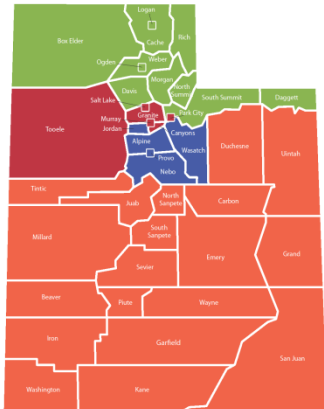


SCIENCE FAIR JUDGE TRAINING



FIND YOUR FAIR



Ritchey Science Fair, Weber Area Fair, State Science & Engineering Fair of Utah

Box Elder, Cache, Dagget, Davis, Logan, Morgan, North Summit, Ogden, Rich, South Summit & Weber
ritcheysciencefair.org

Salt Lake Valley Science and Engineering Fair

Granite, Murray, Salt Lake, Park City, Canyons, Salt Lake Valley Catholic Diocese & Tooele
slvsef.org

Central Utah Science and Engineering Fair

Alpine, Jordan, Nebo, Provo & Wasatch
cusef.byu.edu

Southern Utah Science and Engineering Fair

Beaver, Carbon, Duchesne, Emery, Garfield, Grand, Iron, Juab, Kane, Millard, North Sanpete, Piute, San Juan, Sevier, South Sanpete, Tintic, Uintah, Washington, & Wayne
suu.edu/sci/fair

Winners of the regional fairs are eligible to move on to the Intel International Science & Engineering Fair, held annually in May. The Intel International Science and Engineering Fair (Intel ISEF) is the world's largest pre-college celebration of science. Intel ISEF brings together over 1,600 students from more than 50 nations to compete for scholarships, tuition grants, internships, and scientific field trips. Learn more at www.societyforscience.org/isef



Central Utah

Science & Engineering Fair

- March 26-29, 2012
- Brigham Young University Conference Center
- Alpine, Jordan, Provo, Nebo & Wasatch School Districts

Salt Lake Valley

Science & Engineering Fair

- March 28-30, 2012
- Rice Eccles Stadium Tower
- Granite, Murray, Salt Lake, Park City, Canyons, Salt Lake Valley Catholic Diocese & Tooele School Districts

CUSEF Judging Schedule

Elementary Division I Grades 5-6

Alpine, Provo School Districts &
Charter Schools

Monday March 26, 2012

Judges Preview *6:00-8:00pm*

Tuesday March 27, 2012

Judges Preview (*without students*)

9:00-10:00am

Judging Interviews (*with students*)

10:00am-Noon

Lunch

Noon

Elementary Division II Grades 5-6

Jordan, Nebo and Wasatch School Districts,
Private and Home school students

Tuesday March 27, 2012

Judges Preview *7:00-9:00pm*

Wednesday March 28, 2012

Judges Preview (*without students*)

9:00-10:00am

Judging Interviews (*with students*)

10:00am-Noon

Lunch

Noon

CUSEF Judging Schedule

Secondary Division Grades 7-8 & Grades 9-12

Wednesday March 28, 2012

Judges Preview (*without students*)

7:00-9:00pm

Thursday March 29, 2012

Judges Preview (*without students*)

8:00-9:00am

Judging Interviews (*with students*)

9:00am-Noon

Lunch

Noon

Final Judging for Grand Award's Judges

2:00-3:00pm

What does a *Science Fair* look like?



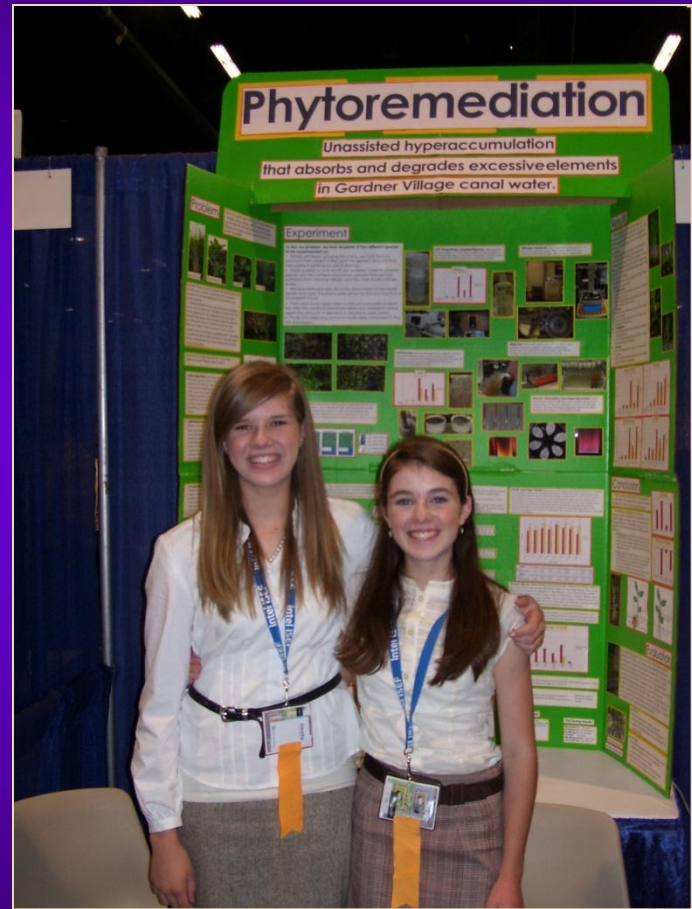
Science Fair Goals

Our primary goal is to excite students about science, engineering and math. It is also our intention to produce and maintain a continuous process that:

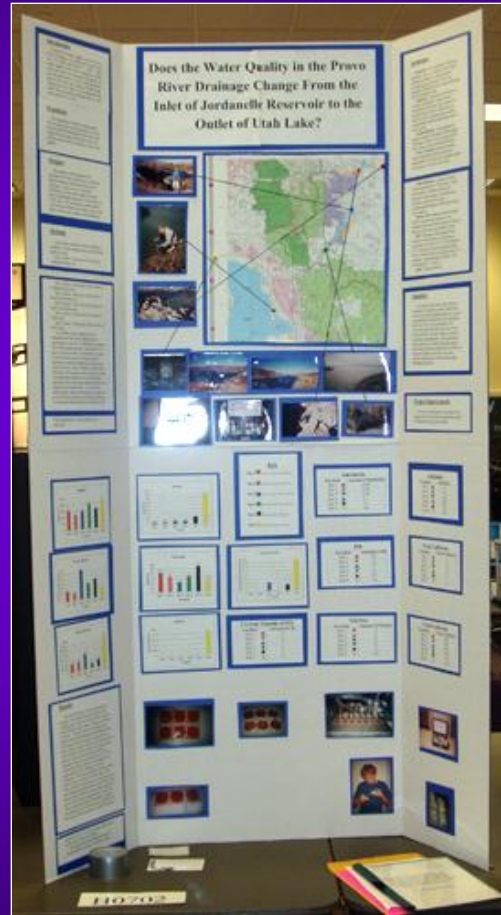
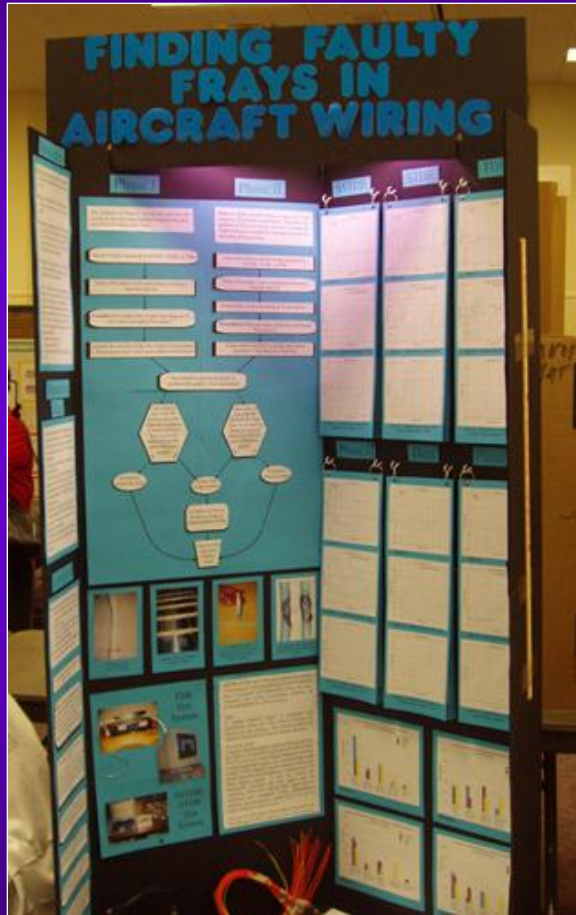
- Encourages and rewards academic excellence. This includes the opportunity for students to represent Utah at the Intel International Science and Engineering Fair.
- Promotes balanced literacy and educational enrichment.
- Provides hands on learning and real life application of information learned in the classroom, as well as, provide unique opportunities for independent achievement in science, engineering, math and technology.
- Provides opportunities for professionals throughout the community to serve as mentors to young scientists and engineers.
- Provides exciting opportunities for students to interact with each other and with professionals with similar interests.

Science Fair Goals

- We award and encourage student efforts through recognition and prizes at the fair, however we firmly believe that beyond the cash and academic opportunities associated with winning projects, there is a reward of greater significance for every student that completes a science fair project. A science fair project is the ultimate answer to the often-asked question, “Why do I have to learn this stuff anyway?” It can also be a self-validating and exciting experience because it is not just practice. It involves real discovery of little known or even unknown information. This is the process we want to foster and encourage.



What do the *Science Projects* look like?



What to Expect

(see handout)

A grade appropriate understanding of scientific principals behind a student's project is expected for all projects. You must therefore, customize your questions based on the grade level and maturity of the student.

Baking Soda & Vinegar Example

Elementary Level Understanding

When baking soda and vinegar mix, a chemical reaction happens that makes gas.

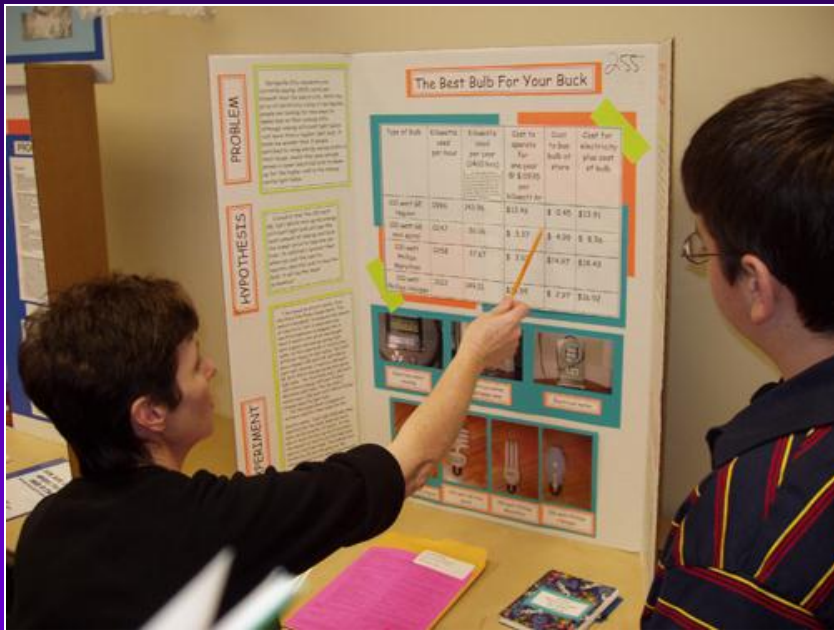
Junior High Understanding

A 7th or 8th grader *might* recognize (1) that vinegar is a diluted acetic acid and baking soda is mostly sodium bicarbonate (2)The baking soda and vinegar experiment is really a 2 step chemical reaction, and (3)the gas produced by the reaction is carbon dioxide.

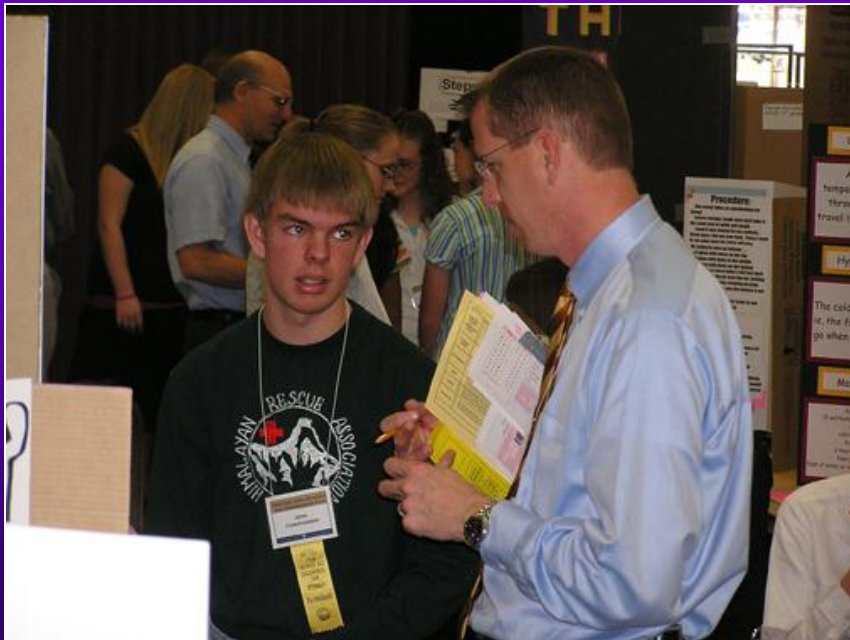
High School Understanding

A 12th grade student's understanding builds upon their elementary and junior high learning and *might* include the ability to write out the chemical formulas for the reactions, give the chemical names for all of the reactants and products, classify the reactions by type, and be able to do stoichiometric analysis of their particular experiments and reactions in general.

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What does a Judging Interview look like?

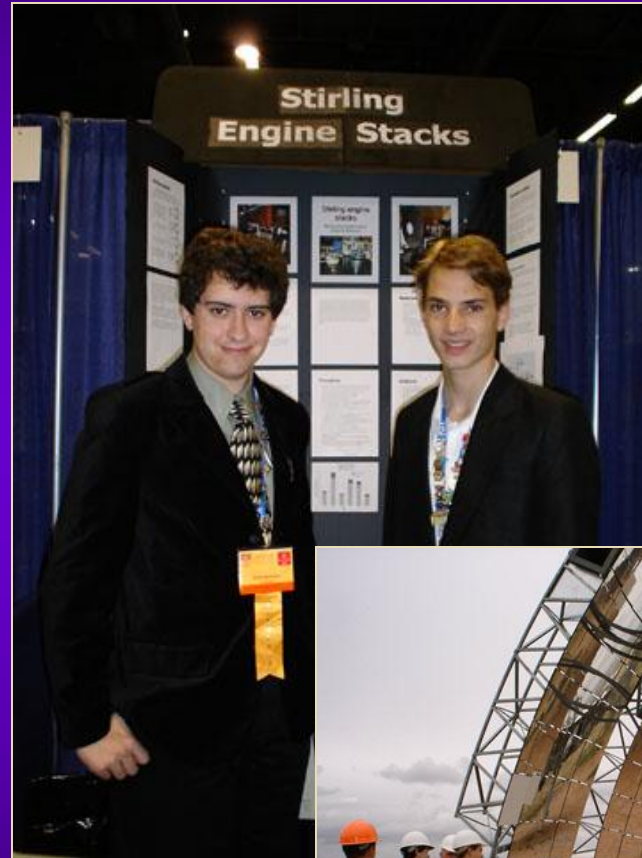


What does a *Judging Interview* look like?



Be prepared to wear many hats...

1. Professional Authority
2. Role Model
3. Facilitator
4. Counselor & Motivator
5. Evaluator



Top 10 Things a Judge Should Do

1. Work to put the students at ease – be genuine & smile.
2. Encourage conversation – encourage students to put away their distractions.
3. Listen actively.
4. Ask the students about their project, not just what they did.
5. Ask the students enough questions to satisfy yourself that they understood the project – when you have reached the student's knowledge limit, **STOP** asking questions.
6. Let the students show their stuff – let them teach you something.
7. Give positive reinforcement to nourish self esteem.
8. Give one opportunity for improvement
9. Remember when you were 12 years old (or 10, or 15).
10. End the interview on a positive note.

Top 10 Things a Judge Should NOT Do!

1. Display Boredom.
2. Tally judging sheets in front of the students.
3. Make Assumptions.
4. Belittle the student or their project.
5. Spend your interview time talking about yourself.
6. Criticize or treat lightly.
7. Judge in teams.
8. Compare to projects seen in other competitions or scholastic events.
9. Refer to other projects you have seen.
10. Discuss winners or critical comments about particular projects in places where students or parents might overhear.

Statistical Information & Student Scores

- CUSEF & SLVSEF normalize judge scores and rank projects accordingly using a Microsoft Excel Spreadsheet.
- As an individual judge's scores are entered, a mean score and a standard deviation is calculated for each judge.
- A "Z-score" is then calculated for *each* score a project receives from *each* judge. This is done by subtracting the judge's mean from the project score and dividing it by the standard deviation.
- An average Z-score is calculated for each project by averaging the Z-scores from all of the judges who scored each project.
- The projects are then ranked based upon the Z-score averages. The project with the highest Z-score average ranks the highest in the category.

How to Pre-Judge a Project

- Take a quick look at all of your assigned projects to get a feel for what they are about, what they look like and how they compare to each other.
- Read through the project display board. Were you able to understand quickly what the experiment was and what the results were?
- Read through the workbook, journal or lab-notes. The student should have one.
- Write down your questions and compliments for use in the interview.
- Remember that the physical display is **SECONDARY** to the student's knowledge of the subject.

General Scoring

(see handout)

The project should demonstrate the use and understanding of the scientific method. While the neatness and organization of the display is important and scored separately, using the scientific method is most important.

High Scores should go to:

- A project that demonstrates the student's full understanding. A simple project that the student understands should receive a higher score than a more sophisticated project that the student does not understand.
- Innovative experimental procedures and or lab equipment that go above and beyond the original experiment and what is expected for the grade level.

Low Scores should go to:

- Apparent lack of research; many resources were available to the students throughout the project
- Superfluous lab equipment or displays that do not relate to the experiment or were not aids in collecting data

Used with permission from Science Buddies

Mentors

All students will have received some kind of help with their project. Their project should reflect their knowledge and understanding.

How do I figure this out as a judge?

- The project notebook is critical. Judges should review the notebook to ensure students did the actual work.
- Ask the student what help they received.
- Ask the student questions about their methods and data analysis. Check for understanding of concepts.
- Ask detailed questions that the student should be able to answer if they really did the work they say they did.

Discussion ideas with SCVSEFA

Engineering, Math & Computers

Computer Programming		Math Projects
Engineering Process	Scientific Method	Mathematical Reasoning/Proof
Define a need	State your question	Define what is known
Do background research	Do background research	Research & define all terminology
Establish design criteria	Formulate your hypothesis, identify variables	Make a conjecture/assumption based on what you know
Prepare preliminary designs	Design experiment, establish procedure	Perform calculations
Build & test prototype	Test your hypothesis by doing an experiment	Look for counter examples
Test & redesign as necessary	Analyze your results and draw conclusions	Recalculate and write up steps to the conclusion
Present results	Present results	Present Results

Scientific Method & Engineering Process Comparison used with permission from Science Buddies.

Publicly Available Data

Student experiments that are based upon the collection of publicly available data *ARE* legitimate projects.

The students must ask a clear question, have a method for analyzing the data, and form a conclusion based on their results.

The students must demonstrate that they did more than put together a research report. The focus should be on the data analysis process, but students should be able to explain how the data was recorded in the first place.

Examples:

1. Sports statistics
2. Astronomy data
3. Criminal statistics
4. Geographic data
5. Weather data
6. Animal populations

Judging Interview

Personalize Your Language

- I liked...
- I enjoyed...
- I noticed...
- I feel that...
- I recommend...
- A technique I have used...
- I understand that...

Possible Judging Questions

1. Tell me about your project.
2. What was your question?
3. What were your results?
4. Did you run into any problems?
5. What are your unanswered questions?
6. If you continue your project, how would you proceed?
7. How did you come up with your idea?
8. Who helped you with your project?

Judging Tips

- Arrive early and plan to stay through the entire judging interview period.
- Pace yourself. Your interviews should last no longer than 10-15 minutes with each of the students.
- Revise your scores as many times as you need.
- If you are stuck on a project see your Category Chair or Science Fair representative. Don't hesitate to ask questions.
- Be consistent with your scoring. Don't worry about how the other judges are scoring projects.
- Please don't give all of your projects the same score.
- Judge the "best" and encourage the rest.

Frequently Asked Questions

1. Where will the judges be meeting at the science fair?
CUSEF: Outside room 1195 of the BYU Conference Center
SLVSEF: Lobby Rice Eccles Stadium Tower
2. Where should I park?
CUSEF: BYU Conference Center Parking Lot
SLVSEF: Rice Eccles Stadium Parking Lot
3. What should I wear?
Professional dress or casual professional.
4. Do I have to stay the whole time?
Please be prepared to stay the entire judging period.
5. What if a conflict arises and I can't judge?
Please notify your science fair contact immediately – it is very difficult to find a replacement last minute.
6. What should I bring?
A lot of enthusiasm! We will provide you with everything else you will need for judging.

Thank You!

