Target Performances for *Decomposers* Activities

All *Carbon TIME units* are organized around a common purpose: *assessing and scaffolding students' three-dimensional engagement with phenomena.* Every *Carbon TIME* activity has its specific expectation for students' three-dimensional engagement with phenomena, what we call its **target performance**. Each activity also includes tools and strategies that teachers can use to asses and scaffold the target performance in rigorous and responsive ways.

The target performances for each activity in the *Decomposers* unit are listed in the table below.

Activity	***Target Performance***
Activity 0.1: Investigation Set Up	Students will make initial measurements of the combined mass of a slide of bread and a Petri dish and leave the bread to mold.
Lesson 1 – Pretest and Expressing Ideas (students as questioners)	
Activity 1.1: *Decomposers* Unit Pretest	Students show their initial proficiencies for the overall unit goal: Questioning, investigating, and explaining how decomposers move and change matter and energy as they live and grow.
Activity 1.2: Expressing Ideas and Questions about How Things Decay	Students ask and record specific questions about changes in matter and energy in response to the unit driving question: What happens when bread molds?
Lesson 2 – Foundations: Zooming into Organisms (students developing foundational knowledge and practice)	
Activity 2.1: Zooming into Plants, Animals, and Decomposers	Students "zoom in" to animals, plants, and decomposers, describing how all of these organisms are made of cells with special structures and functions.
Activity 2.2: Molecules Cells Are Made of	Students use food labels to describe molecules in animal, plant, and decomposer cells: large organic molecules (carbohydrates, proteins, and fats), as well as water, vitamins, and minerals.
Activity 2.3: Molecules in Cells Quiz	Students complete a quiz to assess their understanding of the molecules in cells and how to identify which molecules store chemical energy.
Activity 2.4: Questions about Decomposers	Students describe structures and functions that all decomposers share and pose questions about molding bread to prepare for their upcoming investigation.

Activity	***Target Performance***
Lesson 3 – Investigating Mealworms Eating (students as investigators and questioners)	
Activity 3.1: Predictions and Planning about Bread Molding	Students (a) develop hypotheses about how matter moves and changes and how energy changes when bread molds and (b) make predictions about how they can use their investigation tools—digital balances and BTB—to detect movements and changes in matter.
Activity 3.2: Observing Bread Molding	Students record data about changes in mass and BTB when bread molds and reach consensus about patterns in their data.
Activity 3.3: Evidence-Based Arguments for Bread Molding	Students (a) use data from their investigations to develop evidence-based arguments about how matter moves and changes and how energy changes when bread molds, and (b) identify unanswered questions about matter movement and matter and energy change that the data are insufficient to address.
Lesson 4 –Explaining How Decomposers Move and Function	
Activity 4.1: Molecular Models for Fungi Moving and Functioning: Cellular Respiration	Students use molecular models to explain how carbon, oxygen, and hydrogen atoms are rearranged into new molecules in fungus cells.
Activity 4.2: Explaining How Fungi Move and Function: Cellular Respiration	Students explain how matter moves and changes and how energy changes during cellular respiration in fungus cells.
Lesson 5 – Explaining How Decomposers Grow (students as explainers)	
Activity 5.1: Tracing the Processes of Fungi Growing: Digestion and Biosynthesis	Students “zoom in” to the structure and function of a mushroom’s organ systems and cells, tracing atoms and energy.
Optional Activity 5.2: Molecular Models for Fungi Growing: Digestion and Biosynthesis	Students use molecular models to explain how polymers are broken into monomers during the process of digestion and monomers are linked into polymers during biosynthesis.
Activity 5.3: Explaining How Fungi Grow: Digestion	Students explain how matter moves and changes and how energy changes during digestion by a fungus.
Activity 5.4: Explaining How Fungi Grow: Biosynthesis	Students explain how matter moves and changes and how energy changes during biosynthesis in a mushroom’s cells.

Activity	***Target Performance***
Lesson 6 – Explaining Other Examples of Decomposers Growing, Moving, and Functioning (students as explainers)	
(Optional) Activity 6.1: Exploring Different Kinds of Decomposers	Students explain how matter and energy move and change in other phenomena involving decomposers, included aerobic and anaerobic bacteria, fermentation, spontaneous combustion of hay, and decomposition in forests.
Activity 6.2: Explaining Other Examples of Decomposers Growing, Moving, and Functioning	Students develop integrated accounts of how other fungi (bracket fungi, bread mold, mycorrhizal fungi) grow and function through the processes of digestion, cellular respiration, and biosynthesis.
Activity 6.3: Comparing Decomposers, Plants, and Animals	Students compare how matter moves and changes and how energy changes in decomposers, plants, and animals.
Activity 6.4: Functions of All Decomposers	Students develop integrated accounts of how all aerobic decomposer*s* grow and function through the processes of digestion, cellular respiration, and biosynthesis.
Activity 6.5: Decomposers Unit Posttest	Students show their end-of unit proficiencies for the overall unit goal: Questioning, investigating, and explaining how decomposers move and change matter and energy as they live and grow.