

Review of Science Standards Final Draft by Audrey B. Champagne

Audrey Champagne background information

Holds a dual appointment on the faculty of the University at Albany, a unit of the State University of New York. She is a professor in the School of Education and in the Chemistry Department of the School of Arts and Sciences. She is an active researcher and engaged extensively in the application of research to improve science education in grades K through 16. Her current research is funded by the Department of Education's Office of Educational Research and Improvement and the National Science Foundation's Division of Elementary, Secondary, and Informal Education. She frequently serves on review panels for the National Science Foundation's Directorate for Education and Human Resources.

I found this draft of the Standards much easier to understand and more reasonable in terms of expectations for all students. Even so the expectations remain high, especially for Grades 9-12.

My review is from the perspectives of a classroom teacher and an assessment designer. From those perspectives, I find that I can interpret many of the benchmarks in one of two ways. As a classroom teacher certain of the benchmarks indicate activities in which students in my classroom should have opportunities to engage. As an assessment designer I can interpret these same benchmarks as information or skills that students should know or be able to do on completion of the grade with which the benchmark is associated.

For instance, Kindergarten Benchmark IB1 states that "(T)he student will observe and describe common objects using simple tools." Is this a kindergarten learning activity? Or does the benchmark mean that at the end of kindergarten the student should have the skills to use simple tools, to make observations with them, and describe the observations? Is it the intention that the students should be able to demonstrate these skills in a testing situation such as one in which students are given a object (a flower, for instance) and some simple tools (ruler and hand lens, for instance) and told to observe and describe the flower?

Consider also Benchmark IVG1: "The student will observe and describe the environment using the five senses." Is this a classroom activity or a learning outcome. As a learning outcome might the attainment of the benchmark be assessed by giving the student an object (a flower, for instance) and expecting that the student use all five senses when asked to observe and describe it? Or is the intention simply that the student know the five senses and being able to answer correctly when asked what are the five senses?

On the Standards document, I have indicated, by highlighting in red, instances where benchmarks do not make clear the distinction between what students should know and be able to do on completion of each grade and activities in which the student might participate to develop the knowledge or the skill.

I found the verb, recognize, over used. The benchmarks would communicate better if some time were taken to make verb choices that better describe the intent of the benchmark.

In many instances, it would be helpful to provide instances of situations, objects, or organisms that are included in the learning outcomes described by benchmarks.

I have suggested changes in certain benchmarks. These are referenced as endnotes and found on the last two pages of the Standards document on which I have written comments. In some instances I have suggested the changes because the statements were vague or allowed for incorrect interpretation of the intended science principle. In other cases the suggested changes are just picky.