



Redesigned Engineering Design Process:

Process:

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The purpose of the Redesigned Engineering Design Process is to create a more comprehensible version for the Partnerships Implementing Engineering Education in the 5th Grade at Elm Park Middle School.

Step 1: Brainstorming

Brainstorming-Students were told that there was a \$100 bill in a drain storm and they need to come up with possible solutions to getting the \$100 bill out without entering the sewer system.

Step 2: Choose Best Solution and Sketch it

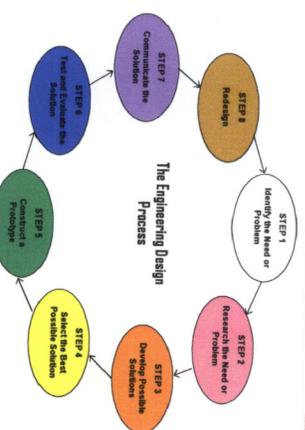
Sketching Primary-Students were given a list of dimensions for the rooms of a house and for the amenities, basketball court, pool, etc. The students then broke up into groups, half sketching the inside and half sketching the outside. Once inside and out were sketched they were to choose the design that they wished to have as their floor plan.



Step 3: Construct a Prototype

*X-Planes: Students are in competition with another company to create an airplane that performs certain maneuvers. If the plane does not perform said maneuvers, they must redesign it.

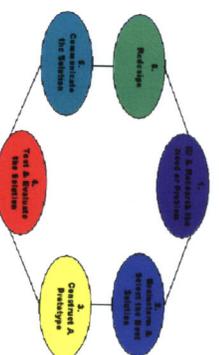
Original Engineering Design Process



Description of Steps

- Find Problem, Research, Brainstorm possible solutions.
- Choose best possible solution, Sketch it.
- Construct it.
- Test Solution
- Communicate findings.
- Redesign.

Modified Engineering Design Process



Step 4: Test the Prototype

*Magnetic Levitation: Students are required to make a car that will levitate on a magnetic track. The car is required to travel down the full length of the track.

Step 5: Results of Testing

Scale: Students learn about scale and how it is useful in the real world, and are then asked to find their own house on a map and measure the distance from their house to their school. Once they find this distance the students then need to convert actual distance to scaled distance. When the scaled distance is found the students then need to explain how the actual distance relates to the smaller scaled distance

Step 6: Redesign

Dream House: In groups, the students are asked to create their dream houses given all the amenities. Each amenity and house style has a price listed with it. When they come up with a final design they then need to see if the total for the house is less than that of their savings. If the number is negative they need to go back and redesign their house.