

## Talk and Writing Educator Resource

**Talk & Writing Tables** provide specific talk and writing goals, as well as strategies teachers can use in talk and writing to support these goals.

Talk and writing goals differ across the unit. The tables below provide suggestions, broken into phases coordinating with the *Carbon TIME* Instructional Model, which organizes each units. These talk and writing tables are also available in the Lesson-level “Talk and Writing” tabs in each unit, as well as in the notes section of each Activity’s PowerPoint.

### **Talk and Writing – Expressing Ideas and Questions**

At this stage in the unit, students engage in the **role of Questioners** as they **Express initial Ideas and wondering Questions**. This phase is typically in Lesson 1 of the unit.

The table below shows specific talk and writing goals for this phase of the unit.

Talk and Writing Goals for Expressing Ideas and Questions Phase	Teacher Talk Strategies That Support This Goal	Curriculum Components That Support This Goal
Treat this as brainstorming and elicitation of student ideas.	<i>Remember, there are no “right” answers at this point. We want to hear all ideas.</i>	Unit Pretest
Listen for student ideas about <b>matter</b> and <b>energy</b> at different <b>scales</b> , but do not correct wrong ideas.	<i>Where did the energy come from? Where does the matter go next? Are you talking about matter or energy? What about the atomic-molecular scale?</i>	Unit Pretest <b>Expressing Ideas and Questions Tool</b>
Elicit a range of ideas. Press for details. Encourage students to examine, compare, and contrast ideas with the ideas of other students.	<i>Who can add to that? What do you mean by _____? Say more. So I think you said _____. Is that right? Who has a different idea? How are those ideas similar/different? Who can rephrase _____’s idea?</i>	Unit Pretest <b>Expressing Ideas and Questions Tool</b>
Encourage students to provide evidence.	<i>How do you know that? What have you seen in the world that makes you think that?</i>	<b>Expressing Ideas and Questions Tool</b>
Document student ideas so they can be revisited later.	<i>Let’s record our ideas so we can come back to them and see how our ideas change.</i>	Sticky notes on class poster or Activity 1.2 Presentation <b>Expressing Ideas and Questions Tool</b>

## Talk and Writing – Foundational Knowledge and Practice

At this stage in the unit, the students experience **Foundational Knowledge and Practice** necessary for their engagement in the unit. This phase is typically in Lesson 2 of the unit.

The table below shows specific talk and writing goals for this phase of the unit.

Talk and Writing Goals for the Foundations Phase	Teacher Talk Strategies That Support This Goal	Curriculum Components That Support This Goal
Treat this as background information.	<i>We want to talk about a few basic practices and some basic knowledge to prepare us for the unit.</i>	
Listen for student ideas about <b>matter</b> and <b>energy</b> at different <b>scales</b> and attend to wrong ideas.	<i>What is happening to matter and energy at _____ scale? Who can explain? Are you in the macroscopic scale or the atomic-molecular scale? Who can explain that at a different scale?</i>	The <b>PPT</b> that “Zooms into” the macroscopic subjects of the unit: a leaf, a potato, air, fossil fuels, etc.
Examine student ideas and correct them when there are problems. It’s ok to give the answers away during this phase! Help students practice using <b>precise language</b> to describe <b>matter and energy</b> at different <b>scales</b> .	<i>Let’s think about what you just said: air molecules. What are air molecules? Are you talking about matter or energy? Remember: atoms can’t be created. So that matter must have come from somewhere. Where did it come from? Let’s look at the molecule poster again... is carbon an atom or a molecule? Let’s revisit our scale poster... what is happening to matter at a macroscopic scale?</i>	Powers of Ten Video Powers of Ten Poster Molecule Poster Three Questions Poster
Grade student ideas.		There is a <b>quiz</b> during this phase of the unit to help you decide if your students are ready to move on.

## Talk and Writing – Predictions and Planning

At this stage in the unit, students are engaged in the **role of Investigators, making Predictions and Planning investigations** that allow them to use tools to test initial hypotheses. This phase is typically in Lesson 3 of the unit.

The table below shows specific talk and writing goals for this phase of the unit.

Talk and Writing Goals for the Predictions Phase	Teacher Talk Strategies That Support This Goal	Curriculum Components That Support This Goal
Treat this as elicitation and brainstorming (like the Expressing Ideas and Questions Phase), but with more directed questioning.	<i>Now that we have set up the investigation, we want to predict what we think will happen to matter and energy.</i>	<b>Predictions and Planning Tool</b>
Elicit a range of student ideas. Press for details. Encourage students to examine, compare, and contrast their ideas with the ideas of other students.	<i>Who can add to that? What do you mean by _____? Say more. So I think you said _____. Is that right? Who has a different idea? How are those ideas similar/different? Who can rephrase _____'s idea?</i>	Investigation Video (first half)
Encourage students to provide evidence that supports their predictions.	<i>How do you know that? What have you seen in the world that makes you think that?</i>	
Have students document their ideas to revisit later.	<i>Let's record our ideas so we can come back to them and see how our ideas change.</i>	<b>Predictions and Planning Tool</b>

## Talk and Writing – Observations

At this stage in the unit, the students are engaged in the **role of Investigators, making macroscopic Observations and collecting data** during investigations. This phase is typically in Lesson 3 of the unit.

The table below shows specific talk and writing goals for this phase of the unit.

Talk and Writing Goals for the Observations Phase	Teacher Talk Strategies That Support This Goal	Curriculum Components That Support This Goal
Help students discuss data and identify patterns.	<i>What patterns do we see in our data? How do you know that is a pattern? What about _____ data. What does this mean?</i>	Class Results Poster Class Results Spreadsheet

Encourage students to compare their own conclusions about the data and evidence with other groups and other classes.	<i>What about this number? What does this tell us?</i> <i>How is group A's evidence different from Group B's data?</i> <i>How do our class's data differ from another classes' data?</i>	Class Results Spreadsheet Class Results Poster Investigation Video (second half).
Make connections between the observations and the data/evidence.	<i>It says here that our BTB turned colors. What does that mean?</i> <i>You recorded that your ethanol lost weight. What does that mean?</i>	
Have students consider how their predictions and results compare.	<i>Let's revisit our predictions. Who can explain the difference between our class predictions and our results?</i> <i>Who had predictions that were similar to our results? Has your explanation changed? How?</i>	

### **Talk and Writing – Evidence-Based Arguments**

At this stage in the unit, students are engaged in the **role of Investigators, making Evidence-Based Arguments** relying on patterns in their investigation data, and identifying unanswered questions. This phase is typically in Lesson 3 of the unit.

*The table below shows specific talk and writing goals for this phase of the unit.*

Talk and Writing Goals for the Evidence-Based Arguments Phase	Teacher Talk Strategies That Support This Goal	Curriculum Components That Support This Goal
Press for details. Encourage students to examine, compare, and contrast their ideas with the ideas of other students.	<i>Who can add to that argument?</i> <i>What do you mean by _____? Say more.</i> <i>So I think you said _____. Is that right?</i> <i>Who has a different argument?</i> <i>How are those arguments similar/different?</i> <i>Who can rephrase _____'s argument?</i>	Investigation Video (second half)
Students provide evidence from the investigation (not just experiences in the world) to develop arguments.	<i>Does your argument include evidence from the investigation?</i> <i>What evidence is most important here?</i> <i>What does this evidence tell us about what happened?</i> <i>What evidence do we still need for a complete picture of what happened?</i> <i>How do you know that?</i>	<b>Evidence-Based Arguments Tool</b> Class Results Poster Class Results Spreadsheets Investigation Video (second half) Data from other classes

<p>Focus on how matter and energy were transformed at different scales.</p>	<p><i>What does this evidence tell us about how matter is changing?</i> <i>What does this evidence tell us about how energy is changing?</i></p>	<p><b>Evidence-Based Arguments Tool</b></p>
<p>Revisit predictions and examine change in thinking.</p>	<p><i>Let's revisit our Predictions and see how our thinking changed now that we know what happened.</i></p>	<p><b>Evidence-Based Arguments Tool</b> <b>Predictions and Planning Tool</b></p>
<p>Encourage students to consider the questions they don't have answers to.</p>	<p><i>This investigation told us many things about what happen to matter and energy during _____. But what questions do we still have?</i></p>	

## Talk and Writing – Explanations

At this stage in the unit, students are engaged in the [role of Explainers, constructing model-based Explanations](#) for unit phenomena. This phase is typically in Lessons 4-6 of the unit.

The table below shows specific talk and writing goals for this phase of the unit.

Talk and Writing Goals for the Explanations Phase	Teacher Talk Strategies That Support This Goal	Curriculum Components That Support This Goal
<p>Examine student ideas and correct them when there are problems. It's ok to give the answers away during this phase! Help students practice using <b>precise language</b> to describe <b>matter and energy</b>.</p>	<p><i>Let's think about what you just said: air molecules. What are air molecules? Are you talking about matter or energy? Remember: atoms can't be created. So that matter must have come from somewhere. Where did it come from? Let's look at the molecule poster again... is carbon an atom or a molecule?</i></p>	<p>Molecule Poster</p>
<p>Focus on making sure that explanations include multiple <b>scales</b>.</p>	<p><i>The investigation gave us evidence for what was happening to matter and energy at a macroscopic scale. But what is happening at an atomic-molecular scale? What is happening to molecules and atoms? How does energy interact with atoms and molecules during chemical change? Why doesn't the macroscopic investigation tell us the whole story? Let's revisit our scale poster... what is happening to matter at the molecular scale?</i></p>	<p>Molecular Models Molecular Modeling Worksheets <b>Explanations Tool</b> PPT Animation of chemical change Powers of Ten Poster</p>
<p>Encourage students to recall the investigation.</p>	<p><i>When did this chemical change happen during our investigation? How do we know that? What is our evidence? What were the macroscopic indicators that this chemical change took place?</i></p>	<p><b>Evidence-Based Arguments Tool</b> Investigation Video</p>
<p>Elicit a range of student explanations. Press for details. Encourage students to examine, compare, and contrast their explanations with others.</p>	<p><i>Who can add to that explanation? What do you mean by _____? Say more. So I think you said _____. Is that right? How are those explanations similar/different? Who can rephrase _____'s explanation?</i></p>	<p><b>Explanations Tool</b></p>

