UNM STEM-H Center for Outreach, Research & Education

Judge Training Manual

Central NM Science & Engineering Research Challenge

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The Research Challenge Opportunity

If you are reading this Judge Training Manual, you have either volunteered to judge, are attending a judge training to see if you might be interested in volunteering, or you have simply picked up this handout to read. If you are a Judge, thank you for your interest and commitment to the youth of tomorrow. If you picked up this handout out of interest, I would encourage you to see the Research Challenge (…formerly "science fair") web site at **http://stemed.unm.edu** as well as read on. We would love to have you join our team!

As a research challenge judge, you will be provided with a number of opportunities for the amount of time that you will invest in judging. You will also gain personal rewards from the experience and interaction with the students that can be found by any other experience.

Judges' Benefits

- Excellent Opportunity to Network
- Develop Communication Skills
- Develop Analytical and Evaluation skills
- Sharpen your Investigative Skills
- Build Self Confidence
- Share Knowledge with Today's Youth
- Have fun while helping others

Judges are an integral part of a research challenge. As a judge you are part of the research challenge infrastructure. Your time as a judge has impact that goes far beyond the day of judging, your time reaches out and influences students, schools, the community, businesses and research challenges.

Students' Benefits

- Learn more about Science
- Are presented with a challenge
- Earn Recognition and win acceptance
- Gain Pleasure from achievement
- Build Self Esteem and Self Confidence
- Meet members of the Business Community
- Meet members of the Scientific Community

School Benefits

Research challenges create an event for schools to use to raise interest in education. Schools also gain in creating better students through their experience of research challenge competition and interaction with the judges.

Community Benefits

The community gets the long-term benefits of leadership development of our children who participate in research challenges. And, after all, these students are the leaders we will look to in the future.

Business Benefits

Research challenges are a medium that can be used to promote businesses by raising community awareness of the businesses that support research challenges. Businesses also reap rewards from the communication and leadership skills that their volunteer judges gain by participating in the research challenges.

Research Challenge Benefits

The Research challenge gains exposure to businesses and schools. The Central NM Science & Engineering Research Challenge is sponsored by community and business donations. Well run research challenges build fair credibility and solidarity amongst all fair supporters.

The Roles of a Judge

The Judging role is multi-facetted. Judging is **much** more than putting scores on paper. As a judge, you will step into a number of roles throughout the judging day. Fulfilling all of these roles is important for having a successful research challenge. You may not fill all of these roles as a judge when interviewing a student, but through the day you will have the opportunity to exercise all of the roles.

Evaluator

The main role of a Judge is to evaluate the various projects and assign them a score. This is initiated before the students arrive in the morning. You will be evaluating the project on the basis of what you see. Quality of work and presentation fit into this function as a judge.

Facilitator

In the morning, you get to meet the students. You will still be evaluating the project, but you will also be a Facilitator, creating an open and positive atmosphere to allow the student to comfortably tell you about their project and the research that they did. This role is important because the quality of your facilitation will promote accurate project evaluation.

Counselor

When a student asks you, “What could I have done better in this project?”, you then stepped into the role of a counselor. You can make a recommendation of what could have taken the project up to the next level of quality. If the Student does not ask how they could have improved their project, then it is

your responsibility to give the student one growth point for improvement on the project. (no more – no less).

Motivator

An important role of a judge is to give the student encouragement and will motivate them to compete again. The students have put in a lot of work to compete in the fair and should be complimented on that as well as the work that they have done. The simplest compliment given to a student can spur them on to future success in life.

Role Model

Remember that when communicating with the students, you are in the role of the judge as well as a leader in the community from business or academia. Your actions portray to the students what the research challenge is all about. Take care in what you do and say in the presence of the students.

Provide a Good Experience for the Competitors

As a judge you can provide a good experience for the student competitors by practicing the following skills/principles:

- Be Genuine.
- Let the exhibitors show their stuff.
- Encourage conversation.
- Avoid value judgments.
- Give one opportunity for improvement.
- Recognize 3 Project Strengths.
- End meeting on a positive note.
- Smile.

Judge Behavior with Students

When with the students, there are things that you can do to make the experience a learning experience for the students and an enjoyable experience for you:

- Show you are interested.
- Listen actively.
- Give positive reinforcement to nourish self-esteem (say what you like about project).
- Work to put students at ease so they will not feel intimidated. (sit down if possible).
- Ask students about their Projects, not just what they did.
- Ask students enough questions to satisfy yourself that they understood the project.
- When you have reached the student's knowledge limit, STOP asking questions.
- Have 1 Positive Comment for every student.

- Remember when you were 12 years old!
- Let the student teach **you** something.

Sample Questions for All Projects

These are some good sample questions that will spur on conversations during the judging process.

- Why did you decide to study this topic?
- What are your controlled variables?
- How accurate are your readings?
- What future applications can you see from the results of this project?
- What one outstanding thing did you learn doing this project?
- How would you improve this project if you would do it again?

Sample Questions for TEAM Projects

These are some good sample questions that will spur on conversations during the judging process and help you in determining the level of teamwork, distribution of work, etc. in a team project.

- Please explain how you split up the work on this project (who did what?). You are trying to determine the division of labor as well as whether or not the work was balanced amongst the team members.
- Ask each team member to talk about their part of the project…then ask specific questions to determine the student's depth of understanding of the project.

Judging Considerations for TEAM Projects

Here are some things to think about as you are judging Team Projects in your category.

- Can you tell whether or not each member of the team contributed to the project equally? Or did one of the students seem to do more of the work with the other(s) riding his/her coat tails?
- Do all team members seem to have a solid working understanding of the project?
- Did all team members contribute equally to the judging presentation?
- Were all team members able to answer follow up questions about their project or did they defer to one team member who seemed to know the most about the project?
- Are the tasks and contributions of each team member clearly outlined?
- Was each team member fully involved with the project, and is each member familiar with all aspects of the project?
- Does the final work reflect the coordinated efforts of all team members?

Quite often, team members divide what aspects of the project that they worked on and talk about. So, one team member may be more knowledgeable in one area than the other. But, clearly, all the team members should be able to contribute and should be familiar with the entire project.

Suggested Wording

Personalize your language

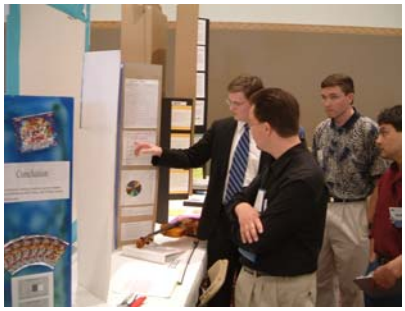
I liked….
I enjoyed….
I feel that……
I see that…..

If asked

I suggest…
A technique I have used…..
The project would have more impact on me if….

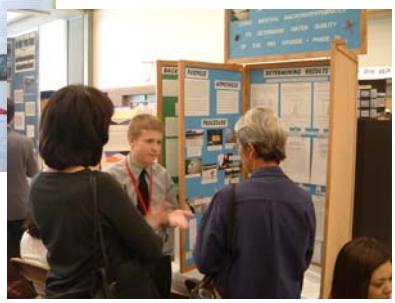




What to Expect on Judging Day



Judging Tips and Tricks

- Get there early.
- Look at all of your category's exhibits before starting to judge your assigned exhibits.
- Set timing goals for your exhibits (10-15 min per project depending upon the number of projects assigned to each judge)
- Exhibitors' understanding of what they did is as important as the project itself. Asking questions that elicit how well the student truly understands the science behind his/her project can tell you a lot…like whether or not the student did the project on his/her own or had A LOT of "help."
- Revise your scores as many times as you need.
- Don't tally Judging Rubric (scoring worksheet) in front of exhibitors.
- If stuck on a project, see your Category Judge Chair
- Judging is finished after the second Caucus Meeting is completed. Be prepared to stay until 1:00pm. The Senior Division Category Judge Chairs will meet in a Final Caucus to determine the projects selected to move on to competition at the Intel International Science & Engineering Fair as well as a list of runners up.

How to Judge a Project

Before starting to judge take a quick walk-around of all of your assigned projects, to get a feel for what they are about, what they look like, and where they are located.

- Read through the backboard in some logical order; assess its impact, and how well it tells the "story" of the project. Were you able to understand quickly what the project is trying to do, and what the results were?
- If equipment or devices are part of the display, do they serve an obvious purpose, based on what you have seen so far?
- Read through the abstract. Assess it. *(If missing, ask for it in interview. No abstract = 1)*
- Read through the workbook (journal &/or full report). Assess it. *(If missing, ask for it in interview. No workbook = 1)*

- Write down your questions and compliments, for use in the Interview, and add to comments section of the judging form.
- Note your marks.
- Remember not to "team-judge", but be sure to ask your Category Judge Chair or another experienced judge if you have any questions during judging.
- ***PLEASE remember to initial/sign the FORM on the student's display table. This helps us insure that every project has been reviewed by at least 3 judges. Thank you!***
- **Once all projects are marked and interviewed**:

    1) Write down the rank order of the projects you have judged, based on your overall impressions of the day.
    2) Which one is best?
    3) Which should be at the bottom of the list?
    4) Now check the total mark you have assigned to each project.
    5) Is your impression consistent with the marks you've assigned? Decide if you need to review anything.

Using the Scoring Worksheet & Judge Score Cards

As a judge the main tools that you will use are a pencil, a folder, Scoring Worksheets, Project Feedback Forms, and a Judge Score Card for each project you are judging. All tools are supplied on the judging day. To use the Scoring Worksheet and Student Feedback Form effectively, please review the attached forms. Your Judge Chair will review these forms along with the Judge Score Cards during the first category caucus meeting on judging day. It is just that easy!

Intel ISEF Rules for Pre-College Research

You can find the current Intel ISEF Rules for Pre-College Research along with the forms our students are required to follow and utilize at the following website:

http://stemed.unm.edu

Final Word

We at the Central NM Science & Engineering Research Challenge would like to thank you for your participation as a volunteer judge. Your help will help to make this a successful fair now and in years to come! ***HAVE A GREAT TIME!***

Other Volunteer Opportunities!

If you know anyone who might be interested in helping out at the Central NM Science & Engineering Research Challenge and/or any of our other programs (Academic Decathlon, Science Olympiad, student workshops, teacher workshops…), please have them call our office. For the regional research challenge, we are always looking for extra hands in the weeks that lead up to the event as well as on the actual day of the fair (i.e. stuffing packets, directing judges between buildings, collecting score cards, covering tables, helping with corporate booth set-up, participating on the display and safety committee on set-up night, etc.). We welcome any assistance that might be available! Thank you for passing the word!

Judge's Scoring Guidelines & Worksheet
for SCIENTIFIC & ENGINEERING RESEARCH PROJECTS

Award the Best … Encourage the Rest

Project Number: _____ **Title/Key Words:** _____

Judge scoring is conducted using a 100-point scale, with points assigned to ***Research Question, Design/Methodology, Data Collection-Analysis-Interpretation, Creativity, and Presentation (poster & interview)*** for **Scientific** Projects **OR** ***Research Problem, Design/Methodology, Construction & Testing, Creativity, and Presentation (poster & interview)*** for **Engineering** Projects. Review the criteria carefully and use the one ***most*** appropriate (scientific project or engineering project) for each project you are judging. Team projects have a slightly different balance of points including points for ***teamwork***. The following is a set of criteria that can assist you in interviewing and scoring your projects. A more thorough discussion of the criteria can be found in the Judging Guide.

GUIDELINES	NOTES *This form is **NOT** given back to exhibitors! Please use Project Feedback Form for comments you want to share with the student(s).*	MAXIMUM POINTS AVAILABLE	POINTS GIVEN
I. RESEARCH QUESTION – SCIENTIFIC PROJECTS • Clear and focused purpose • Identifies contribution to field of study • Testable using scientific methods **or** **RESEARCH PROBLEM – ENGINEERING PROJECTS** • Description of a practical need or problem to be solved • Definition of criteria for proposed solution • Explanation of problem constraints		**10 Points MAX**	
II. DESIGN & METHODOLOGY – SCIENTIFIC PROJECTS • Well designed plan and data collection methods • Variables and controls defined, appropriate, and complete **or** **DESIGN & METHODOLOGY – ENGINEERING PROJECTS** • Exploration of alternatives to answer need or problem • Identification of a solution • Development of a prototype/model		**15 Points MAX**	
III. DATA COLLECTION & METHODOLOGY – SCIENTIFIC PROJECTS • Systematic data collection & analysis • Reproducibility of results • Appropriate application of mathematical and statistical methods • Sufficient data collection to support conclusions **or** **CONSTRUCTION & TESTING – ENGINEERING PROJECTS** • Prototype demonstrates intended design • Prototype has been tested in multiple conditions/trials • Prototype demonstrates engineering skill & completeness		**20 Points MAX**	

IV. CREATIVITY • Project demonstrates creativity in one or more of the above criteria		20 Points MAX	
V. PRESENTATION – DISPLAY BOARD/POSTER • Logical organization of material • Clarity of graphics and legends • Supporting documentation displayed		10 Points MAX	
VI. PRESENTATION - INTERVIEW • Clear, concise, thoughtful responses to questions • Understanding of basic science relevant to project • Understanding of interpretation and limitations of results and conclusions • Degree of independence in conducting project • Recognition of potential impact on science, society, and/or economics • Quality of ideas for further research • **TEAM PROJECTS – Contributions and understanding of project by ALL team members**		25 Points MAX	
	TOTAL POINTS =	*100 points MAXIMUM*	

Keep this sheet with you and use it to take notes. Actual scores and comments are recorded on other forms.

PLEASE RETURN THIS FORM TO YOUR JUDGE CHAIR WHEN YOU HAVE COMPLETED THE JUDGING PROCESS AS IT IS SENSITIVE INFORMATION THAT IS SHREDDED AFTER THE COMPETITION.

ADDITIONAL NOTES…