

Park City School District Science Fair

Informational Packet

Science Fair



Park City School District Science Fair Packet for 5th-12th Grades

The Park City School District is pleased to invite all students within the district to participate in this year's SCIENCE FAIR! Students gain the opportunity to create their own personalized investigations that go beyond the classroom. It is our hope that in offering this opportunity students will foster an appreciation for science.

What is a Science Fair Project? A science fair project is a presentation of an experiment, a demonstration, a collection of scientific items, or an invention. It shows the efforts of a student's investigation and provides a way for the student to "show-off" what they have learned. Whatever the project area, you will want to find something your student is interested in and understands. They will need to be able to explain their science project to our judges, so it should be an age appropriate topic and problem.

We would like to invite you to work along with your student as he or she selects, investigates and reports on an appropriate area of science. With your interest and encouragement, your student can develop the skills and attitude he or she needs to make the project a valuable experience. Guide your child, but let the final project reflect your student's individual effort and design.

A successful science fair project does not have to be expensive, time consuming or complicated. However, it does require some planning and careful thought. Projects become frustrating to students and parents when they are left to the last minute and are overly complex. You can't rush good science!

To help you and your scientist in-training prepare, we have included guidelines and resources. These guidelines will offer some helpful hints on how to create an effective project.

Each individual school will determine its own date for the science fair and will post this date on their website as well as send documentation home. Students will compete to participate in the Salt Lake Valley Science and Engineering Fair, Park City's regional fair. Therefore, the SLVSEF rubric is used for judging science fair projects. SLVSEF requires that projects demonstrate the scientific method and projects must have a journal.

What will you find in this packet?

1. Registration form: One registration form is required per project.
2. Rules for the science fair
3. Description of the scientific method
4. Judging form
5. List of resources

Let the investigating, questioning, experimenting, and analyzing begin!

Park City School District Science Fair Rules

1. Students may enter a project individually or as a part of a group of no more than 3 students.
2. No open flames, dangerous or illegal chemicals, explosives, or live animals permitted.
3. No growing bacteria of any kind.
4. Experiments that harm animals are not permitted.
5. Exhibits must be self standing and no larger than 36" wide/high x 24" deep.
6. Students are responsible for supplying all items needed for their display—including extension cords, etc. The school supplies tables only. Please indicate special needs (electrical outlet, extra space, etc) on form below. We will do our best to accommodate.
7. PCSD is following the rules and regulations of the Salt Lake Valley Science and Engineering Fair (SLVSEF). Selected/Winning students (5th graders and higher) from Park City's school fairs will have the opportunity to participate in the regional fair, held late March in Salt Lake City. More information about SLVSEF is available at <http://slvsef.org> Please note that students competing in the SLVSEF will have an additional registration form which will require the writing of a synopsis of the project and an entry fee. Registration forms will be made available to the "winning" students.

It is important to refer to the individual school's rules and regulations as well. Some may have additional rules or may provide exceptions to the above in special cases. Please consult with the Science Fair Coordinator at each school or the principal with additional questions.

Judging Projects:

Projects submitted by 5th – 9th graders will be judged with the SLVSEF rubric. SLVSEF asks that students demonstrate an understanding of the scientific method. Please note that projects must include a journal.

The rubric may be viewed at this link:

http://slvsef.org/documents/judges/2011_SLVSEF_Judging_Rubric.pdf

The SLVSEF Judges scoring sheet is available at this link:

http://slvsef.org/documents/judges/2011_SLVSEF_Judge_Score_Sheet.pdf

A description of how projects are judged is available at this link:

http://slvsef.org/documents/judges/2011_SLVSEF_How_Projects_Are_Judged.pdf

DISTRICT FAIR: Salt Lake Valley Science and Engineering Fair

The winners of an individual school's fair will have the chance to represent PCSD and compete in the Salt Lake Valley Science and Engineering Fair, held March 23-25, 2011 at Rice Eccles Stadium at the University of Utah's campus in Salt Lake City. It may be helpful to visit and become familiar with the Salt Lake Valley Science and Engineering website. <http://slvsef.org/> Please note that only 5th through 12th graders are eligible to enter this fair.

The schedule for the SLVSEF may be seen at this link.

<http://slvsef.org/the-event>

Registration for the Salt Lake Valley Science and Engineering Fair:

Students who will continue to the Salt Lake Valley Science and Engineering Fair will be required to complete a registration form for that fair. Information and direction will be provided to those students at the completion of the Park City District Fair.

Preparing a Science Fair Project

THE SCIENTIFIC METHOD

The scientific method is a way to ask and answer scientific questions by making observations and doing experiments.

Area of Science: To begin, you need to pick an area of science in which you are interested. These include: biological, physical, earth, chemical, behavioral/health and environmental.

Scientific Problem Solving Process: After deciding on an area of interest, use the following scientific problem solving process (steps 1-6 below) that will prepare you and guide you through your experiment and project preparation. **Be sure to log or record everything that you do into a journal or bound notebook.**

1. Purpose, Problem or Question: The purpose shows that the project intends to solve some problem from which others can learn or benefit. The problem statement or question should be clearly written and easy to understand.

2. Research or Background Information: Once the purpose has been stated, begin researching the topic. Be thorough and record all information in your journal. Check out library sources such as science books and magazines. Learn from past studies on some experiments that have already been done. Seek out experts and technology sources on your project subject.

3. Hypothesis: The hypothesis is your prediction as to what will happen as a result of the experiment. Predicting the expected results of this scientific study is based on consistent conditions, exact measurements and thorough research.

4. Experiment or Procedure: The experiment is to test the hypothesis for correctness. There are four parts to the experiment:

- Write a materials and equipment list you will need
- Write a step-by-step process you are going to follow
- Identify the experimental variable that is going to change and the control variables (or unchanged variables)
- Conduct the experiment

As you do the experiment, collect the data you observe by writing them in your journal or notebook. Pay attention to correctness in measuring and observations. Do the experiment at least 3 times, always keeping the conditions of the experiment the same. Be sure to gather enough data to make a conclusion.

5. Analysis or Results: The analysis is deciding what the data means. This can be done by asking the following questions:

- What happened?
- What steps were important?
- How do the outcomes compare to the hypothesis?
- What observations during the experiment were expected or unexpected?
- What does the data mean?
- What are the first-thought conclusions?

The best way to display the data is to put it as a graph or a chart. A graph is a “picture” of your results. In a scientific investigation the experimental variable is always written at the bottom of the graph (horizontal axis). The information that you collected by measuring, weighing, or timing is recorded up and down on the left side of the graph (vertical axis).

6. Conclusion: The conclusion is the summary of your experiment. It would answer questions such as:

- Did the results confirm or conflict with the hypothesis
- What was learned from the experiment?
- Are there any suggestions or new questions to investigate?
- In what way was this investigation important?
- Is there anything that could be changed to make it a better experiment next time?

Presentation or display board: When you are finished with the scientific problem solving process (steps 1-6 above) you need to create a display for your project so your ideas can be shown at a classroom, a grade or a school science fair. The display should have these things or qualities:

- It should be physically sound and durably constructed, and able to stand by itself
- It should show all the steps (1-6) of the problem solving process.
- It should be neat, edited and easy to follow.
- Your journal is to be in the front of the display.
- The items you used and the results of the experiment may be placed in front of the board as long as they follow the fair guidelines.

Oral Presentation: Since it is likely that you will be discussing your project with a judge, practice a short oral presentation before going to the fair. Know these things:

- What scientific information you learned in your research
- What you did at each step in the scientific problem solving process
- What you learned from your project
- What new questions you have
- What you would change if you did the experiment again

Try to answer the questions the best you can, but don’t dwell on answers you don’t know.

Thoroughness: These are the things that judges will look for as they look and listen to you and your project:

Goals met in your project

- Creativity in your purpose and approach
- Clarity
- Appropriate methods used
- Appropriate equipment used
- Appropriate for grade level
- Knowledge of the subject
- Understanding of your project
- Enthusiasm
- Individual effort shown
- **Complete journal**

Basic 6 steps of a Science Fair Project

1. **Problem or Question** - What problem are you trying to solve? What question are you trying to answer?

2. **Introduction or Background Research** – What information would be helpful to know in order to understand your project?

3. **Hypothesis** - What do you think will happen?

4. **Experiment or Procedure** - What did you do to answer your question? Be specific about the step-by-step process and the equipment used.

5. **Results or Analysis** - What actually happened? Include any graphs or charts to help present your data.

6. **Conclusion** - What did you learn from your experiment? Using the data from your results, answer the question asked in part 1. Then note any additional comments, explanations of why the results did or did not match your hypothesis.

TIPS FOR A GREAT SCIENCE FAIR PROJECT

1. **Work on something you are interested in.** You don't need to know all about your topic when you start. That is the whole idea of doing research. Good projects are ones that you have fun with.
2. **Start early.** This gives you more time for research and to polish your presentation.
3. **Get lots of help.** There are many people that can help you with your project: teachers, mentors and parents. They can't do your project for you but they can teach you about all sorts of things including how to use tools needed for your research. Visit Science Buddies website at www.sciencebuddies.com
4. **Make a plan.** It takes time to learn and do research. Your teachers plan out the entire year for courses you take. You need to meet deadlines too but you can keep your schedule simple. Keep track of things you need to do like creating an abstract, doing research and writing a research paper (suggested for junior and senior division).
5. **Project Data Book.** A project data book is your most treasured piece of work. Accurate and detailed notes make a logical and winning project. Good notes show consistency and thoroughness to the judges, and will help you when writing your research paper.
6. **Visual Display.** You want to attract and inform. Make it easy for interested spectators and judges to assess your study and the results you have obtained. Make the most of your space using clear and concise displays. Make headings stand out, and draw graphs and diagrams clearly and label them correctly. But any display you assemble must follow our Safety and Display guidelines.
 - **A Good Title.** Your title is an extremely important attention-grabber. A good title should simply and accurately present your research. The title should make the casual observer want to know more.
 - **Take Photographs.** Many projects involve elements that may not be safely exhibited at the fair, but are an important part of the project. You might want to take photographs of important parts/phases of your experiment to use in your display. Photographs or other visual images of human test subjects must have informed consent.
 - **Be Organized.** Make sure your display is logically presented and easy to read. A glance should permit anyone (particularly the judges) to locate quickly the title, experiments, results, and conclusions. When you arrange your display, imagine that you are seeing it for the first time.
 - **Eye-Catching.** Make your display stand out. Use neat, colorful headings, charts, and graphs to present your project. Home-built equipment, construction paper, and colored markers are excellent for project displays. Pay special attention to the labeling of graphs, charts, diagrams, and tables. Each item must have a descriptive title. Anyone should be able to understand the visuals without further explanation.
 - **Correctly Presented & Well Constructed.** Be sure to adhere to size limitations and safety rules when preparing your display. Display all required forms for your project. Make sure your display is sturdy, as it must remain intact for quite a while.

Do your best on all project aspects. Great research does not make a great project if you do not present it well. Aspects of the project like writing a paper or making a presentation board may not be at the top of your list of interesting things to do but they are all needed to make a great project. You will find it easier and more fun as you become better at doing these ch

Resources:

The Salt Lake Valley Science and Engineering Fair is Park City's district fair. The SLVSEF provides many tools to assist students in preparing their projects. Please visit their website <http://slvsef.org>

Determining the project often requires the most time. Often the best projects stem from a student's personal interests. Review the scientific method and begin looking for the questions that may be investigated scientifically.

The library has many books on project ideas.

Helpful websites:

<http://school.discovery.com/sciencefaircentral/sciencebuddies.org> (Has helpful questionnaire for students)
<http://www.ipl.org/div/projectguide/>
<http://www.stemnet.nf.ca/sciencefairs/>
<http://www.exploratorium.edu/snacks/>
<http://www.education.com>