Next Generation Science Standards (NGSS)
(link)

Throughout grades K-12, students should have the opportunity to carry out scientific investigations and engineering design projects related to the disciplinary core ideas.

NGSS Lesson Plans. The concord consortium (link)

The NGSS framework

The NGSS framework:

1) focuses on a limited number of core ideas in science and engineering to allow more time for teachers and students to explore each ideas in greater depth.

2) focuses on what all students should know in preparation for their individual lives and roles as citizens in a technology-rich scientifically complex world.

3) emphasizes that designing learning experience fin K-12 science education must involve the integration of the content knowledge and practices.

4) is built on the notion of learning as a developmental progression.

5) consists of a limited number of elements in three dimensions: (1) scientific and engineering practices, (2) crosscutting concepts, and (3) disciplinary core ideas in science. All three dimensions need to be integrated into the system of standards, curriculum, instruction, and assessment. Integration will help the students develop:

1- their understanding of science concepts,
2- their identities as learners of science,
3- their appreciation of scientific practices and crosscutting concepts.

6) does not specify a particular pedagogy.

7) helps students see how science and engineering are instrumental in addressing major challenges that confront society today, such as:

1- generating sufficient energy,
2- preventing and treating diseases,
3- maintaining supplies of clean water and food,
4- solving the problems of global environmental change.

NGSS Practices for Curriculum

We consider eight practices to be essential elements of the K-12 science and engineering curriculum:

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.

Asking Questions and Defining Problems

Questions are the engine that drive science and engineering.

2Science asks

- What exists and what happens?
- Why does it happen?
- How does one know?

Engineering asks

- What can be done to address a particular human need or want?

- How can the need be better specified?
- What tools and technologies are available, or could be developed, for addressing this need?

Both science and engineering ask

- How does one communicate about phenomena, evidence, explanations, and design solutions?