Sample General Curriculum Skills in Science

From Active Learning Space
http://www.activelearningspace.org/implementationscience

What follows below are some sample skills in the General Curriculum used in Texas (Texas Essential Knowledge and Skills) in the area of Science at various levels from Pre-K through High School.

Pre-requisite Skills in Science

Energy & Matter: Characteristics and Properties of Matter
- compare and contrast a variety of mixtures and solutions such as rocks in sand, sand in water, or sugar in water
- measure, compare, and contrast physical properties of matter, including size, mass, volume, states (solid, liquid, gas), temperature, magnetism, and the ability to sink or float

Organisms & Environment: Identify How Organisms Meet Their Basic Needs
- identify and compare the parts of plants
- identify parts of plants such as roots, stem and leaves and parts of animals such as head, eyes, and limbs

- from the Texas Curriculum Framework Pre-requisite Skills in Science

Sample Science, Grade 1, Curriculum Goals

(5) Matter and energy.

The student knows that objects have properties and patterns. The student is expected to:

(A) classify objects by observable properties of the materials from which they are made such as larger and smaller, heavier and lighter, shape, color, and texture; and

(B) predict and identify changes in materials caused by heating and cooling such as ice melting, water freezing, and water evaporating.
Sample Science, Grade 3, Curriculum Goals

(5) Matter and energy.

(C) The student knows that matter has measurable physical properties and those properties determine how matter is classified, changed, and used. The student is expected to:

(D) measure, test, and record physical properties of matter, including temperature, mass, magnetism, and the ability to sink or float;

(E) explore and recognize that a mixture is created when two materials are combined such as gravel and sand and metal and plastic paper clips.

Sample Science, Grade 5, Curriculum Goals

Matter and energy.

The student knows that matter has measurable physical properties and those properties determine how matter is classified, changed, and used. The student is expected to:

(A) classify matter based on physical properties, including mass, magnetism, physical state (solid, liquid, and gas), relative density (sinking and floating), solubility in water, and the ability to conduct or insulate thermal energy or electric energy;

(B) demonstrate that some mixtures maintain physical properties of their ingredients such as iron filings and sand; and

(C) identify changes that can occur in the physical properties of the ingredients of solutions such as dissolving salt in water or adding lemon juice to water.

- from Texas Essential Knowledge & Skills §112.16

Sample Physics, High School, Curriculum Goals

At the high school level areas of science become more specific (e.g., chemistry, physics, biology). Still all science areas continue to focus on observation, exploration, experimentation and the development and testing of hypothesizes.

(3) Scientific processes.

The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom. The student is expected to:

(A) in all fields of science, analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, so as to encourage critical thinking by the student;

- from Texas Essential Knowledge & Skills, High School Physics, §112.39.

Sample Goal Reflecting the Active Learning Approach

An IEP goal to address science for a sensorimotor level learner would be easy to write and might look like this.

Science

By the end of the IEP completion date, given a variety of materials used in various Science units (as well as other materials) in combination with perceptualizing aids, the student will experiment and explore the properties and characteristics of organic and inorganic objects and materials.
through tactile exploration using her mouth, lips, tongue, hands, arms, legs and feet for at least 20 minutes of a 30 minute period.

This goal also provides a goal related to the Expanded Core Curriculum on developing sensory efficiency.

**Activity**

Select a grade level from the samples above.

Thinking about a specific student who would use Active Learning write a sample IEP goal for science that would incorporate a skill or skills the student currently is attempting.

Now think of an Active Learning approach to work on this goal. Specify both the Active Learning equipment and several materials you would use in the activity. If this is an adult-child activity describe what phases of educational treatment you might use with the student during this activity (Offering, Imitation, Interaction, Sharing the Work, and Consequences). If you are unfamiliar with these educational treatments, you may want to review the Five Phases of Educational Treatment at [http://www.activelearningspace.org/principles/five-phases-of-educational-treatment/interacting-with-the-learner](http://www.activelearningspace.org/principles/five-phases-of-educational-treatment/interacting-with-the-learner).
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Figure 1 IDEAs that work logo.