

NGSS Implementation Guidelines

This table was taken from the National Research Council’s 2015 *Guide to Implementing the Next Generation Science Standards*. It describes some of the main shifts that will take place as science practices become integrated into classroom instruction.

“Learning about” Science Education will involve less...	“Figuring out” Science Education will involve more...
<ul style="list-style-type: none"> • Rote memorization of facts and terminology • Learning of ideas disconnected from questions about phenomena • Teachers providing information to the whole class • Teachers posing questions with only one right answer • Students reading textbooks and answering questions at the end of the chapter • Preplanned outcomes for “cookbook” laboratories or hands-on activities 	<ul style="list-style-type: none"> • Facts and terminology learned as needed while developing explanations and designing solutions supported by evidence-based arguments and reasoning • Systems thinking and modeling to explain phenomena and to give a context for the ideas to be learned • Students conducting investigations, solving problems, and engaging in discussions with teachers’ guidance • Students discussing open-ended questions that focus on the strength of the evidence used to generate claims • Students reading multiple sources, including science-related magazines, journal articles, and web-based resources. Students developing summaries of information • Multiple investigations driven by students’ questions with a range of possible outcomes that collectively lead to a deep understanding of established core scientific ideas