Welcome to District Science Day Judge Training.

Please verify that you can hear the music, and that your microphone works.
Please mute your microphone.

Judging & Scoring Projects

First, Thank-you for your time.

Our Mission

To encourage students in the pursuit of the sciences and research in topics of their choosing; confirming the tenants of a project

(1) achieving knowledge,

(2) rigorous process,

(3) clarity of expression of results, and

(4)creative and original application.

Achieve our mission by providing

- Fair assessment of the project with special consideration of skill levels of age group,
- Rewarding language for components of the project well done,
- Positive critique for components of the project that need improvement,
- Encouraging advice in the pursuit of both their project and in science in general,
- Scientific wisdom by providing a perspective on their project they might not have considered and would be interesting to the student.

Second Mission

- Our second mission is to provide a positive science (STEM) related learning experience for the students.

Special Circumstances

- Some students were not able to get their display board – since it may have been inside the school.
- They may also not have been able to access their project notebook, research paper etc. And may have had to create project content without any reference material.
- Teams are not able to collaborate on their project.

Please make accommodations in your scoring to these special circumstances!

Criticism

- Criticism is basic to science to make projects and research better.

- However, students have not had a chance to be introduced to this idea, and we could gently introduce them today with positive criticism.

Parallel Processes for Scientific Method

Inquiry vs Engineering Design Projects

Note:

Students often not aware and try to put engineering design projects in inquiry format

Engineering Process	Scientific Method
Define a need	State a question
Do background research	Do background research
Establish design criteria	Formulate your hypothesis, identify variables
Prepare preliminary designs	Design experiment, establish procedure
Build and test prototype	Test hypothesis by doing experiment
Test and redesign as necessary	Analyze your results and draw conclusions

Four Categories for Projects

- Oral and Written Communication
- Originality
- Experimental Design
- Depth of Understanding

Teams

- Due to the difficulty of the virtual judging process, it was determined that an evaluation of the team and collaboration of the team would be too difficult.
- If they are able to demonstrate team collaboration in the materials you have, please comment on it.
- Otherwise judge the categories on the merits as described below.

Category Discussion

- The following are the standards
- Keep in mind
  - Circumstances
  - Quality of video

Oral and Written Communication

SECTION #1: ORAL, WRITTEN, AND VISUAL COMMUNICATION: ***Tell me about your project? May I see your report?*** *Judges are encouraged to consider student abilities (or potential disabilities) in all three types of communication when assigning points*
Written: Well written Research Report (includes relevant background, research question and hypothesis showing how it is related to background, experimental design and procedures, data acquisition techniques, data analysis, conclusion and bibliography). If Engineering Design project, includes clear statement of technical problem and criteria for success
Oral: Correct and concise explanation of project, design, and analysis. Responses reflect correct understanding of experimental results and limitations of, expansions of, and/or impact of project.
Visual: Logical organization of material, neatly displayed, graphics and legends appropriate to project, easy to read and understand. Photos and graphics cited. Includes required information.
Comments /Feedback – PLEASE ENTER INTO STEM Wizard SUPERIOR (9-10) EXCELLENT (6-7-8) GOOD (4-5) SATISFACTORY (0-3)

Originality

SECTION #2: ORIGINALITY: ***Where did you get the idea for your project, experiment design, and analysis? What interests you about this topic? Did you modify any designs that you found and if so, how?***
Project displays originality in concept relative to grade level (i.e. not "cookbook", not classroom lab, not a simple extension of "found" idea) New idea, concept, principle, insight or non-obvious approach; Novel association or relationship of previous knowledge, particularly rigorous and exhaustive analyses that reveals previously unknown relations, etc.
Evidence of student's unique understanding and development of the project
Comments /Feedback – PLEASE ENTER INTO STEM Wizard SUPERIOR (9-10) EXCELLENT (6-7-8) GOOD (4-5) SATISFACTORY (0-3)

Experimental Design

SECTION #3: EXPERIMENTAL DESIGN: ***What question are you trying to answer and how did you decide to go about answering it? What did you learn from the data? IF ENGINEERING DESIGN: What design problem are you trying to address and how did you decide to go about addressing it?***
Project addresses a clear, focused problem or question with hypothesis that is testable using scientific methods. *If Meta-Analysis project, then hypothesis is testable using data from multiple peer-reviewed research papers. If Engineering Design project, addresses a clear, focused engineering design problem or need; criteria for success are identified; preliminary designs prepared; prototype is created and tested with results clearly communicated.*
Well-designed plan and data collection methodology which identifies variables and controls. Grade appropriate control of variables (Not a summary of already known science) *If Engineering Design project, student identifies and applies established engineering principles in their design.*
Reproducible and sufficient data are collected, *or if Meta-Analysis project, sufficient amount of scientific data is synthesized from other sources to address question/problem*. Data used were collected using appropriate scientific protocols. *If Engineering Design project, student used materials and processes effectively to correctly build prototype or model*
Data are properly analyzed. Appropriate graphs illustrate the data. Statistics appropriate to the age of student are correctly used. *If Engineering Design project, sufficient testing of prototype or model is completed; data is properly measured, presented and analyzed.*
Valid conclusions are reached from the data obtained. Age appropriate discussion of results. Sources of error identified. *If Engineering Design, prototype successfully meets criteria that were established for the project.*
Comments /Feedback – PLEASE ENTER INTO STEM Wizard SUPERIOR (9-10) EXCELLENT (6-7-8) GOOD (4-5) SATISFACTORY (0-3)

Depth of Understanding

SECTION #4: DEPTH OF UNDERSTANDING: ***What did you learn about the science behind your project before and during the experiment? If Engineering Design - What did you learn about the engineering and previous designs for your project before and during the process?***
Adequate age appropriate background research (journals, textbooks, websites, etc.) relevant to the project which provides basis for hypothesis.
Supplements answers with relevant information reflecting knowledge gained during the project.
Age appropriate use of terms and principles.
Age appropriate exploration of science in subject, depth of investigation, and/or sophistication of project.
Comments /Feedback – PLEASE ENTER INTO STEM Wizard SUPERIOR (9-10) EXCELLENT (6-7-8) GOOD (4-5) SATISFACTORY (0-3)

Total Score Ratings

- Minimum number of points for each rating:
  - Superior 36,
  - Excellent 24,
  - Good 12,
  - Satisfactory 4 (Satisfactory is not given at State, District, or Hudson Science Day).

A Note About Ratings

- Since our first mission is to promote science excellence, the significance of the ratings are for promotions to State Science Day.
- Combine all comments in a single comment window. Don't let this discourage you from commenting on all 4 categories.
- All Superior projects will be promoted

To Give A Superior Rating

- Please first determine if the student should be given the opportunity to have their project judged at State Science Day
- Normalize your judging scale prior to scoring

Meaning – if you determine the student should go onto state, they must not lose more that 4 points across the 4 categories.

- We are expecting most projects to be promoted
  - Most committed remain

To Not Give A Superior Rating

- If you are not going to give a superior rating to the project, it is EVEN MORE IMPORTANT that you give guiding comments.
  - What the project is missing
  - What could be improved
  - Mentor-ly advice on future science project (perhaps the issue was project choice)
  - Encouraging words about science of their project.

  - Enough to make them excited about trying again!!!

Note about Comments

- Take special care to have encouraging and thoughtful comments,
- Keep in mind the missing judging interview – you can't demonstrate your respect for their work through thoughtful questions

Analysis of Judges Comments

- Unique opportunity to gather some data on comments from judges.
- Will have general and (sometimes) specific feedback for judges for future purpose.

Use appropriate channels

- As always – you may feel compelled to assist or contact a student
- Do not contact or ask student to contact you.
- Contact scienceday@uakron.edu and work through teachers to offer to mentor students.

Back to Laurel

Conflict of Interest

- If you find during your judging that you know the student, you are judging or have a conflict of interest with the student or student family..
- Contact:
- scienceday@uakron.edu

High Scores for Awards

- Please reserve 40 for all projects that will need to be considered for 1st place.