

TABLE 1

### Explicit/Reflective nature of science planning tool (Wilcox and Lake 2018).

WHAT DO YOU OBSERVE STUDENTS DOING? (SCIENTIFIC AND ENGINEERING PRACTICES)	NATURE OF SCIENCE IDEAS (MODIFIED FROM APPENDIX H IN NGSS).	EXPLICIT/REFLECTIVE QUESTIONS TO ASK STUDENTS
Students are communicating information and ideas. Students are working collaboratively in groups.	Scientists often collaborate with each other.	I noticed all of you worked together during the activity. Why is working together useful? Why might scientists often work together?
During an activity, students are using different approaches to the same task.	Scientists use different ways to study the natural world.	Why is it okay that different groups did different things during the activity? Why might it be good that scientists try to solve problems in different ways?
Students construct an explanation from a data set.	Scientists look for patterns and order when making observations about the world.	I noticed you found a pattern in your data. Why might patterns be useful? Why do you think scientists look for patterns in nature?
Students decide on a way to plan investigations, analyze and interpret data, or construct explanations.	Scientists are often creative.	In what ways were you creative during this activity? When might scientists have to be creative?
Students develop a model to understand a phenomenon.	Scientists use drawings, sketches, and models as a way to understand and communicate.	How did making a model/drawing help you? Why do you think scientists often use models/drawings?
Students engage in productive arguments from the evidence and collectively decide to modify their ideas.	Science has a tentative aspect. Science explanations can change based on new evidence.	I noticed your idea changed. Why is it okay that your idea changed? When might scientists change their minds? Why might evidence be an important part of changing scientists' minds?