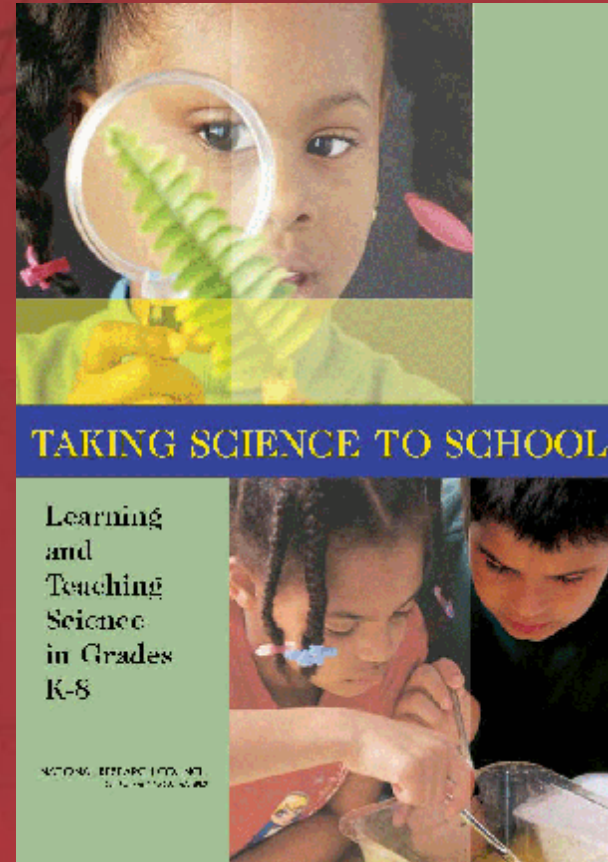


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*What Has  
Changed?  
Reasons for Tackling  
New Science  
Standards*

*Stakeholder Meeting  
October 27, 2009*



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National Academy of Sciences  
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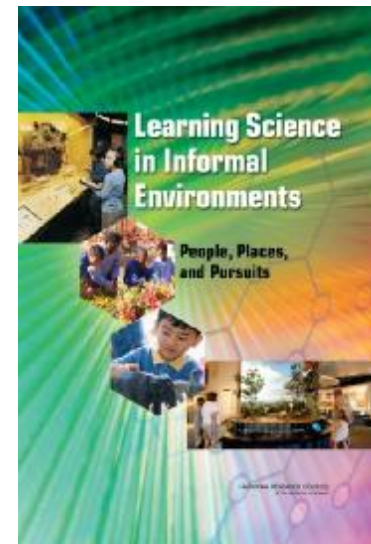
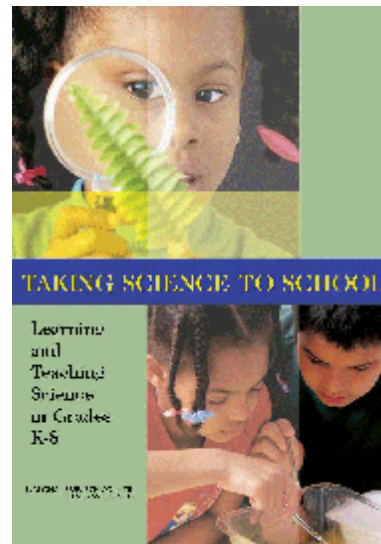
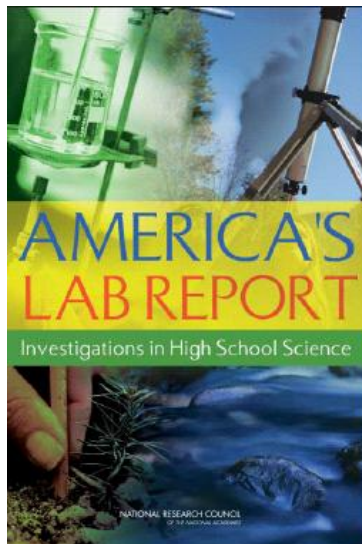
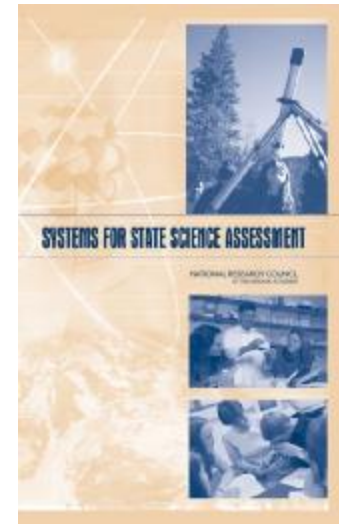
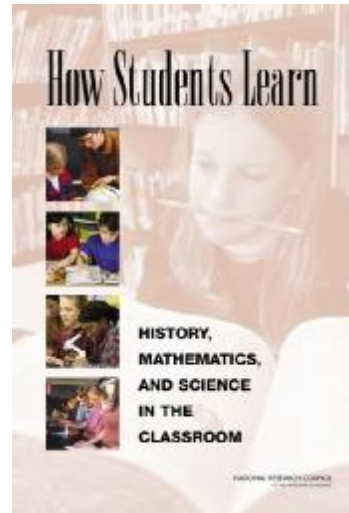
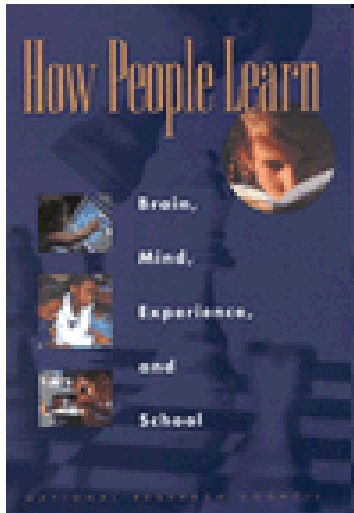
## National Landscape

- Increased attention to STEM education
- Importance of standards in the context of accountability
- Press for common standards

## Improved Evidence Base

- Lessons from over a decade of standards-based reform
- More robust research base on learning
- Ø Less may be more...

## NRC & BOSE Reports Related to Learning



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# Key Ideas from Research on Learning

## Strands of Scientific Proficiency

1. Understanding scientific explanations
  2. Generating scientific evidence
  3. Reflecting on scientific knowledge
  4. Participating productively in science
- è Add two new strands: motivation/interest and identity
  - è Not separate goals — intertwined strands during effective learning and teaching.

## Core Ideas and Learning Progressions

- Major recommendation from research – organize standards around core ideas and learning progressions.
- Study of science needs to reflect science.

## Why Core Ideas and Learning Progressions?

- Proficiency in science is more than knowing facts. It is **not** a simple accumulation of information.
- Factual knowledge must be placed in a conceptual framework to be well understood.
- Students need to learn how ideas are related to each other, and their implications and applications in the discipline.

## Why Core Ideas and Learning Progressions?

- Many ideas in science are complex or even counter-intuitive.
- It takes time (sometimes years) to fully understand these ideas.