SCIENCE EXPO

2022

York Elementary School

Emmanuel–Faith Lutheran School

St. Joseph Catholic School

SCIENCE EXPO
IMPORTANT DATES AND TIMES

INFORMATION & RESOURCE & HELP NIGHTS

- Thursday, January 27 @ 5:30-6:30 p.m. – Y.E.S.Media Center
- Thursday, February 24 @ 5:30-6:30 p.m. – Y.E.S.Media Center
- Thursday, March 3 @ 5:30-6:30 p.m. – Y.E.S.Media Center

Come any of these nights to get ideas from a variety of science projects books, to use any of the library resources including computers, or to get help from teachers and staff. Get help with setting up your boards and finishing your projects as the Expo approaches.

ENTRY DEADLINE

- Wednesday, February 23

Limited scholarship money is available to help defray costs on an as needed basis. Scholarship applications are due by February 14. Applications available in school offices.

SET-UP FOR SCIENCE EXPO

- Monday, March 21 @ 3:30-6:00 p.m. (City Auditorium)
- Tuesday, March 22 (if special arrangements are made)

SCIENCE EXPO

- Tuesday, March 22

-Student presenters must arrive by 5:45 p.m.
-Presentations to science experts 6:00 – 6:30 p.m.
-Public viewing of science expo projects 6:30 – 7:15 p.m.
-Clean up begins at 7:15 p.m.

SCIENCE EXPO RULES

1. The project to be presented may be the work of a single student or two students working equally together as partners.

2. No living creatures will be allowed at the science expo.

3. Experimentation with living creatures must be approved by the science expo committee.

4. No open flames or flammable materials/chemicals will be allowed at the science expo.

5. Must provide own U.L. approved extension cord, if needed.

6. Must bring a table covering **but you MUST also provide own plastic/tarp under the table** if using some type of liquid on your display and bring materials from home to clean up your area at the end of the expo.

7. Exhibit items should present no hazards to observers who may view the display. (no breakable objects-use shatterproof containers)

8. If doing a project where food is being tasted or served, a parent/supervisor needs to be present during the public viewing portion of the expo. The parent will help with crowd control and the serving of the food product. (From previous experience we have learned, this type of exhibit tends to be extremely popular with peer exhibitors, and can become an overwhelming responsibility for the exhibitor.) You must also provide your own trash can.

PROJECT HINTS

Choose a Topic that Interests YOU

It's hard to have fun working on a project you think is boring, and you won't learn much from a project you really don't care about. So the most important step is to pick a project that you really want to do and one you can get enthusiastic about completing.

You don't have to do a highly sophisticated project in order to have a good one. A simple project can be as effective as a complex one. It's more important to demonstrate that you understand your project and that you have researched the issues and are knowledgeable of the facts that relate to your project.

If you are searching for ideas, you may consult any of the school's resource books as well as the Internet web sites that we have bookmarked.

After selecting the topic, learn everything about it. Books on your topic can most likely be found in the school or public library or bookstore.

Do your own work

There is nothing wrong in asking for help. Other people can certainly share resources with you, advise you about how to set up the experiment, even show you how to complete some tests. Getting help on a few specific aspects of your project is okay, but it has to be YOU who does the project, not the parent. Doing the work yourself will give you a much better understanding of how things work and why or why not your project turned out the way it did.

Give yourself plenty of time

For your project to be the best you can make it, you must allow yourself plenty of time to get it done. A good project cannot be done the night before the fair or even a few days before. A good project requires weeks of planning and experimentation to be successful. Even after your research and experimentation is over, you need time to prepare your display for the fair itself.

Make a plan

Once you consider yourself an 'expert' about your topic, make a plan as to how you will carry out your science fair project. Your plan should include the following:

- the purpose of your project/experiment
- the procedure of how you will carry out your project
- if experimental, what things or variables you will change during the experiment
- if experimental, your hypothesis or what you think the outcome will be

Carry out your project plan

While carrying out your plan, keep detailed notes on everything you do or observe. You may even want to take pictures or make sketches of your observations or progress. These notes are vital to your project because they are needed when you make your display.

Analyze your results

Once you are finished, organize your notes, then analyze them. Results are what you learned from doing your project. What did you learn that you didn't know before? If your project was experimental, ask yourself what happened, did the results agree with your hypothesis, and so on. Make charts and graphs to represent the data to help you analyze it.

Prepare an attractive, informative display

A neat attractive display makes it easier for others to examine your project and the results you achieved. Avoid the temptation to cram too much information into too small a space.

Use colorful graphs and pie charts as a means of displaying your data in a form that is quickly understood. If appropriate, use photos or photo collages to show the experiments as they took place. It's always true that "A picture is worth a thousand words", so don't hesitate to use them, especially if parts of your experiment are not on display at the fair. Photos are a great way to show what you did and how you did it in such cases.

It is good to use color in your display but you shouldn't make it too colorful because it will make your display lose its professionalism. Stick to one or two colors that contrast and avoid colors that clash with each other. You want to use just enough color to make your display pleasing to the eye, but not enough to overdo it.

Rehearse your presentation

When you make your presentation to the science experts, it is important that you are prepared and know what you are going to say before you have to say it. By rehearsing your presentation, you get an opportunity to 'work the bugs out' and become comfortable talking about your project. You will be calmer and more composed on the science expo day if you have practiced and prepared.

Good luck!

INFORMATION TO INCLUDE ON YOUR DISPLAY UNIT

**These are the requirements of what needs to be included on your display board. Please read and follow the guidelines carefully. **

1. **TITLE OF THE PROJECT**
   The title must describe the focus of the project. It should be short (10 words or less), neatly lettered, and easy to read.

2. **PURPOSE, INTRODUCTION, and/or PROBLEM**
   This part should answer the question **WHY.** Why did the student want to do this project? This section lists the student's reasons for pursuing the project. What did the student hope to learn by investigating this area? What problem was the student uncomfortable with or wanted to investigate?

3. **PROCEDURE(None Applicable for Collection type projects)**
   This part should tell the **HOW**. How did the student carry out his or her plan of action? What methods or materials were used to discover new information about the topic? Tell step by step how you completed your project.

4. **PREDICITION/HYPOTHESIS(None Applicable for Collection type projects)**
   This part is optional, as it may not fit every project. The student should use a prediction / hypothesis if doing an experimental-type project. A hypothesis is an educational guess or prediction about what the student thinks will happen. It should be written down before beginning the experiment.

5. **RESULTS and/or CONCLUSION**
   This part tells the **WHAT**. What did the student learn during or after his or her investigation? In other words, what facts were discovered that were not known before? It also summarizes the student's investigation. It should offer an answer to the student's original questions. Students may discover something not originally planned--that too should be included.

6. **NAME, GRADE AND SCHOOL**
   Include your name, grade and school. This should be neatly lettered and easy to read, but not the focus of your board.

7. **VISUAL AIDS**
   These include photographs, pictures, charts, surveys, graphs, data, drawings or paintings, diagrams, or other illustrative materials that show vital information gathered during the project.

8. **CREDIT YOUR SOURCES**

Examples of how to properly cite your resources:

Book - [Title, Author(s) & copyright date]
Electricity Is Fun by James Olson, 1999

Reference Book – [Article Title, Reference Book, copyright date]
Motion, World Book Encyclopedia, 2004

Internet - [Article Title, Author, copyright date & internet address]
Seven Wonders of the Ancient World by Al Ashland, August 2007. http://pharos.bu.edu/Egypt/Wonders

Person – [Type of interaction, person, date]
Personal Interview with Bill Nye, February 2008

More tips for your display

You will need to use a three-panel display board. These are available from many retail stores.

Your content is the most important thing on the board and should be clear and easy to follow. As a general rule, your title should be on the center panel in large lettering. If necessary, let it wrap across all three panels. It should be eye-catching, easy to read, in dark letters and legible even across a room. You need a title which is a bit of an eye-catcher, even a bit dramatic, but it should still be accurate and to the point, one that makes others want to know more about your project. Avoid titles that are cute solely for the sake of being cute. It's better to use a simple, straightforward title than one that is misleading.

Your three-sided exhibit can be arranged in this fashion:

Left Panel	Center Panel	Right Panel
Purpose	Title	Results
Problem	Illustrations	Conclusions
Procedure	Photos	Sources
	Graphs/Charts	

TYPES OF SCIENCE EXPO PROJECTS

EXPERIMENTAL PROJECTS

The experimental project is the most common type of project presented at science expos. These presentations allow the student to pose a problem, design an experiment to investigate that problem, record and report their results, and make conclusions based upon those results. The final project is a display of steps the student took, any successes or failures, and the implications of the data.

Examples of possible topics:

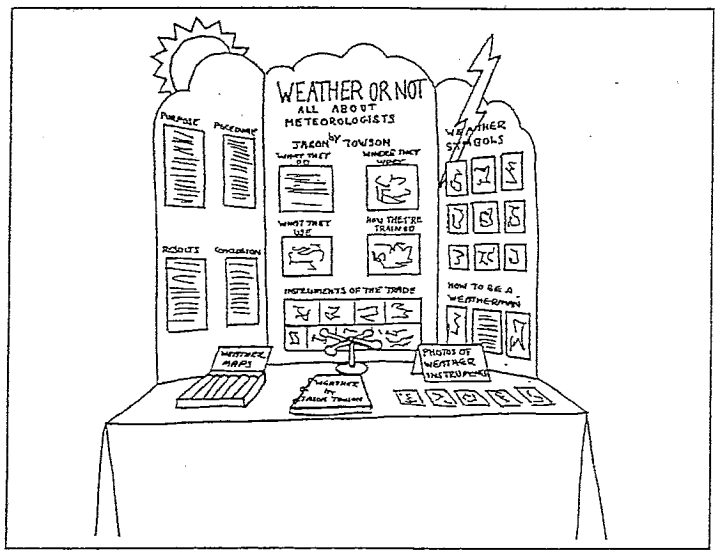
Materials that are the best conductors of electricity
How are crystals formed?
The effect of crowding on plants
What material is the best insulator?

RESEARCH PROJECTS

In a research project, the student investigates a chosen area of science. The intent is for the student to explore a scientific area in depth and detail and to report the findings in a vivid, interesting way through the project. Students will gather their information by consulting *primary* sources. They will need to consult reading materials from libraries, museums, and the like. In addition, they could also interview experts such as health care workers, county agents, and so on.

Examples of possible topics:

How rocks are formed
Why animals hibernate
Pick a career in science and tell about it
Everything you wanted to know about ...

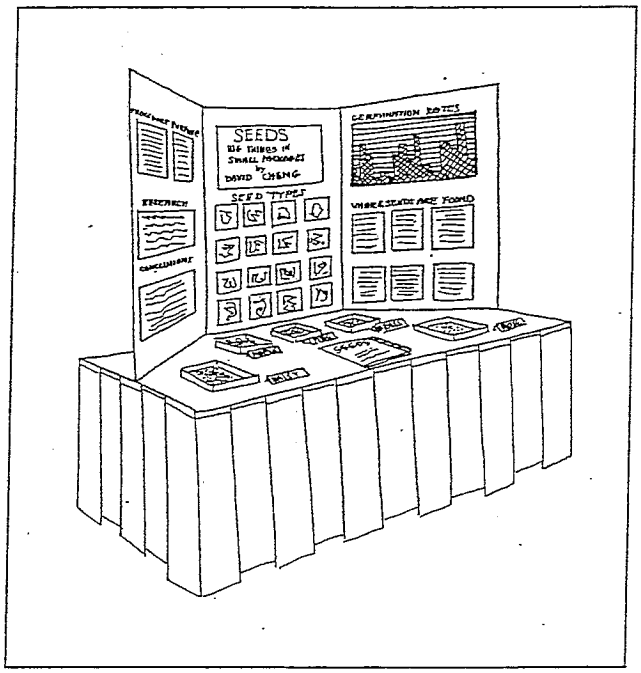


COLLECTIONS PROJECTS

Collections are an assembly of items such as seashells, bird's nests, or telephone parts that show variety and diversity within a chosen area of science. Usually, collection projects will result from a hobby or other free-time activity. Collections need to include as many samples as possible to represent the magnitude of the topic.

Examples of possible topics:

Demonstrate different types of animal teeth
Different types of grains and their uses
Collect and label pictures of clouds
Collections of any of the following:
leaves, pinecones and/or needles,
weed seeds, etc.

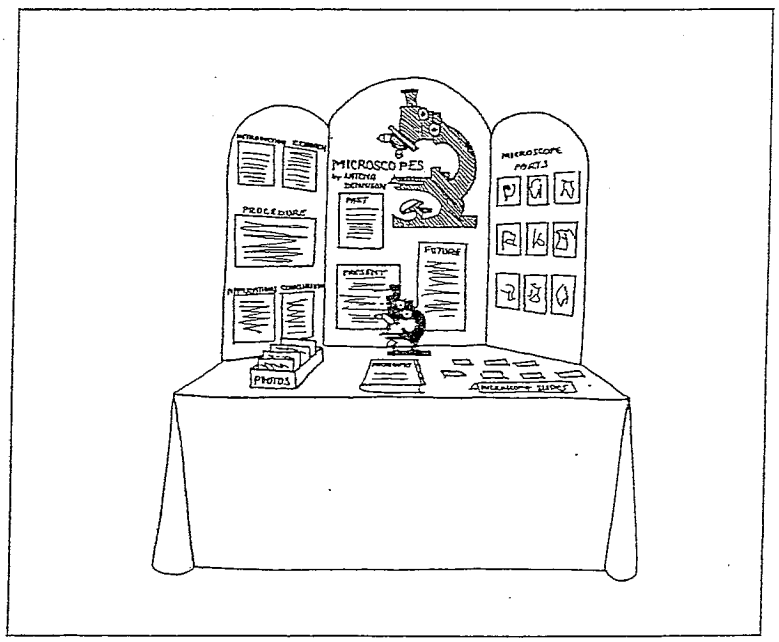


APPARATUS PROJECTS

In this type of project students display some kind of scientific apparatus or instruments and describe their use or function in detail. The project should enumerate the importance of the apparatus for both scientists and the general public. Descriptions of how each apparatus is used within or outside the scientific community would be appropriate.

Examples of possible topics:

How to make electromagnets
Series and parallel circuits
Microscopes: a magnificent invention
Construct a homemade thermometer

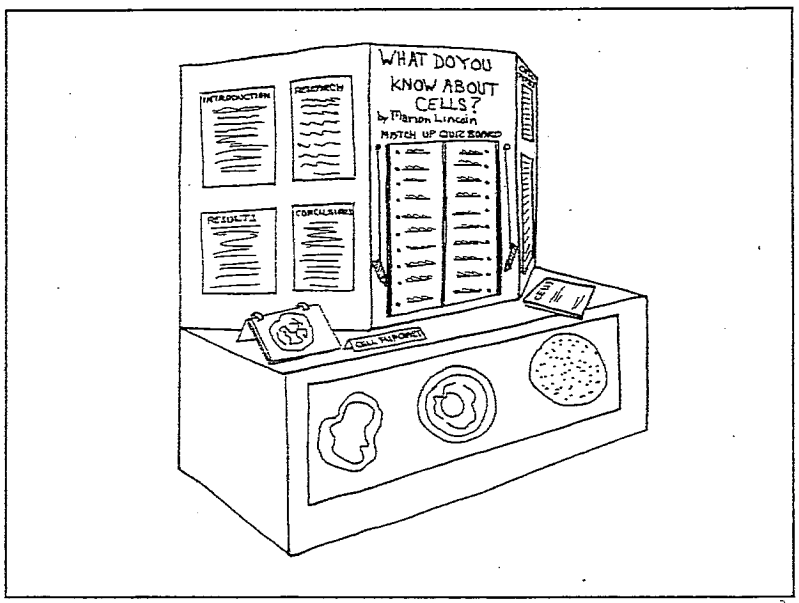


DEMONSTRATIONS PROJECTS

In this type of project students demonstrate a particular science principle or fact. The demonstrations should be self-contained; that is, observers can operate or manipulate any controls, switches, or devices needed for the demonstration. Students may wish to demonstrate how something works, a science phenomenon, or how something is created naturally or in the lab.

Examples of possible topics:

Create your own fossils, using plaster casts
Compare and contrast different types of batteries
Make an electric question board
Create a terrarium

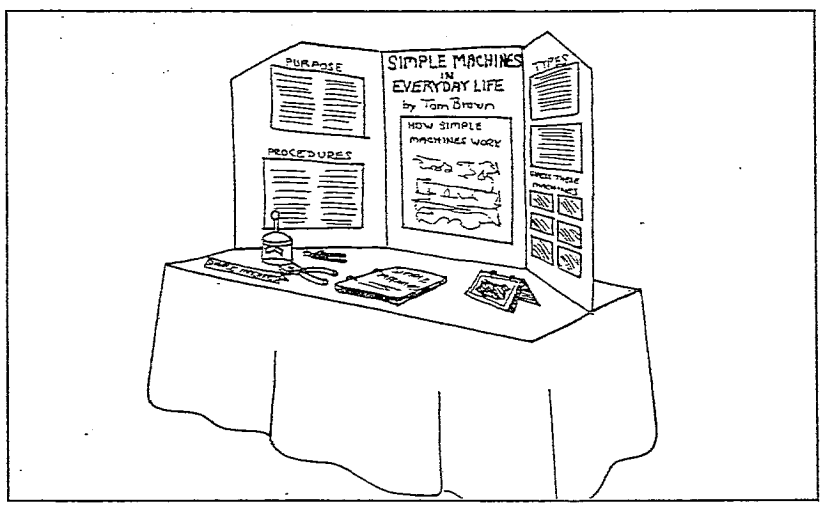


INVENTION PROJECTS

In invention projects, students invent something new and useful. It may be simple or complex. All inventions are unique in that the device or process has never been done in this way before. They are useful and serve a specific purpose.

Examples of possible topics:

Bike turn signals
Night glow house address
No spill t.v. tray



EXPERIMENTAL SCIENCE PROJECTS

The experimental type of science fair project allows a student to pose a problem, design an experiment to investigate that problem, record and report their results, and make conclusions based upon those results. The final project is a display of the steps the student took, any successes or failures, and the implications of the data.

There are eight steps a student must follow if they choose to do an experimental type of science fair project:

1. **Title** the Project

Choose a title that describes what you are investigating. The title should summarize what the investigation will deal with.

Here is an example of a project title.

What Effects Does A Rough Surface
Have On A Skateboard?

2. State the **Purpose** of the Project

What do you want to find out? Write a statement that describes what you want to do. Use your observations and questions to write the statement.

You can start out by writing it this way. The purpose of this project is _____. Your purpose may include any hypothesis (scientific guesses) that you have as to the outcome of your experimentation.

Here is an example of one student's purpose.

The purpose of this project is to determine
if a rough surface will affect the speed of
a skateboard.

3. Make a **Hypothesis and Research**

Make a list of answers to the questions you have. This can be a list of statements describing how or why you think the observed things work. Decide which answer you came up with, is the best answer for your question. Then change your question to an "If/Then" statement which is called the hypothesis. Your hypothesis does not have to be the correct answer at the end of your experiment. Remember you are making an educational "guess" so don't be discouraged if it is wrong; celebrate that you gained some new knowledge about your subject! If you would like to do some research about your subject before you make your hypothesis, this is the time to do it!

Here is an example of one student's hypothesis.

If the surface texture is rough, **then** my skateboard will roll slower.

4. Obtain **Materials** and Equipment

Make a list of things you need to do the experiment and gather them.

5. Design an Experimental **Procedure**

Design an experiment that will test your hypothesis. Make a step-by-step list of what you will do to answer your questions.

Guidelines for your procedure:

Select only **one thing** to change in your experiment that will test your hypothesis. Everything else that might affect the outcome of an experiment has to be kept the same. (Things that can be changed are called **variables.**) List the things you will keep the same for each trial and the **one** thing you will change.

The procedure must tell **how** you will change this one thing.

The procedure must explain how you will measure the amount of change.

In the example above you might change the roughness of the surface. The things you would keep the same would be the slant of the slope, the same car, how you release the car, etc. In the surface roughness example, the only thing that you would change in the setup would be the roughness of the surface the car is going down.

6. **Do the Experiment** and **Record Data and Observations**

Do the experiment and record all numerical measurements made. Data can be how long something is, the time something took, how far an object traveled, etc. A table is a good way to keep your data. You will use this data later to make a graph from your data. If you are not taking any measurements, you probably are not doing an experimental science project.

Observations can be written descriptions of what you noticed during an experiment, or some of the problems you encountered. Keep careful notes of everything you do, and everything that happens. Observations are valuable when drawing conclusions, and useful for locating experimental errors. A good place to keep your data and your observations is in a notebook so everything is kept together.

7. Summarize **Results**

Summarize what happened. This could be in the form of a table of numerical data or graphs. It could also be a written statement of what occurred during the experiments.

If you are making a graph, be sure to include a title for the graph, label your *x* and *y* axes with subtitles, and numerical labels that are "even" in increments. Make your graph so it is easy to read and you can get the information you need quickly.

8. Draw **Conclusions**

Using the trends in your experimental data and your experimental observations, try to answer your original question. Is your hypothesis correct? Now is the time to pull together what happened, and look at the results you have.

Other things you can mention in your conclusion:

If your hypothesis is not correct, what could be the answer to your question?

Summarize any difficulties or problems you had doing the experiment.

Do you need to change the procedure and repeat your experiment?

What would you do differently next time?

List other things you learned.

WHAT IS THE SCIENTIFIC METHOD?

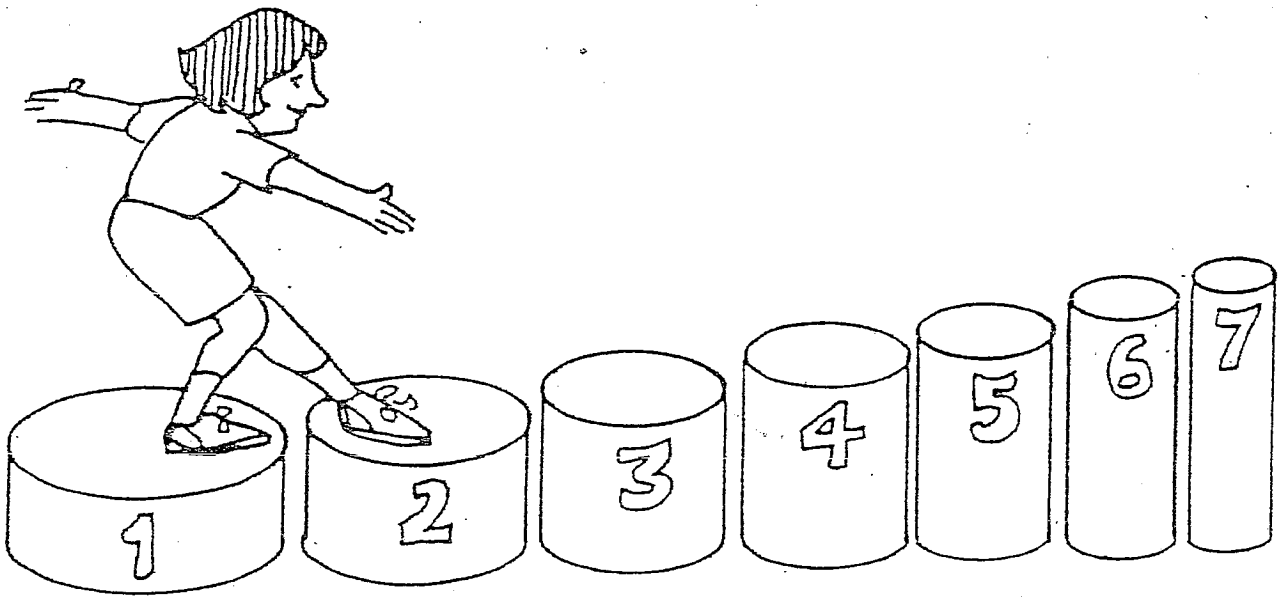
The Scientific Method Features These Steps:

1. **PURPOSE** Identify a Problem What Do You Want to Find Out?	2. **HYPOTHESIS** Make an Intelligent Guess What Do You Think Will Happen?
3. **MATERIALS** Gather Materials Needed to Do the Experiment What Materials Do You Need to Use?	4. **PROCEDURES** Things Done to Solve the Problem What Will You do to Find Out the Solution to Your Problem?
5. **COLLECT DATA FROM TRIALS AND TESTS** Methods of Recording Data What Things Can You Count and Measure?	6. **RESULTS** Observe What Happened What Happened When You Did Your Experiment?

7. **CONCLUSIONS**

Answers to the Questions

What Did You Learn from Your Experiment and How Is It Related to Your Everyday Life?



A SUGGESTED 6-WEEK TIMETABLE

Successful science expo projects take planning. Trying to put a project together a few nights before the scheduled opening can lead to disaster and the student fails to develop an appreciation for the time and effort scientists need to conduct their investigations. Planning a project well in advance allows sufficient time for the necessary research, the construction of the display, and the assembling of the final project. It also provides some leeway should difficulties arise in research or in obtaining vital materials.

6-Week Timetable

Scheduled Completion Date	Actual Completion Date	
_____	_____	WEEK 1 • Choose a topic or problem to investigate • Check resources in school or community library • Contact experts in the field • Gather all the written material you can find on the topic
_____	_____	WEEK 2 • Begin putting your project notebook together • Start collections or experiment • Begin designing display unit
_____	_____	WEEK 3 • Begin building display unit • Design all visual aids • Take the photographs you need • Complete your research • Consult with experts (scientists, teachers, parents) to check your progress
_____	_____	WEEK 4 • Continue collecting items for display • Continue experiments • Set up your apparatus and test it

_____ _____ WEEK 5

- Construct background for display
- Design and assemble graphs or charts
- Complete lettering for display unit and mount it
- Double check your written data
- Complete experiment and record data
- Proofread everything

_____ _____ WEEK 6

- Set up display at home and test
- Transport display to science expo site, set it up and test it
- Congratulate yourself!

-- Credit Your Sources --

As a scientist, it is important to give credit to the resources you used in researching and developing your project. Resources can include books, encyclopedias or other reference books, the internet, or information gathered from a person you might know.

<u>Examples of how to properly cite your resources:</u>

Book - [Title, Author(s) & copyright date]
Electricity Is Fun by James Olson, 1999

Reference Book – [Article Title, Reference Book, copyright date]
Motion, World Book Encyclopedia, 2004

Internet - [Article Title, Author, copyright date & internet address]
Seven Wonders of the Ancient World by Al Ashland, August 2007.
http://pharos.bu.edu/Egypt/Wonders

Person – [Type of interaction, person, date]
Personal Interview with Bill Nye, February 2008

Please list the top 3 sources you used in researching and developing your Science Expo project.
Please see the examples above when listing your sources.

1._____

2._____

3._____

Please include this information on your board.