

Science Fair 2014

Student Information Packet

St. John de la Salle Catholic Academy

Research Project

Science Fair 2014 – Student Information Packet – Research Project

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INTRODUCTION

You are surrounded by science. Everything uses some form of science to make it work. The chair you sit on was made by some person. All the tools used to build it are because of knowledge from science and technology. Someone had to know what shape to make the saw and how sharp the teeth are to cut wood, right? How did they know to make one saw for wood and a different one for metal? Why does the wood saw have big teeth and the metal saw have small teeth?

Science is asking questions and finding answers. A science project, simply put, is the process of asking a question you have about something you are interested in, hypothesizing (best-guessing) what the answer might be, researching for information on that topic, experimenting, inventing, collecting or doing in-depth research, analyzing your results, and coming to a conclusion!

What your accomplishment will mean for you:

- ☆ Gaining self confidence
- ☆ Proving you can do it
- ☆ Learning new things
- ☆ Being recognized by your school and community
- ☆ Knowing what the scientific method is and how it can help you.

Everything you need to know about doing a great science project is inside this packet. You'll be discussing the contents with your teacher and also your parents. Approximately every two weeks between now and your school science fair, your teacher will give you a Student Timeline for Science Fair Project sheet to check your project's progress. The timeline sheet is designed to keep you, your parents and your teacher on target.

You should keep this packet, timeline sheets, letters home to parents, and all other information in a separate "Science Fair" folder. Your science fair folder should be kept at home unless your teacher asks you to bring it to school.

You will find the science fair to be an exciting and rewarding experience. Let's make this year's fair the best ever!

HELPFUL TIPS FOR PARENTS

This should be a fun project! Success is when your child asks their own question, completes their project with a smile, and knows more than when they started. Enjoy this time of discovery and fun for you and your child!

- ❖ The science fair project reinforces reading, writing, logic and math skills, and creativity.
- ❖ The goal is that your child learns “the scientific method” or “the engineering design process” through direct experience.
- ❖ For their daily reading, recommend they choose a science book that can be a research resource for their project.
- ❖ A **Report** is part of the process.
 - o Both the rough draft and final draft of the report must be typed.
 - o Type the report *as your child wrote it or dictated it to you*. If the sentence structure is off, ask them if it needs correction. **Guide** them to the correction.
 - o Use their words; children say things in unique and fun ways.
- ❖ It is best to guide and answer their questions with questions. You may know the answer, but help them discover it themselves. For example, you may want to show them which paragraph in the book to re-read rather than giving them the answer.
- ❖ Although neatness is good, it’s not the main focus. A 6-year-old can make the data chart with a little help. They should do that part while you operate the hot glue gun.
- ❖ The project does not have to look store bought. It needs to be made by them, so that they truly get better every year they participate.
- ❖ Encourage your child’s artistic side with the display. For example, you can show how the use of color and shapes can be used to show the importance of a part of the display.
- ❖ If you allow your child to use web sites for research; verify the site is “correct” and then let them use the research found there. *Remember:*
 - o Anyone can create a web site; this does not mean its information is correct!
 - o Make sure the web site is run by a large, recognized group such as a college or organization.
 - o DOT “org”, “gov” or “edu” are generally trustworthy for accuracy of content.

Where to Purchase Science Fair Materials

HOME DEPOT

www.homedepot.com

LOWE'S

www.lowes.com

MICHAEL'S CRAFTS

www.michaels.com

OFFICE DEPOT

www.officedepot.com

RADIO SHACK

www.radioshack.com

STAPLES

www.staples.com

JOANN'S FABRICS

www.joann.com

WALMART

www.walmart.com

LAKESHORE LEARNING

www.lakeshorelearning.com

INVESTIGATING A SCIENCE FAIR RESEARCH PROJECT

A Research science project is one where you will learn all about a science topic or concept that you are personally interested in by reading books & magazines, going to libraries or other institutions, talking to an expert in the field, and more. Your display board will support your research with photos, drawings, diagrams, dioramas, etc.

I. PROBLEM

Choose a topic that you are interested in learning more about. State the problem as a one sentence **question**. Be specific.

II. HYPOTHESIS

A **hypothesis** is what you think will be the answer to your question. It is your “best guess” before you actually DO the research. It is written as one sentence.

Examples: You are taller in the morning than at night, or, A Granny Smith apple has more seeds than any other apple.

III. RESEARCH

Use a minimum of two sources. Use different types of sources. While conducting your research, think about how it connects to your question and your hypothesis. Take good notes that you can organize later as part of your display.

IV. CONCLUSION

Look over your research. Analyze the information and see what it tells you about your topic. The **conclusion** answers the hypothesis. Does your research prove or disprove your hypothesis?

WRITTEN REPORT CONTENT

TITLE PAGE

See Written Report Format on next page.

☆ **PURPOSE**

In three sentences or less, tell why you did your science project on the topic you chose.

ACKNOWLEDGEMENTS

In one or more sentences, say “Thank You” to those who have helped you with your project. You should include those who gave you guidance, materials and the use of facilities or equipment.

TABLE OF CONTENTS

List each of the following sections and the page numbers for each. Type the page number at the bottom of each page after you have finished the final copy of your report.

☆ **PROBLEM**

State the problem in the form of a question. The problem is one sentence long and specific.

☆ **HYPOTHESIS**

The hypothesis is an educated guess which answers the question. The hypothesis is a statement which is one sentence long.

☆ **RESEARCH**

It is now time to use information from books, magazines, interviews, etc. This section of your paper is your report on the work and research conducted by others that relates to your topic.

☆ **CONCLUSION**

Look over your research and then write what the information shows or indicates. The conclusion is one or two sentences long and should either confirm or reject your hypothesis.

APPLICATION

Now that you have finished your project, use this section to share with others your thoughts about this experience. Did you have any problems? What would you do differently next time? Explain how what you learned from your project applies to the real world.

☆ **SOURCES / BIBLIOGRAPHY**

List all sources that you used for researching your topic and writing your paper. You must have at least three sources, and only one may be a website. All encyclopedia sources will be counted as one source. Interviews with experts in your field of study are encouraged.

STARRED (☆) topics are part of the rubric criteria for judging. The other parts are used only for grading the written report by the teacher.

WRITTEN REPORT FORMAT

- Each line with a box (☐) in front of it begins a new page in the report.
- **Items with a star (☆)** must be included in reports for **Pre-K – 2nd grade** projects. Other sections are optional for Pre-K – 2nd grades.
- **ALL** of the items listed below must be included in reports for **3rd–8th grade** project.
- **ALL** reports must be **typed** – both rough draft and final draft.

☆ TITLE PAGE

- Title in the *middle of the page*.
- In lower right-hand corner:
 - Last Name, First Name
 - Grade ____
 - Teacher Name
 - School Name
 - Date (include year)

☆ PURPOSE

ACKNOWLEDGEMENTS

TABLE OF CONTENTS (with page numbers)

☆ PROBLEM

☆ HYPOTHESIS

☆ RESEARCH

☆ CONCLUSION

APPLICATION

☆ SOURCES / BIBLIOGRAPHY (Go to www.easybib.com for correct formatting in MLA style.)

1. **The original report is in a report cover with 3-hole fasteners and goes inside the report pocket on the display board.**
2. **A COPY should be turned in to your teacher for grading.**
3. **ANOTHER COPY should be kept at home or on the computer.**

DISPLAY INFORMATION

BACKBOARD MATERIALS

The backboard must be sturdy and stand by itself on a table. Foam core-board and cardboard are the best materials. If you need to cut through the sides of your core-board to make “wings”, do not cut all the way through.

COLORS

If you need to paint your backboard, enamel paint works best. Do not use water-based paint. Contact paper may also be used. Use a minimum of three contrasting colors on your board.

LETTERING

Your title and subtitles may be computer generated or cut from construction paper. Do not freehand the letters. The title letters should be 3-4 inches high. The subtitle letters should be 1-2 inches high. The subtitles, which are mandatory on the display board, are: Problem, Hypothesis, Research, and Conclusion. All items on the display must be glued to the board. Do not use pins, tacks, staples, or tape.

DRAWINGS, PHOTOS AND GRAPHS

Drawings and photos are most useful on the display. Drawings should be drawn in pencil first and then retraced. Drawings should be in color and outlined in thin black felt tip pen. Graphs and charts must be used in the results section. They may be computer-generated. All graphs and charts must have explanatory titles. Graph axes must be labeled.

If you have a camera, you should photograph your experiment’s progress. A photo of you with your experimental set up is encouraged. All photos must be titled.

DISPLAY DIMENSIONS

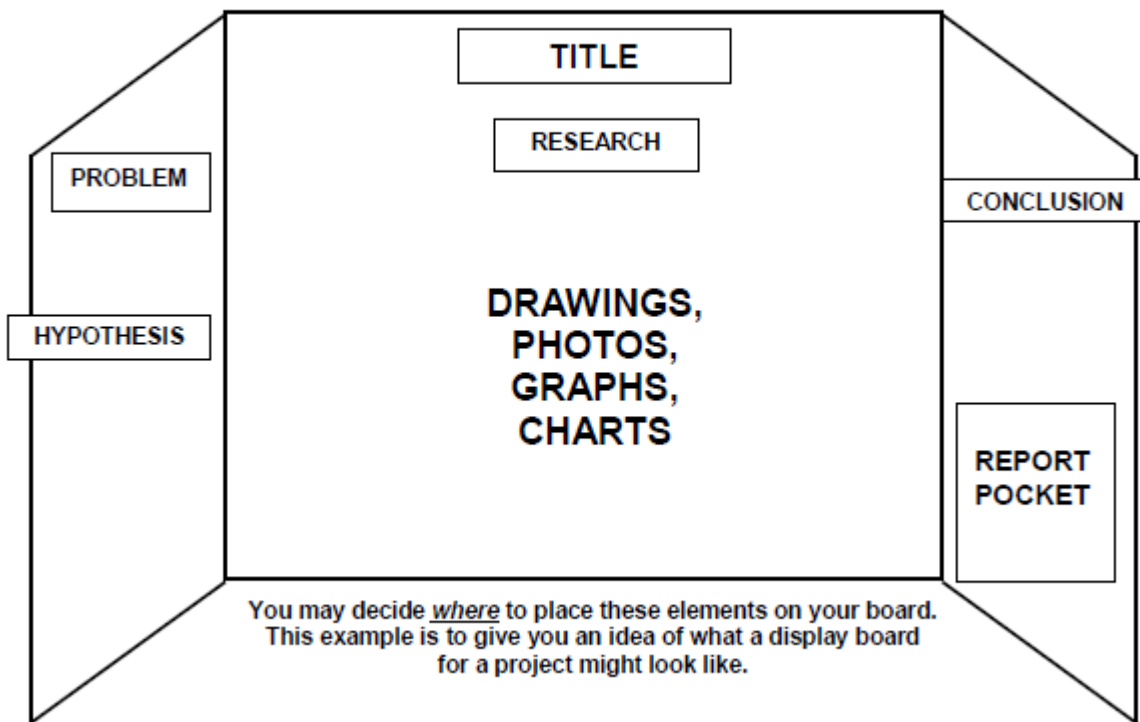
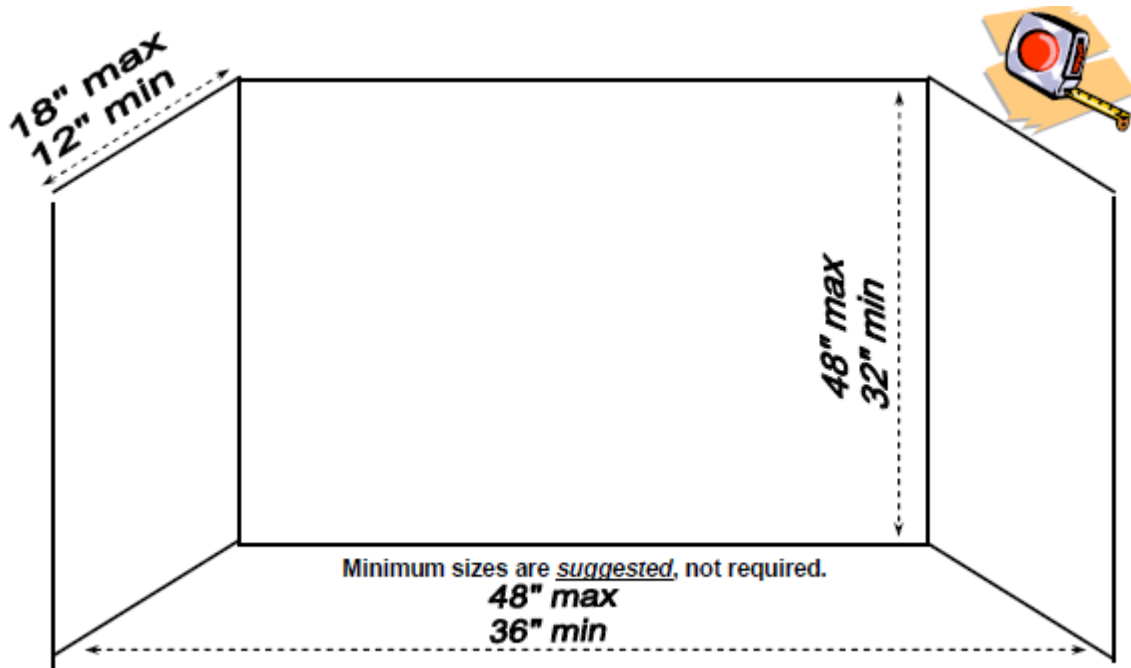
1. When backboard (display portion) is flat, it should be 48 inches wide.
2. Side panels (“wings”) should be 12 to 18 inches.
3. Height should be no more than 48 inches.

REPORT POCKET

There must be a “pocket” on the display to hold your report.

When you have decided what you are going to put on the backboard (display), lay the unglued display on the floor and look at it carefully. Have family and friends look at it and ask their opinions. Then, you should glue everything into place.

DISPLAY SIZE & SET-UP



DISPLAY ITEMS

Part of your display should include something that represents the project and should be placed in front of or on the display board. Depending on the type of project you do the display items may or may not be the focus of the display.

If you cannot decide what to use to represent your project, brainstorm with family, friends, and classmates. Keep in mind that the items you choose will set the tone for your display and must be approved.

No part of your display may pose a safety hazard. Do not include harmful chemicals, bacterial cultures, sharp objects, or any source of heat or flames. No live or preserved animals are allowed.

Some examples of display items are listed below:

- Equipment or materials you have built or used as part of your project or experiment (i.e., an incubator, variously shaped kites, a solar oven, a microscope with slides, etc.)
- Models
- Artistic representations of your topic (i.e., a large paper maché nose for an odor project, toothpick bridges for a physics project, or a collage of leaves for a plant project)
- Samples or specimens
- Simulated items such as photos, video, and audio taken while working on your project or during your experiment. (Keep in mind that use of an extension cords requires special permission.)

There are endless possibilities. Be creative! Put on your thinking cap!

RUBRIC SCORING GUIDE

	“TRANSLATED”	Advanced Proficient 5 points	Proficient 3 points	Attempted 1 point
Purpose and Problem (Double Points) (x2)	Describe what interests you about this topic. Ask a question where you do not know that answer.	States the Purpose and Problem clearly, addressing a valid scientific or mathematical concept. Provides evidence that they come from the student’s personal interests or experiences, and represent a genuine learning opportunity for the student.	States the Purpose and Problem clearly, showing some connection to a valid scientific or mathematical concept. May give evidence of connection to a specific interest or experience of the student, and appears to represent a genuine learning opportunity for the student.	The Purpose and Problem are vague, or have no apparent connection to the student’s interest or experience, or address an issue to which the student already knows the answer.
Hypothesis (Double Points) (x2)	Try to answer your question. Give reasons for your reason.	Hypothesis is complete (in one sentence), testable, directly addressing the stated problem, and reflects prior knowledge.	Hypothesis is complete (in one sentence), testable, and addresses the stated problem without reflecting prior knowledge.	Hypothesis is either incomplete, not testable, or does not connect to the stated problem.
Research (Triple Points) (x3)	Research thoroughly from many sources. Connect the research to your question.	Cites five or more sources. There are at least three different types of resources. The student makes clear, in-depth connections between the research and their problem and hypothesis in their own words.	Cites three or more sources from one or more types of resources (e.g., text, encyclopedia, businesses, magazines, catalogs, internet, or interviews). The student adequately connects the research to their problem and hypothesis in their own words.	Cites only one source. Or, the description of the research is incomplete, or has little or no connection to the problem or hypothesis, or is not written in the student’s own words.
Conclusions	Use your research to answer your original question. Explain how you know if your hypothesis was right or wrong.	Conclusion completely answers all aspects of the problem, states if the hypothesis was supported or rejected, and clearly cites evidence to explain why.	Conclusion answers the problem, states if the hypothesis was supported or rejected, and attempts to explain why.	Conclusion does not answer the problem, or does not refer back to the hypothesis, or contradicts the evidence found in the research.
Visual Quality of Display	Make your project fun to look at with pictures and colors. Use large, clear lettering. Check grammar and spelling.	Project is appealing and neat, and is readable at approximately 2 feet distance. It is well organized and clear, makes striking use of inventive or amusing visuals and/or models, and uses language and spelling flawlessly.	Project is appealing and readable at approximately 2 feet distance. It is organized and clear, uses understandable visuals and/or models, and contains few language and spelling errors.	Project has limited eye appeal or is not easily readable at approximately two feet distance. The project has limited organization, or contains confusing visuals, or contains major language or spelling errors.
Sources (at the end of the written report)	Carefully record where you found your information so others could find those sources, too.	All sources are listed with complete information given, i.e., name, title, web address, date. One could easily find any of the sources as listed.	All sources are listed with most of the information given, i.e., name, title, web address, date. However, some useful information may be missing.	Sources at the end of the written report are listed by title only, or represent an incomplete list.

Rubric for Written Report

<i>COMPONENTS</i>	<i>POSSIBLE POINTS</i>	<i>SCORE</i>
TITLE PAGE: See Written Report Format on page 6 of Student Information Packet.	2	
PURPOSE: In three sentences or less, tell why you did your science project on the topic you chose.	3	
ACKNOWLEDGEMENTS: In one or more sentences, say “Thank You” to those who have helped you with your project. You should include those who gave you guidance, materials and the use of facilities or equipment.	2	
TABLE OF CONTENTS: List each of the following sections and the page numbers for each. Type the page number at the bottom of each page after you have finished the final copy of your report.	3	
PROBLEM: State the problem in the form of a question. The problem is one sentence long and specific.	5	
HYPOTHESIS: The hypothesis is an educated guess which answers the question. The hypothesis is a statement which is one sentence long.	10	
RESEARCH: It is now time to use information from books, magazines, interviews, etc. This section of your paper is your report on the work and research conducted by others that relates to your topic.	30	
CONCLUSION: Look over your research and then write what the information shows or indicates. The conclusion is one or two sentences long and should either confirm or reject your hypothesis.	10	
APPLICATION: Now that you have finished your project, use this section to share with others your thoughts about this experience. Did you have any problems? What would you do differently next time? Explain how what you learned from your project applies to the real world.	5	
SOURCES / BIBLIOGRAPHY: List all sources that you used for researching your topic and writing your paper. You must have at least three sources, and only one may be a website. All encyclopedia sources will be counted as one source. Interviews with experts in your field of study are encouraged. Bibliography is correctly formatted.	10	
PRESENTATION: Entire report is typed (12 pt. font, Arial or Times New Roman), double-spaced, and original copy is placed in a report cover with 3-hole fasteners and goes inside the report pocket on the display board. A COPY should be turned in to your teacher for grading.	10	
CONVENTIONS: Proper grammar and mechanics are used throughout report.	10	
TOTAL	100	