



## Designing a Good Science Project



## Choosing a project

- Ideas
- Gather Resources
  - Books, science journals, magazines
  - Knowledgeable persons
- Develop the Hypothesis

## What is the Hypothesis?

- A question that can be tested by an experiment.
  - Question: "What is the effect of salt on the boiling point of water?"
  - Hypothesis: "Salt will raise the boiling point of water"

## Design the Experiment

- Write a step-by step protocol (procedure)
- Identify safety concerns
- Select the parameters that you will measure
- Identify the controls for each variable
- Repeat the experiment
- Determine how the data will be collected

## Perform the Experiment

- Obtain approval of the Science Horizons Safety Review Committee
- Assemble the materials and equipment
- Record all data in a notebook
- Note the unexpected!
- Keep the work area clean and neat

## Record the Data

- Use several samples and controls
- Change only one variable in each experiment
- Record all raw data and observations in a notebook
- Note any errors or problems that affect the experimental protocol
- Adjust the protocol/ add additional controls

## Data Analysis

- Perform calculations on raw data
  - Statistical analyses
    - Mean, Standard deviation
- Present data in graphs
- Analyze the data/ think about your results
- Draw conclusions

## Presentation of Results

- **Presentation! Presentation! Presentation!**
- Simple and Understandable
  - The main points should be easily grasped during judging
- **Use graphs, word processing of written material**
- Proofread to avoid spelling errors

## What if your hypothesis was not proven?

- You have still learned something!
- Try to explain what might have gone wrong
- Suggest another way the experiment could be done

## Key Points

- Take Careful Notes
- Be Neat
- Organize Your Work

## You are the research director!

- Have Fun!
- Good Luck!



## Resources on the Internet

- Some resources to explore on the Internet:
- <http://www.sciencehorizons.org>
- <http://www.isd77.k12.mn.us/resources>
- <http://www.ipl.org/youth/projectguide>
- <http://www.scifair.org>