Investigation checklist.

- ✓ Do we have a question that can be investigated within the area of our schoolyard?
- ✓ What is the independent variable (the variable that you will change)?
- ✓ What will stay constant in your experiment (variable that will stay the same throughout the investigation?)
- ✓ How will you measure the change to your independent variable?
- ✓ What materials will you need?

Assessment checklist.

Asking questions	Student group formulated a scientific question that could be answered empirically (NRC 2012, p.55).	
Planning and carrying out investigations	Student group "decided what data needed to be gathered, what tools were needed to do the gathering, and how measurements were to be recorded (NRC 2012, p.60).	
	Students planned "field-research procedures, identifying relevancy and dependent and independent variables" (NRC 2012, p. 60).	
(Note: Assessed after investigation)	Students "considered possible confounding variables and effects" (NRC 2012, p. 60).	
Analyzing and interpreting data:	Students analyzed patterns in the data (NRC 2012, p.62).	
	Students "recognized when data were in conflict with expectations and considered what revisions in the initial model were needed" (NRC 2012, p. 62).	
Constructing explanations	Student groups "offered casual explanations appropriate to their level of scientific knowledge" (NRC 2012, p. 69).	

Investigative Questions and Connections to the *NGSS*

Investigative Question	Disciplinary Core Ideas	Crosscutting Concepts	Scientific/Engineering Practices (evident in all investigations)
How does the temperature of the air affect the temperature of water in our stream?	ESS2.D: Weather and Climate [K-ESS2-1, 3-ESS2-1]	Patterns Cause and Effect Systems and System Models	Asking questions Planning and Carrying Out Investigations Analyzing and Interpreting Data
How does the type of bird food affect the amount of food eaten by birds?	LS1.C: Organization for Matter and Energy Flow in Organisms [K-LS1-1] ESS3.A: Natural Resources [K-ESS3-1]	Cause and Effect Energy and Matter: Flows, Cycles, and Conservation	Constructing Explanations Obtaining, Evaluating and Communicating Data
How do different foods attract different animals?	LS4.D. Biodiversity and Humans [2-LS4-1, 2-LS4-4]	Cause and Effect Energy and Matter: Flows, Cycles, and Conservation	
How does the material from the rock bed affect the amount of rain collected?	ESS2.A Earth Materials and Systems [4-ESS2-1]	Systems and System Models Stability and Change	
How does the	LS1.C: Organization for	Cause and Effect	

location of the seed (i.e., playground with woodchips, raised bed, grassy area) affect the growth of a plant?	Matter and Energy Flow in Organisms [5-LS1-1] LS2.A: Interdependent Relationships in Ecosystems [2-LS2-1]	