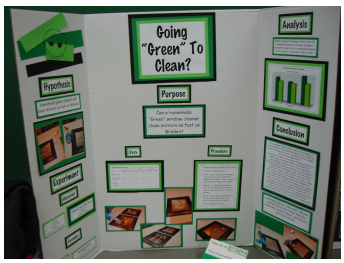
Scientific Method
Science Fair Packet (SM-SFP)
For 5th and 6th Grade Students



"How Does a Student Do a Meaningful Science Fair Project Using the Scientific Method Process?"

In this packet is information for students showing the steps on how to complete a meaningful science fair project using the Scientific Method process. This packet tells what is recommended and required when students do a science fair project for the school science fair.

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If you have any questions about the Scientific Method process, ask your teacher or call Paul Nance, the Jordan District Elementary Science Teacher Specialist, at 801-244-6479 or email him at paul.nance@jordandistrict.org.

Three Science Fair Processes To Choose From For A Science Fair Project

One of the major objectives of students doing a science fair project is to acquire more knowledge about the world around them. Students are able to choose from three processes, namely, the Scientific Method process, the Engineering Design process, and the Computer Design process for their projects.

1. **The Scientific Method process:**
   Using this process you will: write a question; form a hypothesis; plan an experiment; gather the materials needed; perform the experiment; examine the results; write up a conclusion showing what you learned and how this knowledge can be applied to real world situations.

2. **The Engineering Design process:**
   Using this process you will: define a need for the product; connect the need to a design goal; establish the requirements needed for product development; write up a procedure with preliminary designs; gather the materials needed; build a prototype (a model of the product) according to the designs; test the prototype; redesign, if necessary, to meet the stated design goal; and connect or apply the value of the prototype to real world situations.

3. **The Computer Design process:**
   Using this process you will: define a program need; connect the need with a design goal; establish the requirements needed for program development; write up a series of operations for the program code; develop the program with a test plan; conduct several tests according to the test plan for debugging, rewriting, and optimizing the code; and connect or apply the value of the program to real world situations.

How much work that is put into each step of one of these processes will result in a higher score on the judging sheet.

In this packet the Scientific Method process is the only one presented to you. If you want any information on how to do a project using the Engineering or Computer Design processes, go the Jordan District Elementary Science webpage and download the desired packet.

Choosing a Topic of Interest Using the Scientific Method For Your Science Fair Project

Choosing an area of interest is the hardest part of the science fair project. For ideas as where to start, look at these elementary science fair categories below and what they entail. All of these science fair categories fit under the Scientific Method process.

Earth Science

Earth science is the study of volcanoes, earthquakes, weathering, erosion, and deposition; soils, rocks, minerals, crystals; ocean water, fresh water, and the water cycle; weather, weather instruments, air, water, wind, clouds, humidity, cold, and heat. The solar system, moon, seasons, a space are also a part of earth science.

Life Science

Life science is the study of human, animal, plant, insect, and microorganism behavior; forest, desert, tropical, grassland, wetland and other environments; and food chains, plant cycles, life cycles, and ecosystems.

Chemical Science

Chemical science is the study of solids, liquids, gases, and the mixture and uses of chemicals.

Physical Science

Physical science is the study of simple machines, gravity, forces (push and pull), and weight, magnets, electricity, speed, flight (lift), motion, heat, light, and sound.

Consumer Science and Product Testing

Consumer science is the study of testing new invented products, testing products we use and eat everyday--shampoo, detergents, soaps, diapers, stain removers, popcorn, cereals, gum, soda pop, potato chips, paper towels, bandages, etc. This makes the public aware of products that might not perform the way companies say they will perform.

If you want any information on how to do a project using the Engineering or Computer Design processes, go the Jordan District Elementary Science webpage to download the desired packet.

Here are some ideas to help you choose a topic for your science fair project using the Scientific Method process.

airplane wings
air quality
alarms
animal tricks
blindfolding
blood pressure
bugs
chemical reactions
cleaning
clouds
color
computer programs
concentration
conservation
coordination
designing & building
dieting
different age skills
dissolving
ecology
electricity
energy
environments
erosion
evaporation
exercising
feeling
food nutrition
habits
heat
heredity
illusions
inventions
light
listening
magnets
music
memory
noises
optical illusions
pH
puzzles
recycling
rockets
rocks
pollution
smelling
snowboarding
soaps
soil
soil quality
solar power
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video games
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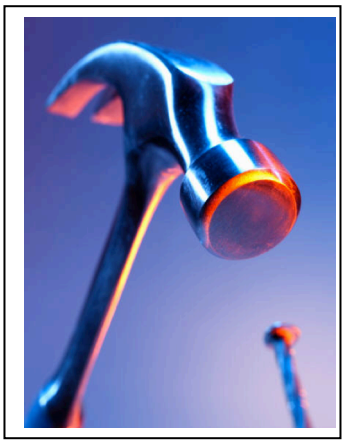
water
waterpower
water quality
weather forecasting
weathering
weight
wind

The Scientific Method Outline



When using the Scientific Method process while doing a science fair project, all of these steps listed below are required in the order shown. During the process of completing each step, each step needs to be written in your journal and later put on your display board. A judge will ask you about the Scientific Method process in your interview.

- **Question or problem**
- **Research**
- **Hypothesis**
- **Experiment Design**
  - **List of Materials**
  - **Step-by-Step Procedure**
  - **Variable Identification**
  - **Gather Raw Data**
  - **Organize the Raw Data into a Chart or Table**
- **Analyze Your Data**
  - **Make A Graph**
  - **Write What the Data on the Graph is Telling You**
- **Conclusion**

In the next section, The Scientific Method "The Procedure" (pages 4a-4b), gives a detailed description of what to do for each step of The Scientific Method process. Please read the next section carefully to know what to do for each step.

The Scientific Method
"The Procedure"

The Scientific Method process is used to investigate a scientific question. It is a natural process scientists use to find an answer to their science questions.

You will follow the steps outlined below. As you perform each step, you will write what you do and write the results you discover. Finally, you will analyze the results and come up with a conclusion. **All of your writing is to be written down in your journal. The interviewer can ask you anything that is in the journal.**

1. Purpose:

Begin by writing a specific question about a science concept that can be answered by following the Scientific Method process. It is a question where the results can be obtained by using your five senses and can be measured using math skills. Be sure to write it so it is clearly understood what you desire to find out. Example: Does the amount of air in a ball affect its bounce? **Remember, it should be in the form of a question.**

2. Research:

You need to research your topic using library materials, Internet sites, magazines, textbooks, encyclopedias, experts, and other available and reliable sources. **At least three sources must be used for the research.** A fairly lengthy paragraph should be written telling what you learned from your three research sources. Be sure the paragraph goes deep into the content learned and you are not just telling knowledge that is already known. Copying a page from a book or Internet and placing it in the journal is not research. **The research needs to be hand or type written in your own words. The interviewer can ask you anything that that is written in the journal.**

3. Hypothesis:

This is your prediction of what you think the results of the experiment will be, based on your research. **Write the hypothesis in a way that will help answer the purpose (question). "If I fill up a playground ball with more air each time before I bounce it, then it will bounce higher each time."** After you write the hypothesis, **you need to write a sentence or two telling why you think this could be the result of the experiment using the knowledge received from your research.**

4. Experiment:

The experiment tests the hypothesis. The experiment is broken down into four parts as listed below. **The experiment needs to be done at least twice to verify the information. Three or more times are better.**

- **List of materials**
  Make a list of all the materials and equipment you will need for the experiment. Using descriptive words to describe the materials and equipment is important. All liquid and dry measurements and their quantities need to shown.
- **Step-by-step procedure**
  Write a step-by-step procedure you will follow to perform the experiment. Write it in the order you want to follow. Be very descriptive in your writing.
- **Variables—Controlled and Experimental**
  You need to identify your **controlled variables** (the things being kept the same) and your **experimental variable** (the thing being changed) by writing them down in your journal. The experimental variable is what is being tested. It is important to keep the test fair by changing only one variable at a time (experimental variable) and keeping all the other variables the same (controlled variables).
- **Observing, measuring, and recording data**
  1. **Observing—**Observing is what you notice happening during an experiment. It is done by using your five senses to notice changes in an experiment.
  2. **Measuring—**Measuring is counting, tallying, and/or using math equipment and skills to see how much something has changed during an experiment.
  3. **Recording—**Recording is writing down these observations and measurements that gives you data to look at. You need to write down the data (information) of what is actually happening during the experiment from beginning to end using the skills of observation and measurement.
- **Organize the data—**Organizing is putting the data into a chart or table so it can be looked at and studied easily.

5. Analysis:

To analyze is to try to understand what happened during the experiment and what the data means. The easiest way to answer these questions is to graph the data. Graphs show patterns of growth and/or patterns of change. They can also be used to compare one set of data to another set of data.

1. **Draw a graph in your journal.**
   From your table or chart make a graph in your journal. It should include a title, labeling of the axes, plotted data information, and a drawn graph.
2. **Write a paragraph about your graph.**
   Write a paragraph in your journal explaining what the graph is telling you. Be very detailed in your writing of what the graph is telling you.

The graph and the explanation of what the graph means, need to be written in the journal.

6. Conclusion:

The conclusion shows evidences of what you learned. It summarizes your learning by answering some of these questions: Did the results confirm or conflict with the hypothesis? What was learned from the experiment? Are there any suggestions or new questions to investigate? Were there any surprises in the results? Why was this investigation important? What does this experiment tell about the real world? How can this information be applied to real life? What new insights were discovered that weren't known before?

The Scientific Method
"The Journal"

All students entering the school science fair must have a journal. The journal is the literacy area that connects the writing, thinking, research, planning, analysis and conclusion to science fair project. **The interviewer can ask you about anything that is written in the journal.**

The journal will consist of four main parts:

- **Title page**
- **Table of Contents page**
- **The Scientific Method pages**
- **The Bibliography page**

1. Title Page

Make a title page that consists of the project title, student name, school, and date.

2. Table of Contents

Make a table of contents that shows where the pages of the Scientific Method process steps are found with page numbers so these steps can be easily found.

- Purpose (question)
- Research
- Hypothesis (prediction)
- Experiment
  - List of materials
  - Step by step Procedure
  - Variables—controlled and experimental
  - Recorded data (raw and organized in a table or chart)
- Analysis (graph and explanation)
- Conclusion

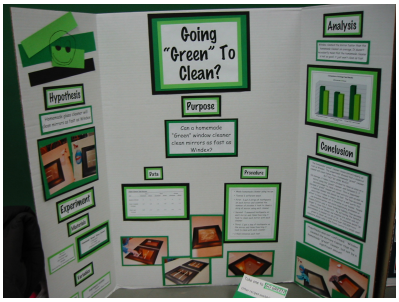
3. The Scientific Method

In this section you will write what you did or discovered by following each part of The Scientific Method process. See the Scientific Method process pages (4a and 4b) to know what should be written on each page.

- Purpose page
- Research pages
- Hypothesis page
- List of Materials page
- Procedural page
- Variables page
- Data pages
- Analysis page
- Conclusion page

4. Bibliography

Write a list of the three or more sources you used for research by telling the type of source, title, and page numbers.



The Scientific Method
"The Display Board"

Create a display board so your findings can be shown at the science fair. It is a summary of your project and reflects your journal. This is your showcase. Make it creative and colorful. Below are ideas for a great display board.

- Physically sound and durably constructed, and able to stand by itself.
- Title of your project at the top.
- Show all the steps of the Scientific Method process (except the research) with a brief explanation of each: question, hypothesis, experiment (materials, procedure, variables, and data gathered that is organized in a chart or table), analysis (graph and graph explanation), and conclusion. The research will be in the journal.
- Well-organized and easy to follow from one idea to the next.
- Neat, edited, and without scribbles and misspelled words.
- Creative, pleasing to look at, colorful, with different font sizes to show emphasis.
- Photos of the developing experiment. (Only the student doing the experiment and family members can be displayed on the board. Other children under 18 on the board need parent permission if under 18 years of age.)
- Drawn pictures, artwork, and icons that bring out the ideas of the experiment.
- The journal should be in front of the display.

Students like to display items they used when doing their experiments. For reasons of safety the following items cannot be displayed at the school and district fairs. This is also found on the last page of the 2014 Central Utah Science and Engineering Fair (CUSEF) Registration Form.

- Living organisms
- Plant material (living, dead, or preserved)
- Taxidermy specimens or parts
- Preserved animals including embryos
- Human or animal food including seeds
- Human or animal parts or body fluids
- Soil, sand, rocks, or waste samples
- Laboratory/household chemicals including water
- Poisons, drugs, hazardous substances or devices
- Sharp items, scissors, glass, syringes, needles
- Dry ice or other sublimating solids
- Flames or high flammable materials
- Empty tanks that previously contained combustible liquids or gases
- Batteries with open top cells
- Photographs of children under 18 other than yourself or your family without parental written permission
- Photographs or other visual presentations depicting vertebrate animals in surgical techniques, dissection, necropsies, other lab techniques, improper handling methods, improper housing conditions, etc.

Pictures of these items can be placed on the board except the last bullet.

Schools and Jordan District have the right to remove these things above and anything else that may be dangerous to the public.

The Scientific Method
"The Interview"

The judge's interview gives you the opportunity to explain your project. The judge wants to know how much you know about your project.

- How you received the idea
- How you personalized it to make it unique
- How you prepared it
- How you set it up
- What information you discovered
- What the information means
- What your conclusion is

The judge also wants to know your background knowledge about the subject you chose. Some of the judge's questions may not be about your project. He/she may ask questions related to your topic. For example, if you did an experiment about bacteria growth found in different places, it would be well to know about the different kinds of bacteria that exist, kinds of bacteria that do and don't cause diseases, and the substances that have been discovered to fight against bacteria growth. Even though this information is not entirely what your project is about, it shows you have done research about bacteria.

Some questions that might be asked:

- Explain where you got your idea for the project.
- What did you do to personalize it and make it unique?
- Explain the project method you used.
- Why did you choose this subject?
- What are your controls?
- What is your experimental variable?
- Explain your results.
- Describe your graph.
- Explain your conclusion.
- How do the results relate to your background knowledge?
- How do the results help you in understanding the world better?
- What are the practical applications of your project?
- What specific background knowledge do you know about your subject?
- What problems did you run into?
- How could you have improved your project?
- If you did it again, what would you change?
- What questions do you have now?
- Tell some ideas you learned from your research.
- How did the research help you with your project?
- How much time did you spend on your project?
- How did others help you or give you ideas?

Be excited about your project when you speak. Don't talk too fast. Elaborate on your answers. Help the judge understand your project by speaking clearly in an organized manner so it is not confusing. **You need to show evidences of learning.**

Judges do not want you to redo your experiment for them. Their interest lies in your knowledge of The Scientific Method process, the project design, the display board, the results, and the knowledge you acquired.

5TH AND 6TH GRADES SCHOOL SCIENCE FAIR
SCIENTIFIC METHOD JUDGING SHEET

Name(s)_____ School _____

Project Title_____

Category	Comments	Excellent	Good	Fair
I. Journal/Log (Scientific Thought)		**5**	**3-4**	**1-2**
Title Page/Table of Contents: Title, name, school, date, and the table of contents				
Purpose: Problem stated clearly and as a question				
Research: Three different sources cited with well-written notes				
Hypothesis: Well thought out, educated guess with explanation of why				
Experiment: o List of materials and step-by-step instructions clearly written				
o Controlled and Experimental Variables clearly identified				
o Sufficient data gathered and organized				
Analysis: Graph accurately made showing the data and comparisons with a written explanation				
Conclusion: Reveals evidence of learning				
II. Display				
o Neat, edited, and physically sound				
o Scientific method displayed, easy to follow, and self-explanatory				
o Journal and display showed a close relationship				
o Creative Board Design				
III. Interview				
o Student shows a basic knowledge of field studied and able to elaborate				
o Student is able to explain how the scientific method was used				
o Student shows interest, enthusiasm, and a passion toward the project and could tell how it was personalized				
IV. Project Follow Through				
o Creative, procedural approach with ingenious use of materials and equipment to solve the problem				
o Project shows in-depth thought and work to solve the problem				
o Results show a well, thought out, reasonable conclusion showing a useful connection to the world				
o Overall great follow through from the purpose to the conclusion				

Score Ex. 5 Gd. 3-4 Fair 1-2

Sub scores				**Total Score**	**/100**

What A Scientific Method Science Fair Project Is and Is Not

A Science Fair Project using The Scientific Method is not:

- Just doing an experiment
- A report about science subject
- A simulation or demonstration to show how something works
- A survey of what people think or feel about something
- An experiment that shows common knowledge that everyone knows
- An experiment that is copied from of a book or off the Internet
- Gathering statistics from a news source or reporting on the daily changes

A Science Fair Project using The Scientific Method is:

- Thinking of a problem to investigate and solving it by means of using The Scientific Method process
- Planning an investigation to answer a science question using higher level thinking strategies and ideas
- Follow through with conducting an experiment and gathering measurable data
- Analyzing data to gain knowledge
- Using the knowledge learned to make a connection to higher-level ideas and to understand those new ideas to see how to apply them to the real natural world

Science Fair Resources

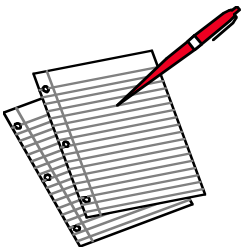
Online Resources for Science Projects Ideas

- http://cusef.byu/edu
- www.sciencebuddies.org
- http://www.stevespanglerscience.com/content/experiment/science-fair-survival
- www.sciencebob.com

Online Resources for Environmental Science Projects

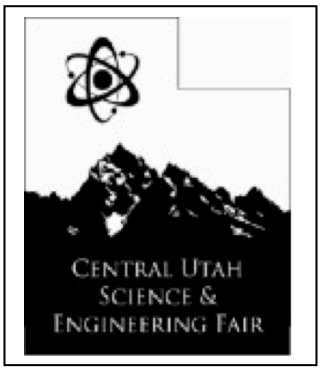
- http://www.isd77.k12.mn.us/resources/cf/SciProjIntro.html
- www.isd77.k12.mn.us/resources/cf/SciProjIntro.html
- www.detroit.lib.mi.us/is/science_fair.htm
- http://faculty.washington.edu/chudler/fair.html

SCIENCE FAIR STUDENT TIMELINE



Week	What is going to be accomplished?	Done
Week 1	Student becomes familiar with the Scientific Method process. Student gets the science fair journal ready. Student comes up with a topic and purpose (question) for his/her science fair project and writes it in the journal.	
Week 2	Student researches the topic by finding at least three sources and reading about them. He/she writes detailed paragraphs in the journal of specific details of what was learned.	
Week 3	Student writes his/her hypothesis in the journal. Student writes an explanation of why he/she thinks this will happen. Student writes up a list the materials needed and the step-by-step procedure of the project in the journal.	
Week 4	Student identifies the controlled variables and the experimental variable and writes them in the journal. Student begins to acquire the materials.	
Weeks 5-6 (or longer if needed)	Student does the experiment. He/she gathers data and writes the data in the journal. The student organizes the data into a table in the journal.	
Week 7	Student analyzes the data and makes a line, circle, or bar graph in the journal. Student interprets the graph and writes what the data means according to the graph. A conclusion is written in the journal. The student also writes what was learned and makes a connection to the world.	
Week 8	Student makes a creative display board using colors, decorative paper, different font size, pictures, and designs. It displays all parts of the scientific method (except the research). Student writes a brief explanation under each method step on the board. Student practices what he/she is going to say about each step for the interview.	

Directions for Filling out the 2014 Central Utah Science & Engineering Fair Registration Form For 5th and 6th Grades



All 5th and 6th grade students entering their respective school science fair in Jordan District must fill out the 2014 Central Utah Science and Engineering Fair (CUSEF) Registration Form for 5th and 6th grades to give to their teachers prior to beginning their science fair projects. There are certain rules that students must follow in doing a science fair project. If these rules are not followed the project can be disqualified at the district and regional levels. Filling out this form correctly and completely will guarantee admittance to all science fair levels of competition.

After you have chosen a topic and prior to beginning your project, the next step is to fill out **completely** the Central Utah Science and Fair (CUSEF) Registration Form for 5th and 6th Grades. **Your teacher will either give you the CUSEF Registration Form or you can download it off the Jordan District website: jordandistrict.org—Faculty and Staff—Departments—Science Elementary—Science Fair Information.**

Below are the directions on how to fill out the CUSEF Registration Form. Completion of this form does not guarantee advancement to the Jordan School District or the CUSEF Science Fairs but it will show that you have followed all the science fair rules for all competition levels.

Once you have filled it out, give it to your teacher for approval. If it is not complete he/she will give it back for you to complete. If you change your science fair research plan, then you must submit a new plan to your teacher. **If you are doing this project as a group (maximum of three students per project) you will only need to fill out one form.**

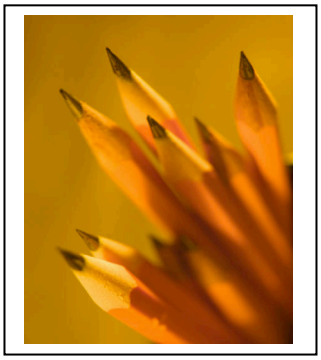
Directions For Filling Out the Four-Page, 2014 Central Utah Science and Engineering Registration Form

Page One—Student and Project Information

1. **Student Information**
   - This is to be filled out by you and anyone else who are doing this project with you. You can have up to three per project.
   - All the information needs to be filled in just in case you need to be contacted either by phone or mail.
2. **Project Information**
   - Fill out all information including teacher's name and his/her email. Your teacher's email will be the first and last name with a period between the first and last names ending with "@jordandistrict.org".
   - Mark the box of which category your project is under. If you have problems knowing, look on pages "1a" and "1b" of this student packet, ask your teachers, or call Paul Nance at 801-244-6479 or email him at paul.nance@jordandistrict.org**.**
   - Mark the boxes on the right if you are going to be experimenting on any of the things listed. If you are, you need to get some professional signatures before starting your experimentation found on the second page of the registration form. If not, mark "none of these".
   - Answer the "yes" or "no" questions at the bottom.

Page Two—Science Fair Project Rules*

(This page is for the those projects that need Special Signatures)



Some projects require special signatures from professionals before you can begin them. These experiments may cause harm to humans and vertebrate animals without being screened. Laws have been set up to protect humans and animals from being hurt, disgraced, or diseased.

The following projects need special signatures from certain professional people listed below with the date they signed it.

- **If you are working with humans as subjects,** you must get **prior approval** from a science teacher, a school administrator, and one of the following: a psychologist (could be from your school), psychiatrist, medical doctor, physician's assistant, or registered nurse. Have each sign on the lines provided on the form. **Also, if any of your subjects are under 18, you need to get written permission from a parent of each child. A form to use is included in this packet.**
- **If you are working with non-human vertebrate animals as subjects,** you must get **prior approval** from two science teachers and a veterinarian. Have each sign on the lines provided on the form. Proper animal care must be provided daily and there cannot be any pain or discomfort.
- **If you are working with controlled substances,** you must get **prior approval** from two science teachers and a school administrator. Have each sign on the lines provided on the form. All laws in handing the controlled substances must be followed. An adult must be present and supervise the experiment.
- **If you are working with hazardous substance or devices,** you must get **prior approval** from two science teachers and a school administrator. Have each sign on the lines provided on the form. Students must follow the laws in handling these substances or devices. An adult must be present and supervise the experiment.
- **If you are working with potentially hazardous biological agents (bacteria, mold, fungi, viruses, parasites, fresh human or animal tissues),** you must get **prior approval** from two science teachers and a biomedical scientist (usually found at a university or lab office). Have each sign on the lines provided on the form. Growing of unknown microorganisms must be grown in a sealed, unbreakable container such as a Petri dish and stayed sealed during the whole experiment. **The containers must be kept and observed in an authentic science lab for observation and not in the home. If this experiment is done at home the project will be disqualified.**

If you have questions about these signatures ask your teacher or call Paul Nance at 801-244-6479 or email him at paul.nance@jordandistrict.org.

***It is important to get these signatures before the experimentation begins. otherwise, it may cause the project to be disqualified for further competition.**

Page Three—The Science Fair Project Research Plan

After you have chosen a topic, the next step is to write up the research plan for your teacher. There are a couple of reasons a research plan needs to be written.

- **There is pre-work that needs to be done before the actual experimentation. Knowing the steps you need to take to complete a science fair project will help you do a completed project.**
- **Your teacher can look at it and know that your project will be a safe and meaningful project.**

Filling out the Science Fair Project Research Plan includes the following:

1. Coming up with a question that can be answered by science experimentation.
2. Doing research on your topic.
3. Writing a hypothesis using background knowledge acquired during the research.
4. Writing a list of supplies needed for the experimentation.
5. Telling where your experiment will be conducted.
6. The name of your adult supervisor.
7. Writing up the actual procedure, in detail, how you plan to do your experiment.

- **Be sure to be complete when you write up your plan so you, your teacher, parents, supervisor and those who may need to sign it know exactly what you will be doing.**
- **If you change your science fair research plan, then you must submit a new plan to your teacher.**

Page Four—Display and Safety Rules and Student And Parent/Guardian Signatures

1. Display and Safety Rules

- Be sure to read and understand all the display and safety rules. They must be followed when displaying your project. Anything that is on the list that is with the display board will be removed.

2. Student, Parent, and Teacher Signatures

All student, parent/guardian, and teacher signatures must be acquired before entering the school, district and CUSEF fairs. Have each person read the statement above each respective signature line to know what each person is signing. It is important that everyone knows the rules and what is expected when you enter the different science fairs.

- There is a place for the student to sign the registration form to show he/she has followed all the rules of the science fair.
- There is a place for the parent/guardian to sign the registration form to show that all the rules of the science fair has been followed.
- There is a place for the teacher to sign the registration form to show that all the rules of the science fair have been followed.
- There is a place for parent signatures if child and project information can be appropriately used for publicity purposed.
- You don't need to have the "CUSEF Approval for Completion" at this time.

What Parents Can Do To Help With a Science Fair Project And What Students Need To Do When Doing a Science Fair Project

It is very important that a student do as much as he/she can when doing a science fair project. This is how the student learns first hand what is involved in the planning, the experimenting, and the writing of a science fair project. A rule of thumb is if the student can do it the student should do it.

Parents can act as a coach, but they shouldn't be in the "game" playing. In other words, the student should do most all the work that is part of the project. Parents can brainstorm, share ideas, and help bring out the knowledge learned of the student. Parents can help build things that are hard for the student. After the parent help, final decisions should mostly rest with the student. With this idea, the playing field is leveled where students are doing mostly the same work for their science fair projects.

Below is a list of ways parents can help the student with the science fair project.

Pre-science Fair Experiment Help

Parents can help by sharing ideas on how to set up a journal. They can help with brainstorming questions or problems for a science fair project experiment. They can brainstorm with the student of which books, encyclopedias, Internet sites, people for interviews, etc. to use for the research. The parent and student could read the research together if needed. After the reading parents can help bring out the information of the research so the student can understand it.

Science Fair Experiment Help

Parents can help with brainstorming ways to design the science fair project experiment. They can make sure the experiment is safe and the student is following all the science fair rules. They can help the student understand controlled and experimental variables. Parents can help with the purchase of supplies needed for the experiment. They can coach the student in building things that are needed for the experiment.

Post-science Fair Experiment Help

Parents can teach the student computer techniques to make charts, graphs, and downloading pictures off the computer. They can help the student understand the gathered data of what it means. Parents can help bring out the ideas as to what was learned in the experiment so the student can come up with a conclusion. They can help with brainstorming ways to put together an effective display board, such as, ideas of what to put on the display board and where to effectively place the important information. Parents can help the student practice for the interview.

What the Student Needs to Do Mostly By Themselves With Some Parent Guidance For The Scientific Method Science Fair Project

- The student should do most or all of the writing in the journal whether it is hand written or typed on the computer.
- The student should mostly come up with the final decisions for 1) the question to be answered, 2) the hypothesis, 3) the project design, (i.e. list of items needed, the step-by-step procedure, and identifying the controlled and experimental variables).
- The student should mostly acquire the professional signatures for the project.
- The student should mostly acquire the parent signatures of children used in the experiment.
- If things need to be purchased for the experiment, the student should mostly be with the parents during the purchase of the supplies.
- If something needs to be built and tools are needed, parents should let the student help as much as possible at the discretion of the parents for the sake of safety for the student. The student should help with measuring, sanding, gluing, building, and anything else the student is able to do. The student shouldn't leave the project for the parent to finish.
- During the experiment, the student should be there the whole time measuring and writing down the data in the journal. The parent should oversee the experiment for the sake of safety.
- The student is mostly to do all the computer work when making graphs and tables.
- The student should mostly have the final say for the analysis and conclusion writing.
- The student should mostly come up with the final decisions as to how the display board should look.
- The student should mostly do all the computer work that is going on the display board.
- The student should mostly do all the pasting of the words and pictures on the display board.

Parent Consent Form To Use Children Under 18 As Participants in a Science Fair Project

Date:

Dear Parents,

For my school science project this year I am using children under 18 and I would like you use your child as a participant. Therefore, I need to get your permission to do so. I am not doing anything or using anything that would be harmful to people. I have gotten permission, by signature, to do my project using people from my science teacher, my principal, and a psychologist.

Here is what I am doing for my project and how I am using people.

If what I am doing is all right, please sign below that I can use your child in my science fair project and date it. Please return it to me.

Thank you,

_____

(signature of student doing the science fair project)

I give my permission to have my child _____

(name of child participating in science fair project)

to participate in _____ science fair project.

(name of student doing science fair project)

Signed:

_____ _____

(Signature of Parent) (Date)

Ways a Science Fair Project can be Disqualified

Because CUSEF and SLVSEF are affiliated with the Intel ISEF, the rules and regulations used by CUSEF and SLVSEF must match those established for ISEF. Though they may seem pesky, these rules help ensure student safety and compliance with applicable international, federal and state laws. The complete ISEF rules can be found here:
http://www.societyforscience.org/isef/document/completerules2010.pdf

The ISEF website has a very handy Rules Wizard, which asks a series of questions about your project and then tells you what, if any, additional forms you will need to fill out in addition to the ones that CUSEF and SLVSEF require. The Wizard can be found here:
http://www.societyforscience.org/isef/students/wizard/index.asp

I. The following is a list of things, based on the ISEF, CUSEF, and SLVSEF rules that are not allowed. These *will* get your project disqualified.

- Not growing microorganisms in a BSL 1 lab.
- Growing any microorganisms at home.
- Failing to complete and submit the required forms. Make sure that you have all the required signatures and be certain that your dates are correct. For example, if your form says you started your project on November 1st, but you didn't get approval until November 15th, then we have a problem.
- Failing to get pre-approval *if* your project requires it.
- Do a project involving human subjects without getting pre-approval.
- Using children under eighteen without parent approval unless they are part of your own family.
- Doing a project with hazardous chemicals, activities, or devices without a Designated Supervisor.
- A demonstration project. (If your project is simply showing how something works, it is probably a demonstration. Change it into an experiment by selecting and manipulating a variable.)
- Plagiarism, fabrication of data, or any other form of ethical misconduct.
- A project where a vertebrate animal has died.

II. The following things are not allowed with the project. If they are not removed the project will not be judged.

- The entire project display, including notebooks, pictures, gadgets, and papers, must fit within the required dimensions of 30" deep, 48" wide, and 108" tall (from floor to top).
- No living organisms, taxidermy specimens, preserved animals; human/animal body parts or body fluids are permitted.
- No pictures showing vertebrate animals during laboratory procedures are allowed.
- **No food is permitted at the display.**
- No raw plant materials, living, dead, or preserved are permitted.
- **No chemicals (including water), no hazardous substances or devices, highly flammable material, sharp items, or glass are allowed at the display.**

Resolving problems with the project display is usually possible, but it is best to avoid violating any of the display and safety rules. Use pictures to show items not allowed at the project display; it ***will not*** negatively affect the judging scores and it ***will*** make life much easier. The required items at the project in addition to the display board are a lab notebook. The student should bring their research report if they have one.