TABLE 1

Tenets of nature of science (NOS) and authentic scientific inquiry (SI) emphasized in the What's in the Box (WiB) activity.

	Tenets	Student activities
NOS	Science demands evidence.	Students collect data to deduce the objects sealed in the boxes.
	Science is a blend of logic and imagination.	When deducing the objects, students rationalize their data based on prior knowledge and creativity.
	Science explains and predicts.	Students explain what is in the boxes using the collected data.
	Scientists try to identify and avoid bias.	Students systematically collect data when exploring the boxes and testing ideas (e.g., collecting data from multiple trials while controlling for confounding variables).
	Scientific ideas are subject to change.	Students revise their hypotheses multiple times based on new evidence.
	Science deals only with natural patterns and explanations.	Students discuss the natural patterns and explanations emerging from the WiB activity based on evidence rather than a belief that is not grounded in reason.
Authentic SI	SI is complex and iterative and can take many different paths.	Students map an authentic SI at the beginning of the activity and revise the map at the end. Next, they explain the changes in their maps based on the WiB inquiry process.
	SI involves observation, exploration, idea-testing, communication, and application.	Students are involved in all these practices in the WiB activity. In the whole-class discussion, students are asked to reflect on when and how they performed these practices.
	Multiple research methods are used to collect data.	Students first explore the boxes using their senses; later, they are offered tools to further their exploration. In both small-group and whole-class discussions, they are asked to consider whether additional data could be collected and how.
	Scientists usually work collaboratively.	Students work in groups of four or five. Near the end of class, students are asked to consider how their ideas evolved, from exploring the boxes themselves to discussing the ideas with their peers and in the whole class.