

Next Generation Science Standards—A Teacher’s Perspective

The Middle School and Jr. High Perspective – by Lisa Hegdahl

Much like my high school colleagues as addressed above, upon reading the draft of the NGSS, one of the first things that strikes most California middle school and jr. high teachers is that instead of dividing the core disciplines by subject and grade level into Earth science in 6th grade, life science in 7th grade, and physical science in 8th grade, the NGSS have twelve “Disciplinary Core Ideas” (comprised of Earth, life, and physical sciences) to be addressed in grades 6-8. As teachers used to a system where each grade level has its own set of standards, having them grouped in a grade band left many wondering what would be taught in what grade. Per the request of the Lead State partners, and in order to help readers of the standards visualize how these standards could be divided amongst the grades, Achieve developed [Appendix J – Model Course Mapping in Middle and High School for the NGSS](#). This appendix provides two suggestions for the division of coursework in grades 6-8 along with justifications for choosing one model over another. It is important to note that these are models and not necessarily how California will choose to structure its courses. This debate will happen after the final standards are released.

Middle school and junior high teachers will also find that the NGSS offer more freedom to explore the real world of scientific and engineering practices than the current California science content standards allow. Rather than listing separate investigation and experimentation (I&E) standards, the NGSS integrate the scientific and engineering practices into the performance expectation. Scientific practices should be quite familiar middle school and junior high teachers in California; however, the engineering and design practices are a less familiar element being incorporated into the standards (as called for in the Framework for K-12 Science Education). In order to help readers of the standards easily identify the areas where the engineering and design practices are integrated into the standards, the writers provided a separate list of performance expectations from the standards that incorporate the engineering and design practices. The integration of the scientific and engineering practices into the disciplinary core ideas (content) calls for a profound shift in the way these standards will be assessed. “Future assessment will not assess student understanding of core ideas separately from their abilities to use the practices of Science and Engineering.” ([Appendix F, p.1](#))

Many middle schools inherit students with little to no science background. The developers of the NGSS realize this and included a chart in Appendix E showing the “Increasing Sophistication of Student Thinking” for each performance expectation. Middle school and jr. high educators can use the matrix to identify the prior knowledge students need to have in order to begin mastering the performance expectations, and the Assessment Boundaries included in the performance expectations help to clarify where one course ends and the next begins. However, the NGSS materials make it clear that the NGSS are student outcomes at the end of coursework – they are not curriculum. Instructional lessons will need to be created in the future to guide students to each end point.

Even with all these efforts to provide clarity and guidance, upon reading the NGSS for the next time the thought of transitioning from California's current science standards to the NGSS can be overwhelming. There are numerous steps that will need to be taken in order to implement instruction of the new standards in the classroom after they are adopted. I recommend you read [NGSS: What's Next?](#) in this month's issue of *California Classroom Science (CCS)*. It will be important for teachers to maintain their engagement in this process in order to help stem the feeling of being overwhelmed and to help structure a system that will support them.

(Hegdahl 2013)