

NGSS Innovations



- Explaining Phenomena & Designing Solutions
- Three Dimensional Learning
- Building K-12 Progressions
- Alignment with English Language Arts and Mathematics
- All Standards, All Students

NGSS Science & Engineering Practices



1. Asking questions (for science) and defining problems (for engineering)
2. Developing and using models
3. Planning and carrying out investigations
4. Analyzing and interpreting data
5. Using mathematics and computational thinking
6. Constructing explanations (for science) and designing solutions (for engineering)
7. Engaging in argument from evidence
8. Obtaining, evaluating, and communicating information

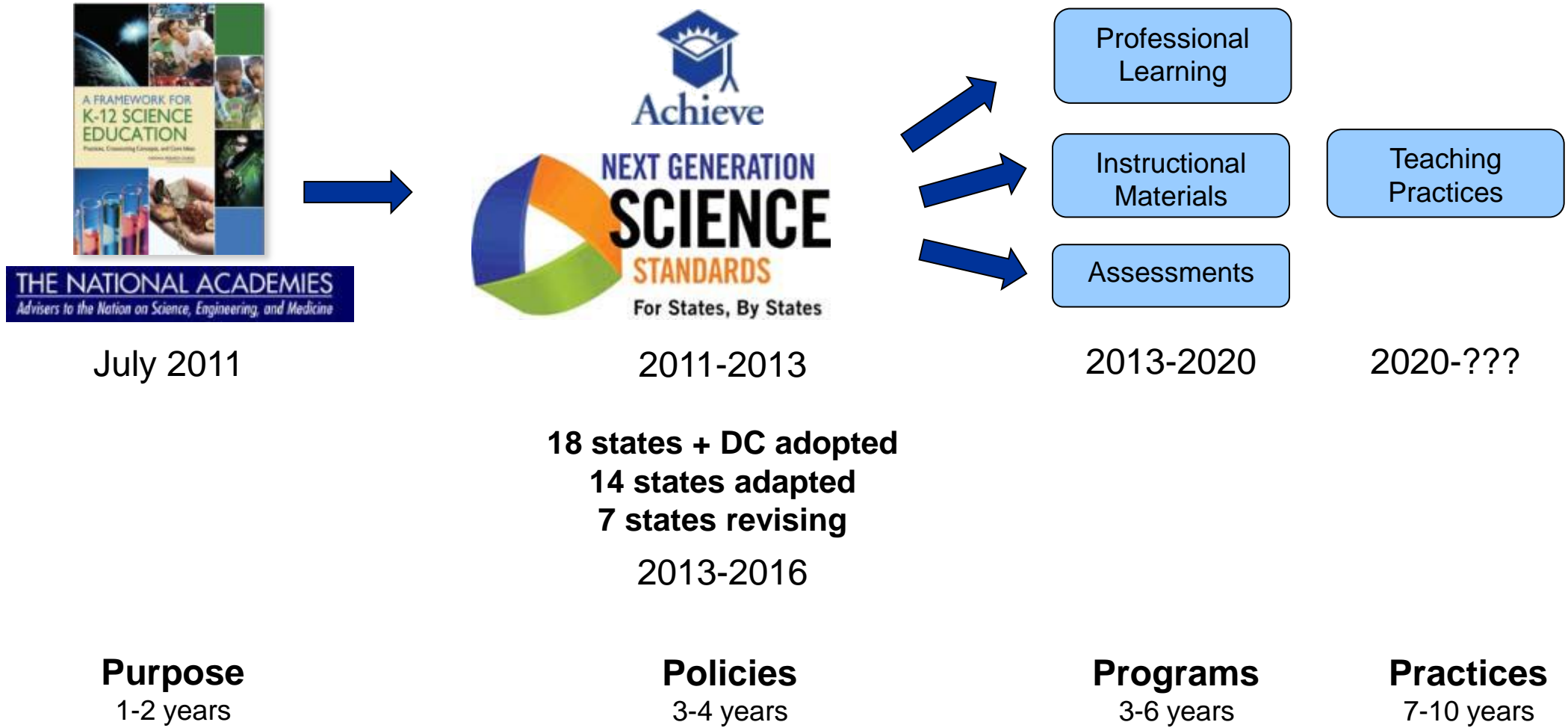


Core Idea: Engineering Design

How do engineers solve problems?

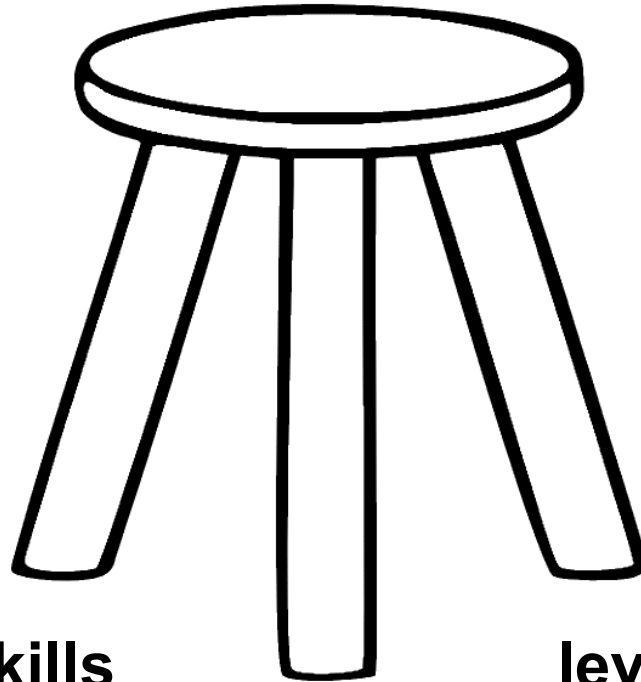
- **Defining and delimiting an engineering problem**
 - *What is a design for?*
 - *What are the criteria and constraints of a successful solution?*
- **Developing possible solutions**
 - *What is the process for developing potential design solutions?*
- **Optimizing the design solution**
 - *How can the various proposed design solutions be compared and improved?*

Logic of Standards-Based Reform



Instructional Core

Improve student learning at scale

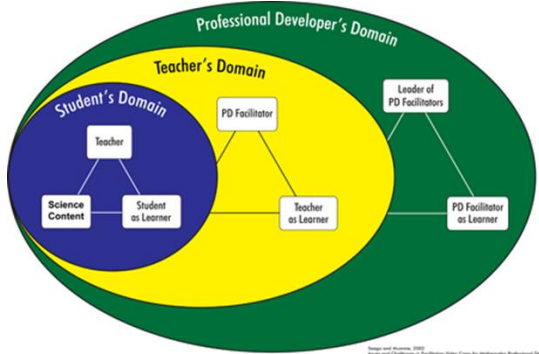
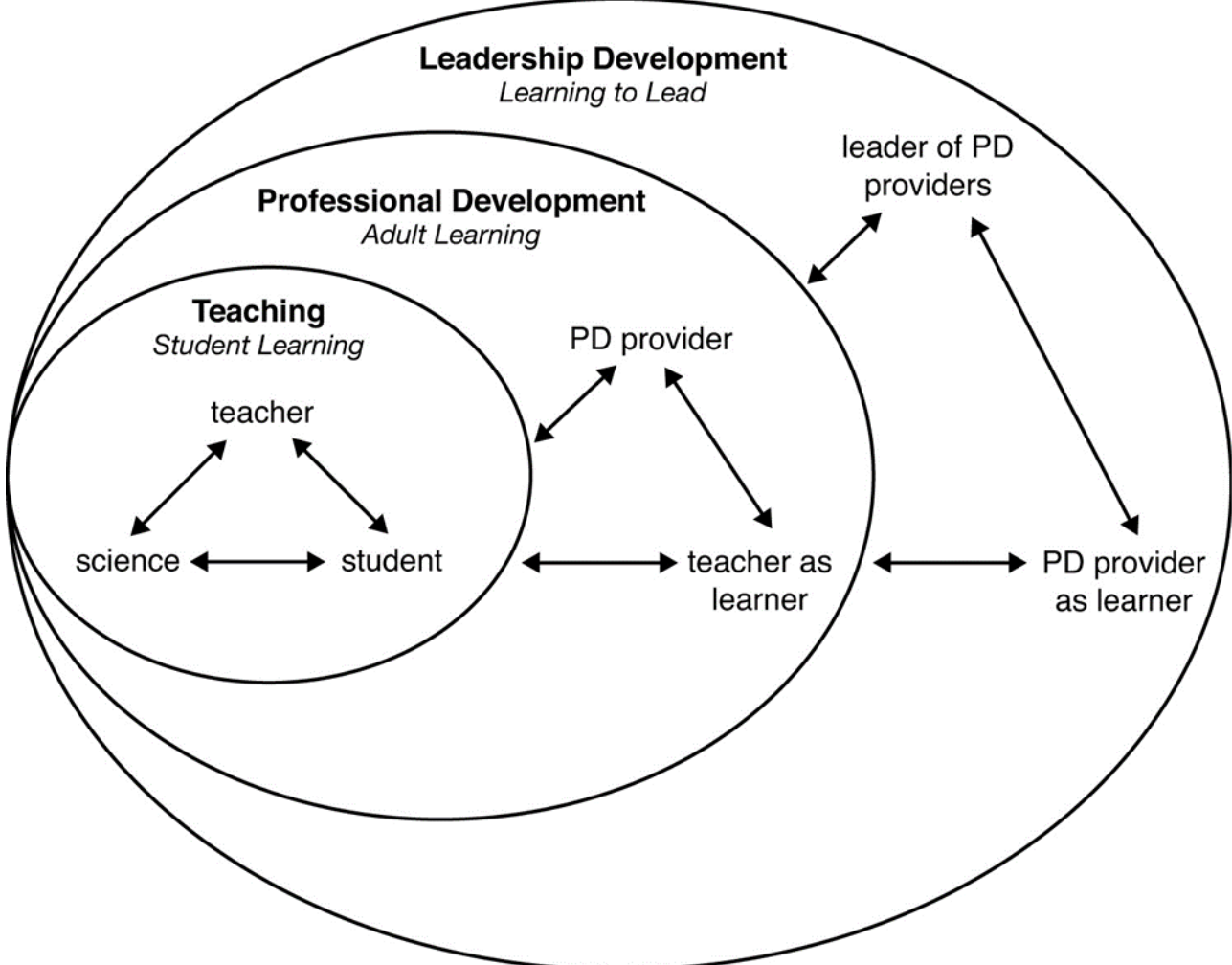


teachers' knowledge & skills
Professional Learning

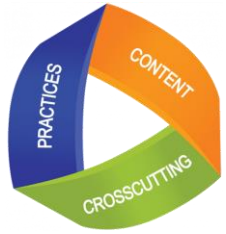
level of students' active learning
Instructional Materials

level of content
Standards

Practice-Based Approach



Reiser and Hershon, 2002
 Project and Program on Developing Expert Cases for Mathematics Professional Development
 Project of the NSF's National Science Foundation



Tools for Professional Learning

- **EQulP** Rubric for Science (Achieve)
- **Primary Evaluation for Essential Criteria** for NGSS Instructional Materials Design (Achieve)
- **Analyzing Instructional Materials Process and Tools** (BSCS & K-12 Alliance at WestEd)
- **Five Tools & Processes** for Translating the NGSS (AMNH, BSCS, & K-12 Alliance at WestEd)