



## Supporting Student Writing Through the Corn Storyline

### A. What is this section about?

- *How to use the embedded activities and the supplemental lessons in the Corn Unit to support the development of writing skills for your students*
- *How to use writing in combination with academic talk to deepen student engagement in three dimensional learning in science*
- *How to develop and manage the reuse of tools in the classroom (specific anchor charts and worked examples) to support transitions between science and writing lessons in an authentic and coherent manner*

The tools and supports built into this unit of instruction are designed to scaffold the writing students complete before, during, and after a scientific investigation.

It is important to note that the writing in this unit is not intended to replace focused, high-quality writing instruction in, say, a Writing Workshop. Instead, the writing in this unit is designed to give students repeated, authentic writing experiences in which they are writing for a specific purpose and audience. This helps draw the connection between what they are doing and why it is important, not only to their work in the unit, but also to their growth as writers. We highly recommend that the writing instruction in this unit complement a focused unit of instruction on informational writing.

### B. What will students be writing about?

Scientists, like their counterparts in any professional field, integrate writing naturally into their daily work. In this unit we provide authentically motivated writing experiences for students in which actual scientists might engage. Just like professional scientists, students will use writing for many purposes. Four different purposes will be supported by four specific forms of writing:

1. ***Noticing & wonderings:*** to help students ***notice and wonder*** about phenomena in their world
2. ***Investigation plans:*** to help students ***plan an investigation*** to answer specific questions they raise.
3. ***Evidence-based claims:*** to ***make and support a claim*** based on the evidence they gathered, from an investigation they conducted, that answers a specific question that motivated that investigation
4. ***Discoveries report:*** to ***report their discoveries*** and share it with their scientific community (their classmates)

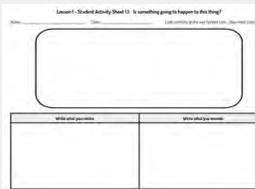
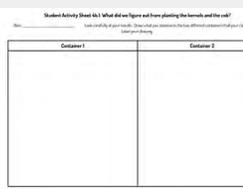




## C. What forms of writing are designed to support which scientific practices?

Different ideas this helps us keep track of:	Form of the writing			
	1. Noticings & Wonderings	2. Investigation Plan	3. Evidence-Based Claims	4. Discoveries Report
Notice	Notice	Notice		
Wonder	Wonder	Wonder		Wonder
Investigate		Investigate		Investigate
Predict		Predict		Predict
Claim / Conclusion			Claim / Conclusion	Claim / Conclusion
Evidence			Evidence	Evidence
	Analyzing data & Asking questions	Planning & Conducting Investigations	Analyzing Data Arguing From Evidence	Communicating information
	Writing Scientific Practices Targeted with this			

## D. What do these forms of writing look like for students when they try to do it initially on their own?

What does this look like?	Form of the writing			
	1. Noticings & Wonderings	2. Investigation Plan	3. Evidence-Based Claims	4. Discoveries Report
In student activity sheets (first drafts)				
When do students do a version of this:	L1, L2, L3, L5, L7 L4a, L6a, L8a -->	L4a, L6a, L8a, L9a -->	L4b, L6b, L8b, L9b -->	L9c

## E. How does the teacher help the class put their ideas together?

Throughout this storyline, students are using the ideas from what they may have recorded in their student activity sheets to then share their these ideas together as a class in three different ways:

1. Developing posters for shared Notice & Wondering Charts
2. Developing posters for shared Investigation Plan Outlines
3. Developing posters for shared Evidence-based Claim Outlines





The purpose of these posters is two-fold. The first is to provide the learning community a public space to represent and keep track of where we are in our thinking and where we are headed. It provides a vehicle for the entire class to contribute to a shared vision of what it is we figured out and what it is we want to do next (and why). Such charts and outlines are useful anchors to remind students where we left off in our thinking on a previous day and where we need to pick back up on the next. For example, a classes Notice & Wondering Chart in early lessons provides a space to keep track of all the questions that students generate, some of which they may decide to go back and investigate further at a later point in the unit (e.g. lesson 9). A separate investigation plan outline for experiment 2 and experiment 3 are useful to keep posted in the room, because both experiments take multiple days to generate data, and both are happening in overlapping windows of time. Having a place to refer to which experiment we are talking about, and referencing why we decided we wanted to do that experiment, is helpful way to reorient the students to that branch of the storyline.

The second is to provide outlines to use as a reference for the teacher to use to show students how to put further develop their expository writing. Two forms of expository writing: 1) an Investigation Plan and 2) a Scientific Explanation are modeled in the writing extension lessons in for this storyline. Ultimately, by the end of this storyline (lesson 9a, 9b, and 9c) students are using their own questions to do the following:

- Developing their own group investigation plan in lesson 9a
- Setting up and collecting data from their own experient in lesson 9b
- Making evidence-based claims using results they collected from their experiments in lesson 9c.
- Putting all of this together to craft two parts of expository writing (an Investigation Plan and a Scientific Explanation) to share with their class in lesson 9d as part of their Discoveries Report.

The two organizers in the activity sheets for lesson 9a and 9c are used in conjunction with one another to help students design what has traditionally been named a “lab report.” We use the term Discoveries Report to summarize the two parts of this product (an Investigation Plan and a Scientific Explanation) describe the two forms of writing that students do at three different points before the end of the unit. This report, occurs at the very end of a unit of instruction. It’s also has two purposes: 1) to help students communicate with their group created investigations and results to their classmates, and 2) to provide a vehicle to demonstrate the writing skills they developed over the course of the unit. This type of writing is designed to be analogous to those that scientists use to communicate their findings to a wider audience.





## F. What do the charts and writings look like after the class makes them?

Examples of all the charts for each of the lessons is included in the last section (I). A sample of one of these is included here

**Example of a teacher led class co-constructed poster from lesson 4a**

<b>Notice</b>	<b>We noticed:</b> <u>Little white things coming out of the corn.</u>
<b>Wonder</b>	<b>We wondered:</b> <u>Are the white things coming out of the cob or the kernel?</u>
<b>Investigate</b>	<b>We decided to investigate this by:</b> <ol style="list-style-type: none"> <li>1. <u>fill two pots with dirt.</u></li> <li>2. <u>Put the corn cob in one pot.</u></li> <li>3. <u>Put a kernel in one pot</u></li> <li>4. <u>Add water to both pots.</u></li> </ol>
<b>Predict</b>	<b>We predicted that:</b> <u>White things will come out of the cob</u>

→

**Example of a shared writing example from Lesson 4a.we**

While we were looking at the corn, **we noticed** that there were little white things coming out of it.

**We wondered** if the white things are coming out of the cob or the kernel.

**We decided to investigate** if the white things would grow out of the cob or the kernel. The first step we took was to get two pots and fill them both with dirt. The next thing we did was put the corn cob in one pot and a kernel in the other pot. The last thing we did was add the same amount of water to both pots. We will observe our pots over the next day to see which will grow white things out of them.

We **predicted** that the pot with the cob will grow white things, but the pot with the kernel will not.

## G. What Writing Extensions Lessons Are Included & When Should I Use Them?

Each of the investigations conducted throughout the unit are accompanied by two distinct writing extension structures: showing how to turn a Investigation Plan outline into an Investigation Plan paragraph as well as how to turn a Scientific Explanation outline into a Scientific Explanation paragraph. These lesson extensions are referred to with a “we” suffix. So for example, lesson 4a has a an opportunity for a writing extension to be done at a later point after the lesson. That writing extension would then be referred to as Lesson4a.

The writing extensions students do in the science classroom should be practiced **more than once in this unit**. We recommend that anytime the class engages in the design of a new investigation, that the teacher consider using that opportunity to work through shared writing examples using the Investigation Plan structure. Likewise, anytime students complete an investigation, we recommend that the teacher consider using that opportunity to write about that investigation using the Scientific Explanation Writing structure. We have outlined a suggested structure on the next page, highlighting 6 points for writing extension lessons (3 Investigation Plans and 3 Scientific Explanations) before the end of the unit (Lesson 9) where students will attempt to write similar plans and explanations for their own experiments.





# Why Is My Corn Changing?

[1.0 MI field trial version - fall 2016]

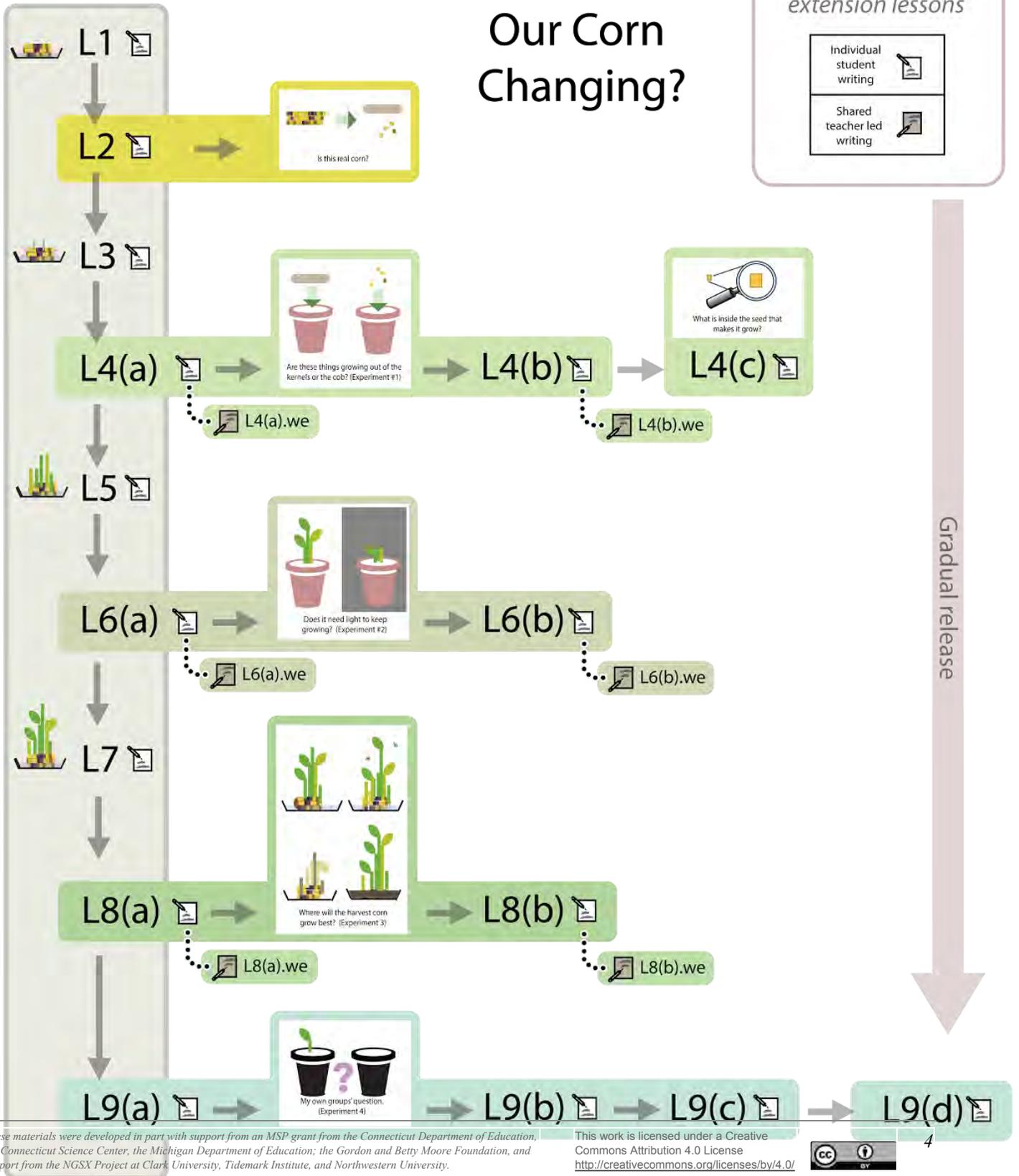
Teacher Guide

Front Matter: Writing Supports for NGSS  
2nd Grade Storyline

## Why Is Our Corn Changing?

Writing supports and extension lessons

Individual student writing	
Shared teacher led writing	



These materials were developed in part with support from an MSP grant from the Connecticut Department of Education, the Connecticut Science Center, the Michigan Department of Education; the Gordon and Betty Moore Foundation, and support from the NGSS Project at Clark University, Tidemark Institute, and Northwestern University.

This work is licensed under a Creative Commons Attribution 4.0 License <http://creativecommons.org/licenses/by/4.0/>





## H. How Do I Help Student Keep Their Writing Work Organized?

Though activity sheets are provided for students to fill out for their first draft of the types of writing that they will use in writing extension lessons, keeping this work organized for students can be a challenge. One recommendation is to have students keep these sheets in science journal. The activity sheets can be added to the journal by pasting or stapling the sheets into it, or adding it to a 3 ring binder that also has note book papers in it. It is up to each individual teacher to decide what works best for his/ her classroom in helping students keep track of their work in an organized manner for them to refer to throughout the unit.

## I. How Do I Organize Our Posters Work From Science In A Form That Is Useful For Writing Extension lessons?

One recommendation for organizing our work for the writing supports are built into the science lessons of this unit provide guidance for students about how to fill out each graphic organizer. It is up to the teacher to determine when and how students will put the information from these graphic organizers into a formalized format. One option would be to use these organizers during your writing instruction to model and practice transforming information into a complete paragraph or more formal writing piece.

When students have composed formal pieces, we highly recommend that you provide students with an authentic audience with whom they can share their work. Students can write interactive journal entries which are shared with their teacher for regular feedback. Or, students can post their writing to a blog to share their learning with the world.

***Investigation Plan Writing Tool:*** In this type of writing, students organize their thoughts about the shared phenomena from a particular lesson. Using the gradual release model, teachers should introduce this tool in a whole group setting, modeling and thinking aloud as they answer the questions in each part of the organizer. This can be completed with bullet points, phrases, or complete sentences. Regardless of how it is completed, it will be the source of information for students to transfer into a structured paragraph which could be used to communicate their learning to an authentic audience.

<b>Notice</b>	<ul style="list-style-type: none"> <li>• <i>What do we notice about a particular phenomena?</i></li> <li>• <i>What attributes attract our attention?</i></li> <li>• <i>What seems interesting or unusual?</i></li> </ul>
<b>Wonder</b>	<ul style="list-style-type: none"> <li>• <i>What do we wonder about this phenomena?</i></li> <li>• <i>What do we want to figure out about it?</i></li> <li>• <i>What burning questions do we want to answer?</i></li> </ul>
<b>Investigate</b>	<ul style="list-style-type: none"> <li>• <i>How will we investigate the answers to our questions?</i></li> <li>• <i>What steps will we take in our investigation and why?</i></li> <li>• <i>What materials or resources will we need?</i></li> </ul>
<b>Predict</b>	<ul style="list-style-type: none"> <li>• <i>What is our predicted outcome of this investigation?</i></li> <li>• <i>What do we think will happen?</i></li> </ul>





### Writing Arguments From Evidence

This type of writing would occur after students have completed an investigation and collected data. The Scientific Analysis graphic organizer is designed to assist students in the process of making claims sense of what the investigation is helping them “figure out.” The goal of this writing process is to link the claim they can make back to the question that motivated this investigation and to explain how the observations/data collected counts as evidence for that claim.

The true analysis occurs when students reason out how the data they collected supports the claim. Saying pot 1 grew more than pot 2 is not enough. What was different about pot 1 and pot 2 is key, in establishing potential cause for the different results. Helping students reason out that the difference in outcomes must be due to only one possible cause (the one thing that was changed between the conditions) is a key form of reasoning to help students explain why their data is evidence for their claim.

In the example below, the graphic organizer has been filled out to reflect information relating to the same lesson we referenced above.

<b>Claim or Conclusion</b>	<ul style="list-style-type: none"> <li>• <i>What did the investigation lead us to figure out?</i></li> <li>• <i>What is the answer we now have to our original question.</i></li> </ul>
<b>Evidence</b>	<ul style="list-style-type: none"> <li>• <i>What data did we collect that helped make our claim statement?</i></li> <li>• <i>What evidence do we have that for our claim?</i></li> </ul>

## **I. How does all this fit together for the three investigations that students write up together, in relation to the final investigation they write up on their own?**

On the following pages, we will provide examples of how students individual work in the regular science class in completed in their activity sheets. And then below that we show how we shared writing extensions in a later lesson (e.g. later that day, or the next day) could be supported by the teacher.





## Experiment 1 - Individual & Shared Writing Experiences & Extensions

As We Are Setting It Up:

**In Lesson 4a**

First, students do this on their own	Second, we do this together	Third, students do this on their own



After We Have Set It Up:

Fourth, we do this as a class together	Fifth, we do this as a class together								
<p><b>In Lesson 4a</b></p> <p><u>Teacher Models This and Builds A Poster</u> (co-constructed with students)</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%; text-align: center; vertical-align: middle;"><b>Notice</b></td> <td><b>We noticed:</b> <u>Little white things coming out of the corn.</u></td> </tr> <tr> <td style="text-align: center; vertical-align: middle;"><b>Wonder</b></td> <td><b>We wondered:</b> <u>Are the white things coming out of the cob or the kernel?</u></td> </tr> <tr> <td style="text-align: center; vertical-align: middle;"><b>Investigate</b></td> <td><b>We decided to investigate this by:</b>  <ol style="list-style-type: none"> <li><u>1. fill two pots with dirt.</u></li> <li><u>2. Put the corn cob in one pot.</u></li> <li><u>3. Put a kernel in one pot</u></li> <li><u>4. Add water to both pots.</u></li> </ol> </td> </tr> <tr> <td style="text-align: center; vertical-align: middle;"><b>Predict</b></td> <td><b>We predicted that:</b> <u>White things will come out of the cob</u></td> </tr> </table>	<b>Notice</b>	<b>We noticed:</b> <u>Little white things coming out of the corn.</u>	<b>Wonder</b>	<b>We wondered:</b> <u>Are the white things coming out of the cob or the kernel?</u>	<b>Investigate</b>	<b>We decided to investigate this by:</b> <ol style="list-style-type: none"> <li><u>1. fill two pots with dirt.</u></li> <li><u>2. Put the corn cob in one pot.</u></li> <li><u>3. Put a kernel in one pot</u></li> <li><u>4. Add water to both pots.</u></li> </ol>	<b>Predict</b>	<b>We predicted that:</b> <u>White things will come out of the cob</u>	<p><b>In Lesson 4a.we</b></p> <p><u>Teacher Models This and Builds a Poster</u> (if and when it makes sense)</p> <p><i>While we were looking at the corn, <b>we noticed</b> that there were little white things coming out of it.</i></p> <p><i><b>We wondered</b> if the white things are coming out of the cob or the kernel.</i></p> <p><i><b>We decided to investigate</b> if the white things would grow out of the cob or the kernel. The first step we took was to get two pots and fill them both with dirt. The next thing we did was put the corn cob in one pot and a kernel in the other pot. The last thing we did was add the same amount of water to both pots. We will observe our pots over the next day to see which will grow white things out of them.</i></p> <p><i>We <b>predicted</b> that the pot with the cob will grow white things, but the pot with the kernel will not.</i></p>
<b>Notice</b>	<b>We noticed:</b> <u>Little white things coming out of the corn.</u>								
<b>Wonder</b>	<b>We wondered:</b> <u>Are the white things coming out of the cob or the kernel?</u>								
<b>Investigate</b>	<b>We decided to investigate this by:</b> <ol style="list-style-type: none"> <li><u>1. fill two pots with dirt.</u></li> <li><u>2. Put the corn cob in one pot.</u></li> <li><u>3. Put a kernel in one pot</u></li> <li><u>4. Add water to both pots.</u></li> </ol>								
<b>Predict</b>	<b>We predicted that:</b> <u>White things will come out of the cob</u>								





## As Students Collect Results:

**In Lesson 4b**

**First, students do this on their own by observing their pots**

Student Activity Sheet 4b.1 What did we figure out from planting the kernels and the cob?

Name: \_\_\_\_\_ Look carefully at your results. Draw what you observe in the two different containers that your class planted. Label your drawing.

Container 1	Container 2
-------------	-------------



## After We Have Our Results

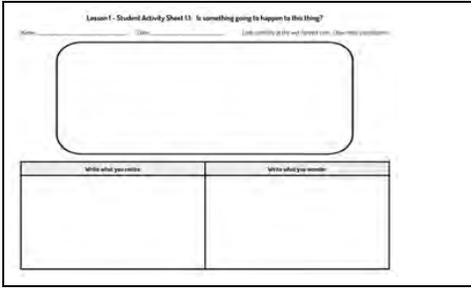
<p style="text-align: center;"><b>Second, we do this as a class together</b></p> <p style="text-align: center;"><b>In Lesson 4b</b></p> <p style="text-align: center;"><u>Teacher Models This and Builds A Poster</u> (co-constructed with students)</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <tr> <td style="width: 20%; text-align: center; vertical-align: middle;"><b>Claim / Conclusion</b></td> <td style="padding: 5px;"><b>We now know that:</b> <i>The white things grow out of the kernels, not the cob.</i> _____</td> </tr> <tr> <td style="text-align: center; vertical-align: middle;"><b>Evidence</b></td> <td style="padding: 5px;"><b>We know this because:</b> <i>_____ after 6 days we saw white things on the kernels in the pot with only a kernel in it. We saw no white things on the cob in the pot with only the cob in it.</i> _____</td> </tr> </table>	<b>Claim / Conclusion</b>	<b>We now know that:</b> <i>The white things grow out of the kernels, not the cob.</i> _____	<b>Evidence</b>	<b>We know this because:</b> <i>_____ after 6 days we saw white things on the kernels in the pot with only a kernel in it. We saw no white things on the cob in the pot with only the cob in it.</i> _____	→	<p style="text-align: center;"><b>Third, we do this as a class together</b></p> <p style="text-align: center;"><b>In Lesson 4b.we</b></p> <p style="text-align: center;"><u>Teacher Models This and Builds a Poster</u> (if and when it makes sense)</p> <p style="margin-top: 10px;"><b><i>We now know that</i></b> the white things grow out of the kernels not the cob.</p> <p><b><i>We know this because</i></b> after 6 days we saw white things only in the pot with the kernel, not in the pot with the cob.</p> <p><i>Because the only thing we changed between the two pots was whether we planted a cob or a kernel, we can conclude that something special about the <u>kernel</u> must <u>cause</u> the white things to <u>grow</u> from it, instead of the cob.</i></p>
<b>Claim / Conclusion</b>	<b>We now know that:</b> <i>The white things grow out of the kernels, not the cob.</i> _____					
<b>Evidence</b>	<b>We know this because:</b> <i>_____ after 6 days we saw white things on the kernels in the pot with only a kernel in it. We saw no white things on the cob in the pot with only the cob in it.</i> _____					





## Experiment 2 - Individual & Shared Writing Experiences & Extensions

As We Are Setting It Up:

In Lesson 6a		
First, students do this on their own	Second, we do this together	Third, students do this on their own
	 	

After We Have Set It Up:

In Lesson 6a		In Lesson 6a.we*								
<p><u>Teacher Models This and Builds A Poster</u> (co-constructed with students)</p>		<p><u>Teacher Models This and Builds a Poster</u> (if and when it makes sense)</p>								
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%; text-align: center; vertical-align: middle;"><b>Notice</b></td> <td style="padding: 5px;"> <p><b>We noticed</b> our plant was leaning towards the sunlight and our water was going down in the containers _____</p> </td> </tr> <tr> <td style="text-align: center; vertical-align: middle;"><b>Wonder</b></td> <td style="padding: 5px;"> <p><b>We wondered</b> if plants need sunlight and water to grow. _____</p> </td> </tr> <tr> <td style="text-align: center; vertical-align: middle;"><b>Investigate</b></td> <td style="padding: 5px;"> <p><b>We decided to investigate this by:</b> _____</p> <ol style="list-style-type: none"> <li>1. Separate the two containers. _____</li> <li>2. Place one container in the sunlight with dirt and the other in the closet with dirt. _____</li> <li>3. Water the same amount to each plant everyday. _____</li> </ol> </td> </tr> <tr> <td style="text-align: center; vertical-align: middle;"><b>Predict</b></td> <td style="padding: 5px;"> <p><b>We predicted that:</b> the plant in the sunlight will grow more than the plant in the closet. _____</p> <p>—</p> </td> </tr> </table>	<b>Notice</b>	<p><b>We noticed</b> our plant was leaning towards the sunlight and our water was going down in the containers _____</p>	<b>Wonder</b>	<p><b>We wondered</b> if plants need sunlight and water to grow. _____</p>	<b>Investigate</b>	<p><b>We decided to investigate this by:</b> _____</p> <ol style="list-style-type: none"> <li>1. Separate the two containers. _____</li> <li>2. Place one container in the sunlight with dirt and the other in the closet with dirt. _____</li> <li>3. Water the same amount to each plant everyday. _____</li> </ol>	<b>Predict</b>	<p><b>We predicted that:</b> the plant in the sunlight will grow more than the plant in the closet. _____</p> <p>—</p>	→	<p>While we were looking at the corn plant, <b>we noticed</b> that our plant was leaning toward the sun and that the water in our corn keeps going down. <b>We wondered</b> if plants need sunlight and water to grow.</p> <p><b>We decided to investigate</b> if plants grow better in sunlight or the a dark room. The <b>first</b> thing we did was separate the containers. Both plants got the same amount of dirt added to to the pot and would get the same amount of water added to their pot each day. The <b>second</b> thing we did was place one pot in the closet and the other pot near the sunlight. We did this because we wanted to see if the environment a plant was placed in has any effect on it growing. <b>Finally</b>, we will watch and observe our plants in the next couple of days to see which pot will container of plants will grow more.</p> <p><b>We predicted that</b> the plant in the light will grow higher than the one one in the dark.</p>
<b>Notice</b>	<p><b>We noticed</b> our plant was leaning towards the sunlight and our water was going down in the containers _____</p>									
<b>Wonder</b>	<p><b>We wondered</b> if plants need sunlight and water to grow. _____</p>									
<b>Investigate</b>	<p><b>We decided to investigate this by:</b> _____</p> <ol style="list-style-type: none"> <li>1. Separate the two containers. _____</li> <li>2. Place one container in the sunlight with dirt and the other in the closet with dirt. _____</li> <li>3. Water the same amount to each plant everyday. _____</li> </ol>									
<b>Predict</b>	<p><b>We predicted that:</b> the plant in the sunlight will grow more than the plant in the closet. _____</p> <p>—</p>									





## Experiment 2 - Individual & Shared Writing Experiences & Extensions

As Students Collect Results:

**In Lesson 6b**

**First, students do this on their own by observing their pots**

Student Activity Sheet 6(b)11 - Why are the parts growing in different directions?

Plant we kept in the light	Plant we kept in the dark												
<table style="width: 100%; border-collapse: collapse; font-size: x-small;"> <tr> <th style="width: 33%; text-align: center;">Notice <i>Draw, Label, and Explain</i></th> <th style="width: 33%; text-align: center;">Wonder <i>Ask questions</i></th> <th style="width: 33%; text-align: center;">Measure <i>(cm)</i></th> </tr> <tr> <td style="border: 1px solid black; height: 100px; vertical-align: top;">I noticed...</td> <td style="border: 1px solid black; height: 100px; vertical-align: top;">I'm wondering...</td> <td style="border: 1px solid black; height: 100px;"></td> </tr> </table>	Notice <i>Draw, Label, and Explain</i>	Wonder <i>Ask questions</i>	Measure <i>(cm)</i>	I noticed...	I'm wondering...		<table style="width: 100%; border-collapse: collapse; font-size: x-small;"> <tr> <th style="width: 33%; text-align: center;">Notice <i>Draw, Label, and Explain</i></th> <th style="width: 33%; text-align: center;">Wonder <i>Ask questions</i></th> <th style="width: 33%; text-align: center;">Measure <i>(cm)</i></th> </tr> <tr> <td style="border: 1px solid black; height: 100px; vertical-align: top;">I noticed...</td> <td style="border: 1px solid black; height: 100px; vertical-align: top;">I'm wondering...</td> <td style="border: 1px solid black; height: 100px;"></td> </tr> </table>	Notice <i>Draw, Label, and Explain</i>	Wonder <i>Ask questions</i>	Measure <i>(cm)</i>	I noticed...	I'm wondering...	
Notice <i>Draw, Label, and Explain</i>	Wonder <i>Ask questions</i>	Measure <i>(cm)</i>											
I noticed...	I'm wondering...												
Notice <i>Draw, Label, and Explain</i>	Wonder <i>Ask questions</i>	Measure <i>(cm)</i>											
I noticed...	I'm wondering...												



After We Have Our Results:

<div style="text-align: center; background-color: #cccccc; padding: 5px;"><b>In Lesson 6b</b></div> <p style="text-align: center; margin-top: 10px;"><u>Teacher Models This and Builds A Poster</u> (co-constructed with students)</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <tr> <td style="width: 20%; text-align: center; vertical-align: middle;"><b>Claim / Conclusion</b></td> <td style="padding: 5px;"><b><u>We now know that:</u></b> plants need light to grow. _____</td> </tr> <tr> <td style="text-align: center; vertical-align: middle;"><b>Evidence</b></td> <td style="padding: 5px;"><b><u>We know this because:</u></b> the plant in the light was green and grew 4 inches. But the plant in the dark closet grew 0.5 inches and was turning brown. _____</td> </tr> </table>	<b>Claim / Conclusion</b>	<b><u>We now know that:</u></b> plants need light to grow. _____	<b>Evidence</b>	<b><u>We know this because:</u></b> the plant in the light was green and grew 4 inches. But the plant in the dark closet grew 0.5 inches and was turning brown. _____	<div style="text-align: center; background-color: #cccccc; padding: 5px;"><b>In Lesson 6b.we</b></div> <p style="text-align: center; margin-top: 10px;"><u>Teacher Models This and Builds a Poster</u> (if and when it makes sense)</p> <p style="margin-top: 10px;"><b><i>We now know that</i></b> plants need light to grow.</p> <p><b><i>We know this because</i></b> the plant in the light grew higher than the plant in the closet. The plant in the dark closet was not healthy looking. It was brown, not green.</p> <p>Because the only thing we changed between the two pots was whether they were in the light or the dark, we can concluded that <u>light</u> must be <u>needed for</u> (or cause) the plant to keeping <u>growing</u>.</p>
<b>Claim / Conclusion</b>	<b><u>We now know that:</u></b> plants need light to grow. _____				
<b>Evidence</b>	<b><u>We know this because:</u></b> the plant in the light was green and grew 4 inches. But the plant in the dark closet grew 0.5 inches and was turning brown. _____				





## Experiment 3 - Individual & Shared Writing Experiences & Extensions

As We Are Setting It Up:

In Lesson 8a		
First, students do this on their own	Second, we do this together	Third, students do this on their own
		

After We Have Set It Up:

In Lesson 8a		In Lesson 8a.we
Teacher Models This and Builds A Poster (co-constructed with students)		Teacher Models This and Builds a Poster (if and when it makes sense)
<b>Notice</b>	<b>We noticed</b> that the dirty water that the water in the container was getting dirty and kind of smelly. _____	<i>While looking at our corn plant <b>we noticed</b> that the water in the container was getting dirty and kind of smelly.</i>
<b>Wonder</b>	<b>We wondered:</b> if the dirty water is affecting the corns growth and what kind of _____ environment does a plant need to grow best. _____	<i><b>We are wondered</b> if the dirty water is affecting the corns growth and what kind of environment does a plant need to grow best.</i>
<b>Investigate</b>	<b>We decided to investigate this by:</b> <ol style="list-style-type: none"> <li>Setting up four containers _____</li> <li><b>The first</b> was the corn placed in a container of clean water. _____</li> <li><b>The second</b> was the corn placed in a container of dirty water. _____</li> <li><b>The third</b> was corn placed with soil &amp; watered daily. _____</li> <li><b>The fourth</b> was corn placed in an empty container that would not be watered. _____</li> </ol>	<i><b>We decided to investigate if water or dirt in the container affects corn growth</b> by setting up four different containers. The first was the corn placed in a container of clean water. The second was the corn placed in a container of dirty water. The third was the corn placed with soil and watered daily. The fourth was corn placed in an empty container that would not be watered.</i>
<b>Predict</b>	<b>We predicted that:</b> the corn placed in the container of clean water would grow the best. _____	<i><b>We predicted that</b> the corn placed in the container of clean water would grow the best.</i>





## Experiment 3 - Individual & Shared Writing Experiences & Extensions

As Students Collect Results:

**In Lesson 8b**

**First, students do this on their own by observing their pots**

Lesson 8b) - Student Activity Sheets - What did we figure out from Experiment #3?  
Name: \_\_\_\_\_ Date: \_\_\_\_\_

**My Observations of Experiment #3**

<p style="text-align: center;"><b>Plant in Clean Water</b> (Sketch and write your observations below)</p> <div style="border: 1px solid black; height: 60px; width: 100%;"></div> <p style="text-align: center;">Plant Height (in cm): _____</p> <p>I noticed: _____ _____ _____</p>	<p style="text-align: center;"><b>Plant in Dirty Water</b> (Sketch and write your observations below)</p> <div style="border: 1px solid black; height: 60px; width: 100%;"></div> <p style="text-align: center;">Plant Height (in cm): _____</p> <p>I noticed: _____ _____ _____</p>
--	--

<p style="text-align: center;"><b>Plant in No Water</b> (Sketch and write your observations below)</p> <div style="border: 1px solid black; height: 60px; width: 100%;"></div> <p style="text-align: center;">Plant Height (in cm): _____</p> <p>I noticed: _____ _____ _____</p>	<p style="text-align: center;"><b>Plant in Soil With Water</b> (Sketch and write your observations below)</p> <div style="border: 1px solid black; height: 60px; width: 100%;"></div> <p style="text-align: center;">Plant Height (in cm): _____</p> <p>I noticed: _____ _____ _____</p>
---	--



After We Have Our Results:

<p style="text-align: center;"><b>In Lesson 8b</b></p> <p style="text-align: center;">Teacher Models This and Builds A Poster (co-constructing a shared understanding using students ideas/experiences from above)</p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <tr> <td style="width: 20%; text-align: center; vertical-align: middle;"><b>Claim / Conclusion</b></td> <td style="padding: 5px;"><b><u>We now know that:</u></b> plants need water to grow. _____</td> </tr> <tr> <td style="text-align: center; vertical-align: middle;"><b>Evidence</b></td> <td style="padding: 5px;"><b><u>We know this because:</u></b> the plant in the clean water was healthy and grew 4 inches. The plant in the dirty water also grew, 3.5 inches. The plant in the dirt and water also grew 4 inches. But the plant that was placed in a container with just dirt but no water did not grow and started to turn brown. _____</td> </tr> </table>	<b>Claim / Conclusion</b>	<b><u>We now know that:</u></b> plants need water to grow. _____	<b>Evidence</b>	<b><u>We know this because:</u></b> the plant in the clean water was healthy and grew 4 inches. The plant in the dirty water also grew, 3.5 inches. The plant in the dirt and water also grew 4 inches. But the plant that was placed in a container with just dirt but no water did not grow and started to turn brown. _____	<p style="text-align: center;"><b>In Lesson 8b.we</b></p> <p style="text-align: center;">Teacher Models This and Builds a Poster (if and when it makes sense)</p> <p style="text-align: center;"><b><i>We now know that</i></b> plants need water to grow.</p> <p style="text-align: center;"><b><i>We know this because</i></b> we put some plants in clean water, some in dirty water, some in soil and water, and some just in soil with no water. The plant that had clean water grew 4 inches, the plant that had dirty water grew 3.5 inches, and the plant that had dirt and water grew 4 inches. But the plant that was placed in a container with just dirt but no water did not grow and started to turn brown.</p> <p style="text-align: center;"><i>The only plants that grew were the ones with water in their pots. We can conclude that <u>water must be needed</u> for the plant to keeping growing.</i></p>
<b>Claim / Conclusion</b>	<b><u>We now know that:</u></b> plants need water to grow. _____				
<b>Evidence</b>	<b><u>We know this because:</u></b> the plant in the clean water was healthy and grew 4 inches. The plant in the dirty water also grew, 3.5 inches. The plant in the dirt and water also grew 4 inches. But the plant that was placed in a container with just dirt but no water did not grow and started to turn brown. _____				





## Instructional Strategies for Writing Extensions Lessons

When students bring the following graphic organizer to the writing classroom, the teacher can provide focused instruction on what good writers do to make their writing clear and interesting to read. Instruction may be needed on selecting appropriate vocabulary, constructing complete sentences, using transition words, and writing a paragraph with an introduction, body, and conclusion. These lessons can be done throughout a unit, using writing from any of the investigations. A piece of writing generated from this graphic organizer could resemble the example shown from lesson 4b.we, lesson 6b.we, and lesson 8b.we above.

The following instructional strategies may be employed anytime writing is done in the science classroom, or likewise when science content is the focus of focused writing instruction.

- Provide students with a strong model of grade-appropriate writing, but set a high bar for students as far as sentence structure, grammar, and vocabulary. This modeling gives students an exemplar, and when the expectations are high they will rise to the occasion with appropriate support.
- While you model, be sure to share your thinking aloud with students so that they can draw connections between each portion of a graphic organizer and the associated thinking that needs to be done.
- Use a gradual release model to move students to independence. The first time you use these organizers, the teacher should take on the role of expert, thinking aloud and filling out the graphic organizer in front of students. Next, students can participate in a shared writing as you fill out the organizer together. Once students are more comfortable with the thinking associated with these graphic organizers, consider giving students opportunities to fill them out in small groups or partnerships, and eventually they will fill them out independently.
- Once students are filling out these organizers in groups or independently, be sure to ask students to bring their work back to the group to share what they've completed. Give students an opportunity to critique one another's work, and to apply the feedback they receive from their peers.
- Consider using the same graphic organizer as the anchor for several different mini lessons in the Writing Workshop. Some potential focus points could include using transition words, writing complete sentences, using clear and specific vocabulary, choosing correct punctuation, and more.

