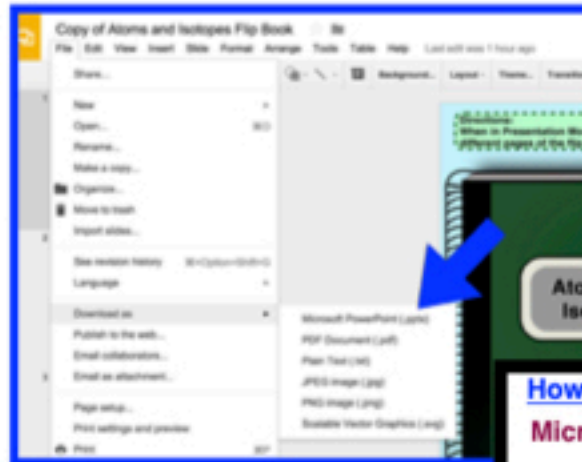
2. Students will be able to automatically save.

3. Students may share

How to use this resource with your student:

Microsoft OneDrive Directions:

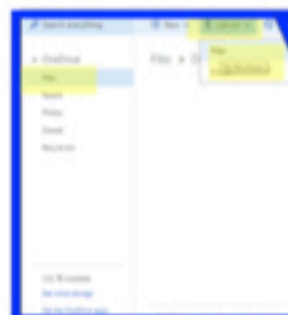
1. After you have made your own copy of the resource from the link, you will need to download your copy as a ppt to your desktop. To do this from the menu to FILE > Download as > Microsoft PowerPoint (.pptx)



2. Open your OneDrive. Create a folder for this step is recommended to keep you and your students' work organized.



3. From the menu, select Upload > Files from your computer or select the file and upload it.



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How to use this resource with your student:

Microsoft OneDrive Directions:

4. Make sure that you open the resource to make sure it is in good working order before sharing it with your students.

5. You will want to interact with the digital flip book in the "edit mode". This allows you to add their own text and move the pieces.

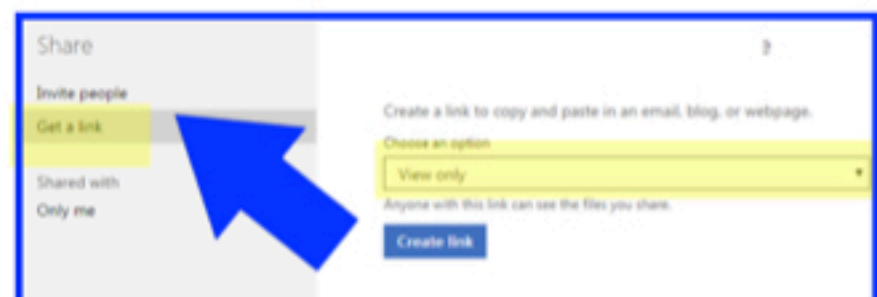
6. You will be prompted to choose to edit the file in PowerPoint or online. Select online. It will then open in a browser.

7. Follow your normal steps in sharing the file with your students. Go to Share > Share with people



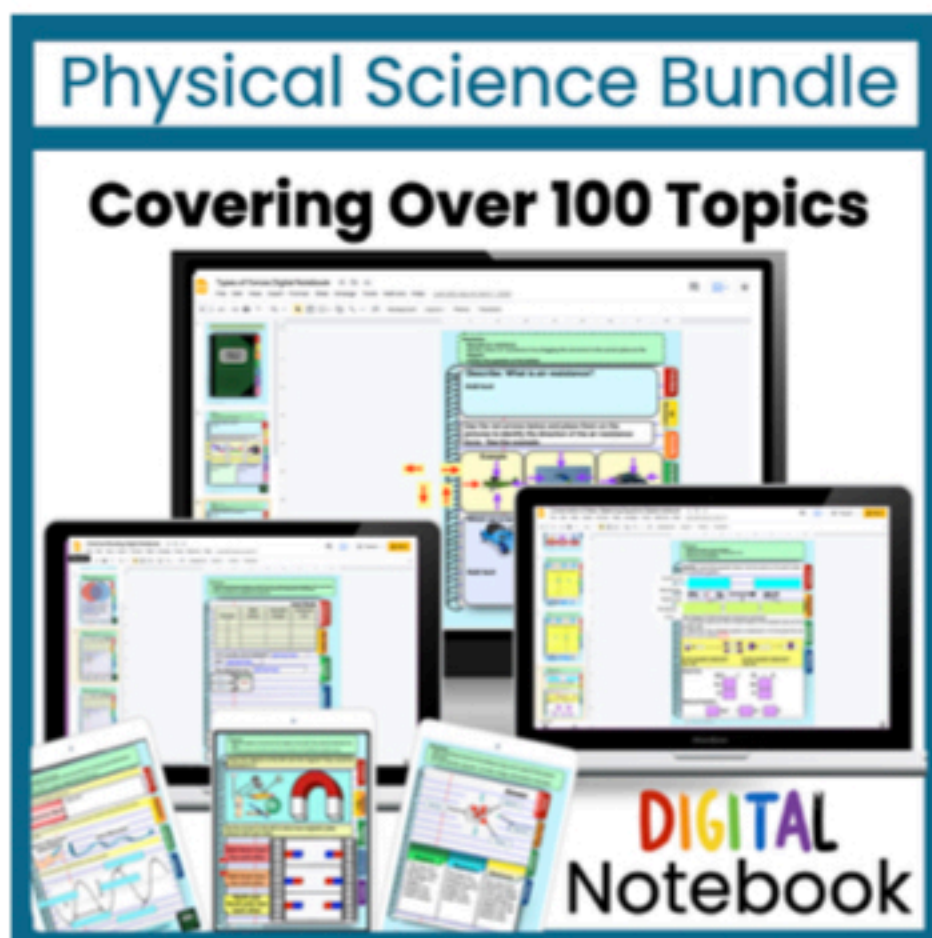
8. Choose the option to view only. Then require your students to make a copy in their own drive before editing the file. This ensures your students do not edit your file.

- **Remember**, when sharing your link with your students make sure it is a secure format that requires a log in password and not on a personal, school, or district that can be accessed by anyone

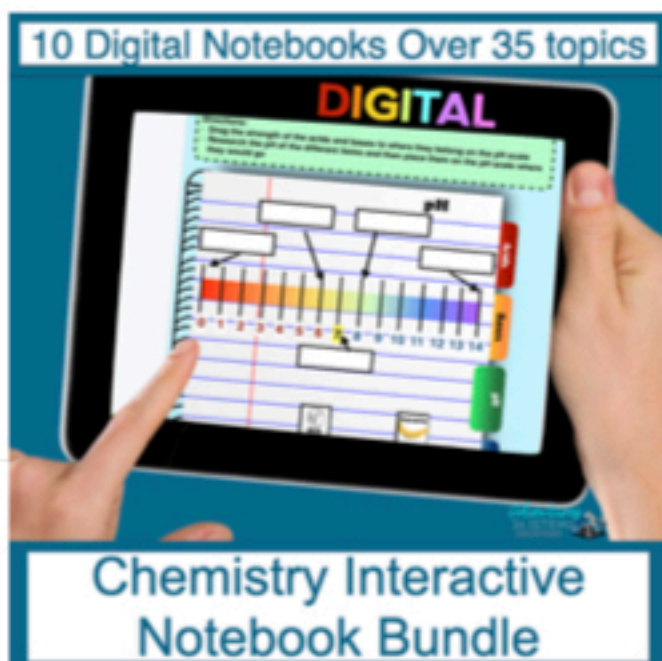




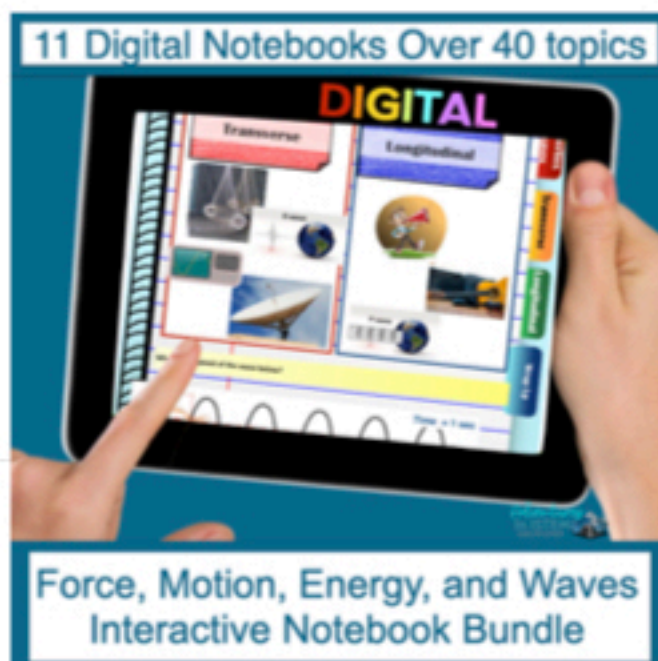
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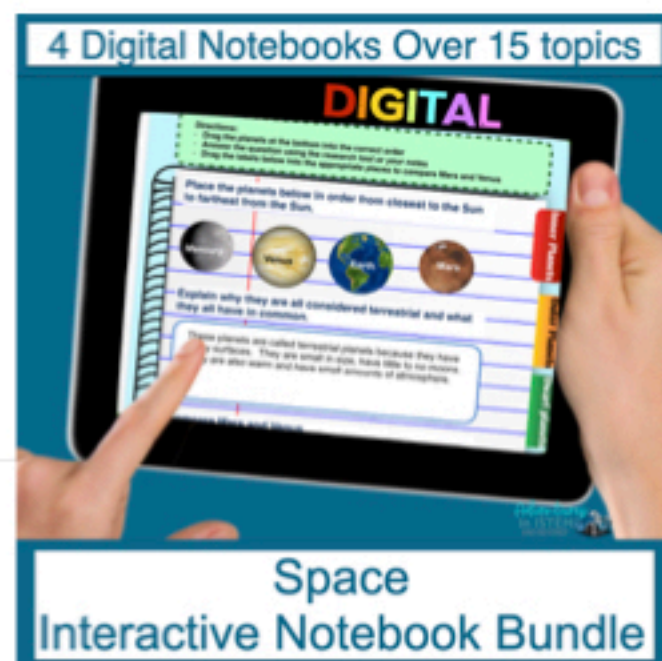
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Teaching STEM Through Inquiry

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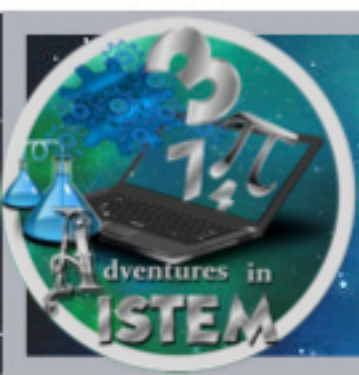
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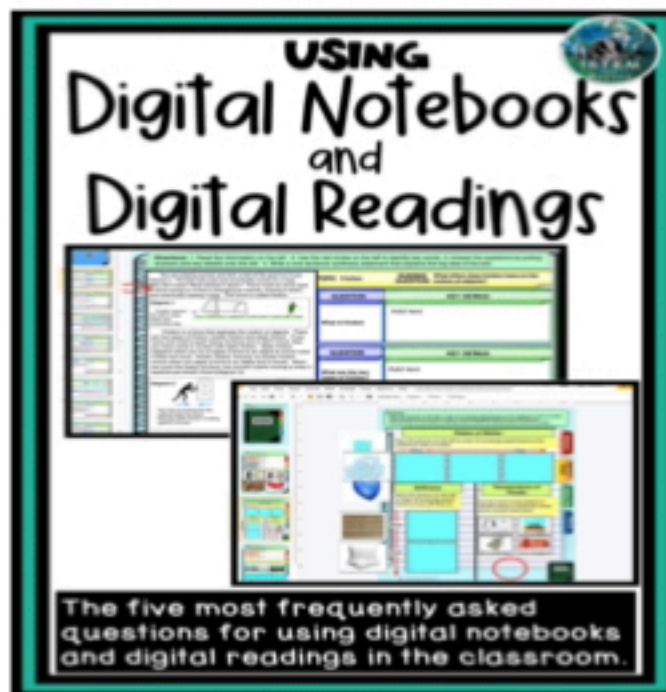




Digital Resources

Using Digital Products?

If you are new to using digital lessons than I recommend to check out my blog post that contains the most frequently asked questions. Click the picture for the link.



I would also recommend checking out my Google Slide videos that demonstrate how to drag and drop pieces, write in the text boxes, add objects, and more. These are short videos that can easily be shared with students and parents. Click the picture for the link

