Student Resource:

**Student Vocabulary**

- **Force**
  A push or pull acting on an object

- **Acceleration**
  Increasing the rate or speed of something

- **Gravity**
  The force that pulls an object toward the center of the earth

- **Friction**
  Resistance of one object when moving against another

- **Wind Resistance**
  A force an object will need to overcome to move through the air
The Engineering Design Process

1. Define
What is the problem you want to solve? What is your challenge?

2. Develop Solutions
Think about all the possible options you can identify to solve the challenge. Brainstorm as many solutions as possible.

3. Optimize
Compare your solutions, test them, and consider which one will do the best job of solving the problem.

And, throughout....Communicate
At each step in the process talk with your team members so everyone can contribute ideas and be a part of the process. Good communication is very important to the engineering design process.

Your Challenge

1. Define
Your challenge is to develop a skier out of materials provided that can race down a classroom ramp the fastest. You will not push the skier from the top of the ramp, but just let it go and let gravity move the skier down.

2. Develop Solutions
As a team, look at the materials you have to work with, and consider lots of solutions to the challenge. Be sure to talk about options and consider the materials. Consider the vocabulary words, like friction, and how they might apply to this challenge.

3. Optimize
Agree on which two design solutions are most likely to work, then build both and test them on the ramp. Choose which design your team will use to enter into the classroom race. Then enjoy the race and see what other designs worked well to meet the challenge.