Standard 2: Engineering Design
Engineering Design is an *iterative* process that involves modeling and optimizing to develop technological solutions to problems within given constraints.

**Strand 2.1:** Identify and explain the steps of the engineering design process, i.e., identify the need or problem, research the problem, develop possible solutions, select the best possible solution(s), construct a prototype, test and evaluate, communicate the solution(s), and redesign.

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Engineer: A person that designs new technology (invents) or improves
existing technology (innovates) using creativity & understanding
of materials, tools, math & science

Engineering Design: An *iterative* **process** that involves modeling and
**optimizing** to develop technical solutions to problems within given **constraints**

Iterative: Repeating

Engineering: Uses scientific discoveries to create new technology

Design: A plan

Process: A set of **steps** that lead to a result

**8 Steps of the Engineering Design Process**

Step 1: **Identify the problem**

Step 2: **Research the problem**

Step 3: **Make a list of possible solutions (Brainstorm)**

Step 4: **Select the best solution**

Step 5: **Make a prototype**

Step 6: **Test and evaluate the prototype**

Step 7: **Communicate your solution**

Step 8: **Redesign (if necessary)**

**Leonardo daVinci Biography**

Many of Leonardo daVinci’s ideas were not actually built at the time that he came up with them because **the technology did not exist to build them**

Leonardo daVinci often did not **finish** his projects

Leonardo daVinci never published his ideas. To help keep them secret he wrote his notes in **reverse**

**Thomas Edison Biography**

Thomas Edison believed more could be accomplished if people worked as a **team** when inventing

Lewis Latimer contributed to the work of Thomas Edison when he was working on **electricity**

Thomas Edison used **advertising** to get the news of his new inventions to the public

Thomas Edison created the cement used to construct **the original Yankee Stadium**

Thomas Edison has more **patents** than any other inventor

**The Invention of Gatorade**

Gatorade was invented at the **University of Florida**

What problem was Gatorade invented to resolve? **Dehydration of football players**

Gatorade was developed by Dr. Robert Cade and a **team** of other doctors and researchers

The film was an excellent example of the use of the **Engineering Design Process** to solve a real world problem

In addition to football players Gatorade was also given to **babies** who were also suffering from dehydration

Given the success of the product, Gatorade was eventually **marketed to the public** and is now responsible for 3 billion dollars of sales each year