Engineering a Custom Door Sweep

Objective

To design and build a custom door sweep that efficiently prevents air drafts.

Vocabulary

- **Engineering Design Process**: A series of steps that engineers follow to come up with a solution to a problem. These steps include identifying the problem, brainstorming, designing, building, testing, and improving.
- **Prototype**: An early sample or model built to test a concept or process.
- **Efficiency**: The ability to accomplish a job with a minimum expenditure of time and effort.

Materials

- Various materials (e.g., foam, felt, plastic, rubber)
- Scissors
- Glue or adhesive tape
- Measuring tape
- Small fan
- Door for testing

Procedure

1. **Identify the Problem**: Understand the purpose of a door sweep and define the problem you are trying to solve (preventing drafts).
2. **Brainstorm**: Discuss possible designs and materials for an effective door sweep.
3. **Design**: Sketch your door sweep design.
4. **Build**: Create a prototype of your door sweep using available materials.
5. **Test**: Attach the prototype to the door and use a fan to test its effectiveness at preventing drafts.
6. **Data Collection**: Use the chart below to record the effectiveness of your design.

Data Collection Chart

Prototype Design	Material Used	Test Temperature (°C)	Temperature Change (°C)	Improvements Needed
Prototype 1				
Prototype 2 or Classmates' Data				

Conclusion

Write a paragraph describing the effectiveness of your custom door sweep. Discuss any improvements you made during the testing phase and how these changes impacted performance. Reflect on what you learned about the engineering design process through this activity.