# STEM
## teaching tools

**STEMTeachingTools.org**

## Ways to Promote Equity

- Equalize opportunities to learn
- See science learning as a cultural accomplishment
- Relate youth discourses to scientific discourses
- Build on prior interest & identity
- Leverage students' cultural funds of knowledge
- Make diversity visible
- Value multiple modes of expression

## 3D Science Learning

### Science and Engineering Practices (SEP)
1. Asking questions (sci.) & defining problems (eng.)
2. Developing & using models
3. Planning & carrying out investigations
4. Analyzing & interpreting data
5. Using mathematics & computational thinking
6. Constructing explanations (sci.) & designing solutions (eng.)
7. Engaging in argument from evidence
8. Obtaining, evaluating, & communicating info

### Disciplinary Core Ideas (DCI)

**Life Sciences**
LS1: From molecules to organisms: structures & processes
LS2: Ecosystems: interactions, energy, & dynamics
LS3: Heredity: inheritance and variation of traits
LS4: Biological evolution: unity & diversity

**Earth and Space Science**
ESS1: Earth's place in the universe
ESS2: Earth's systems
ESS3: Earth & human activity

**Physical Science**
PS1: Matter & its interactions
PS2: Motion & stability: forces & interactions
PS3: Energy
PS4: Waves & their applications in technology for information transfer

**Engineering, Tech & the Application of Science**
ETS1: Engineering design
ETS2: Links among eng., tech, science, & society

### Crosscutting Concepts  (CCC)
1. Patterns
2. Cause & effect
3. Scale, proportion, & quantity
4. Systems & system models
5. Energy & matter
6. Structure and function
7. Stability & change

### Key Definitions
**AB:** Assessment Boundary
**CCSS:** Common Core State Standards
**CS:** Clarification Statement
**PE:** Performance Expectation

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## Practical tools for science educators

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