

Attachment 2

I began teaching in 1999

joined the science standards committee in 2005 - so entering

year 13 working on Idaho's science standards

### Notes Related to Idaho Science Standards, Feb 2018

Thank you Chair and members of this committee for hearing testimony today. My name is Angela Hemingway. I serve as the executive director of the Idaho STEM Action Center and I may be the longest serving member on the science standards committee. I have been a member since 2005 after the original standards were adopted in 2001. Between 2005 and 2015, the standards <sup>2001</sup> ~~underwent~~ <sup>have undergone</sup> minor modifications to add clarity and content limits which served to guide the depth and breadth of a standard. For example, as you can imagine, teaching photosynthesis in 5<sup>th</sup> grade is very different than the concepts of grade 10 - content limits add clarity so the teacher can understand the standard.

or supporting content

The proposed content of Idaho's new science standards is similar, but the way these concepts are being taught is different. For example, our ~~2001~~ <sup>old</sup> standards used the word **explain**; the proposed standards use the words **evaluate for evidence** or **obtain and combine evidence**. **Apply** from the old standards is replaced with **plan and conduct**; **measure** is replaced with **construct**; **use** is replaced with **develop and use**.

To supporting content

In a competitive workforce, no longer does an employee simply 'measure' or 'use'. They are expected to "plan and conduct" and "develop and use". It is critical that we are teaching the concepts in a way that is required once the student leaves the classroom and enters a career. ~~The standards of 2001 are as good as the device of 2001 - you remember your dial-up modem, your bulky 2001 computers, your land line and corded home phone. You remember your VCR. None of us would want to revert to these old, outdated technologies.~~ I would highly encourage the adoption of these new science standards to ensure that Idaho students can more easily transition into post-secondary and career.

Thank you chair and committee - I am happy to stand for questions.....

- Watched movie in 2007  
US  
nm

Standards - understand & do

Human Solutions / human mitigation  
human causes → mitigation

delete on sentence → Remove 3-4-1-1  
removal of supporting content

In addition to the standards, supporting content is provided as supplementary material which is also important, but it is not required! The purpose of the supporting content is three-fold:

could  
maybe

- 1) First, the goal was to connect the teacher and student with local, relevant examples related to the performance standards
  - a. For example: A standard would discuss rock formation and fossil location, the supporting content would suggest that the three types of rocks are discussed within the context of a local example (ESS1-4-1)

- 2) Second, the supporting content was intended to illustrate how the standard cuts across multiple disciplines:

include

- a. For example, when discussing technology and instrumentation with in elementary school, the child knows how to use the device to play games, send a text, take pictures. As the child progress into middle school, the idea of the engineering behind the device and how memory is coded and stored is discussed. By high school, students are making their own apps and understand how data storage allows large amounts of information to be stored and transferred digitally.
- b. This is a classic example of STEM including science, technology, EUA engineering and math within a single experience related to technology and instrumentation. The integration of multiple disciplines into the standard which simply focuses on technology and instrumentation, but the supporting content shows how it is relevant to the student, age-appropriate, and connected to their experiences.

- 3) Finally, the supporting content was intended to show a progression in the complexity of student thinking. In other words, the supporting content is intended to be teachable over multiple grades with increasing complexity

- a. For example, the structure of matter is found as supporting content through the standards. In elementary, the focus is on the fact that matter exists and comes in different forms (such as solid, liquid, gas). In middle school matter is discussed in terms of its makeup of protons, electrons and neutrons; by high school teachers are discussing how atoms bond to create new substances and other more complex chemical reactions

Guide for new teachers - demonstrate what they might  
Guide for me (a HS teacher) to know students' knowledge.