

STEAM NIGHT

HOW TO DO A SCIENCE PROJECT

STEAM Night involves projects based in Science, Technology, Engineering, Art and Math. You are not required to do a “Science” Project. However, if you choose to do a Science Project, here are some tips to help you:

CHOOSE A TOPIC:

This is your chance to become an expert on something that is interesting to you or find an answer to a question you have always wondered about. Topics can be chosen from Biology (living things), Chemistry (solids, liquids, gases), Physics (forces and motion, astronomy), or Environmental Science (ecology—interactions between the earth and organisms). Your project can be a research investigation (what you know and find out about something) or a true experimentation (comparing/contrasting, testing, collecting data, analyzing data).

Examples of investigations: What animals live in my backyard? What makes a bird a bird? “The chemistry of slime,” Why leaves change color in the Fall, “The physics of rockets.”

Examples of experiments: What is the best way to keep cut flowers fresh? What types of food do ants prefer? What types of materials sink/float?

BECOME AN EXPERT:

From your own observations, reading about your topic, and interviewing experts, you will become the expert on your subject! Keep a scientific journal that records your data (information that you gather from observations and experimentations) and other important information you learn. You can display your journal along with your presentation board at the Science Fair.

You will continue to research your topic throughout your project. However, it is important to start this early in order to help formulate your scientific question and hypothesis.

DEVELOP A HYPOTHESIS:

A hypothesis is a scientific prediction. It is based on what is already known or observed, and what you think will be the result of a manipulation of something. For example, if you are testing different types of fertilizer on plant growth, you need to first know something about what plants need to grow. If you know they need nitrogen, you may develop a hypothesis such as plant will grow faster/bigger with fertilizer that has more nitrogen. As you develop and explain your hypothesis, use scientific words such as “determine,” “discover,” “find out,” “explain” and “test.”

Whether your hypothesis turns out to be proven or disproven (or your experiment doesn’t work,) it is important to explain WHY you got the results you did, WHY your hypothesis was proven or disproven, and WHAT you would do differently next time, if anything.

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TEST YOUR HYPOTHESIS:

Once you have some background information, have developed your hypothesis, and have gathered your materials, you may begin your experiment. Remember to keep a record of your observations, questions, materials, and how you did your experiment. Your results can be recorded in your journal and/or with pictures, drawings, graphs, etc.

RESULTS AND CONCLUSIONS:

Now it is time to share what you have learned. You can use graphs, charts, drawings, photographs, maps, and other visuals to show what you have studied and found out. Did you do your experiment enough times to get an accurate answer to your original question? Based on your observations, what did you find out? You will want to communicate your results and your explanation of what the results mean on your presentation board.

PRESENTATION BOARD/"POSTER" :

Science is very collaborative—scientists always share their findings with others so that the information may be useful to another study, or it may be important for people to know what they found out. Once you have completed your study, you will want to display your hard work. You will prepare a tri-fold presentation board to show your drawings, graphs, written explanations, pictures, drawings, etc. For more information, see the other handout “How to Prepare your Presentation Board.”

GOOD LUCK and HAVE FUN!