YES Fair

Judges Manual

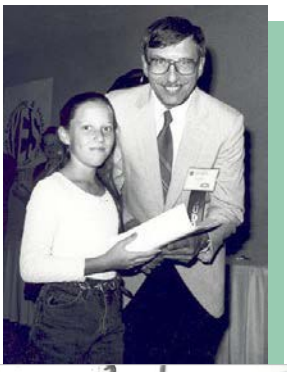
The Science Fair Opportunity

The judges at the YES Fair are the true backbone of the fair. I can't thank you enough for your dedication to the fair and the kids of Southeast Arizona. As part of the continued growth process for the YES Fair, this manual (modified from the Canadian Science Fair) is to help you as a Judge, and we as a Science Fair improve our judging process. I would encourage you to see the Science Fair web site at **www.yesfair.com**

YES Fair—30+ Year History

By LaDonna Burgess (SSVEC)

In 1984 Sulphur Springs Valley Electric Cooperative sponsored its first science fair. There were a total of 17 student entries in the fair. What started as SSVEC's Youth Energy Science (YES) Fair in connection with National Energy Education Day and SSVEC's annual meeting has grown into one of the major science fairs in the Southwest, recognized by and affiliated with the International Science and Engineering Fair (ISEF).



The second YES Fair was held at the old Buena High School Gym in Sierra Vista. That year the Armed Forces Communications and Electronics Association (AFCEA) held a small science fair in the school's library at the same time. As the 1985 SSVEC YES Fair Director, I approached AFCEA's Education Committee Chairman Harold Vangilder about merging the two fairs. The two joined in 1986 and the fair continues today as the Youth Engineering and Science (YES) Fair co-sponsored by SSVEC and AFCEA.

Why do such an event? To offer students in grades 5 through 12 from throughout Southeast Arizona the opportunity to display, compete and earn awards and recognition for their projects. To provide the opportunity for students to think, discover, research, produce and learn! To create interest for work and careers in various fields to build a better America. To give a ribbon to a child who has never received one. To award certificates, money, and prizes to inspire, motivate and reward students for doing science and engineering projects.

The YES Fair awards all-expense-paid trips to the top two high school project winners and their advisers to compete in the International Science and Engineering Fair. These students compete with other student scientists from around the world for special awards. The location of the ISEF changes each year and over the past 19 years has included major U.S. cities, as well as Canada and Puerto Rico. Along with the Grand Prize winners many other projects in each fair are recognized and awarded. Significant monetary contributions from AFCEA and the SSVEC Foundation provide core funds and prizes. Many other sponsors also donate prizes, scholarships, monies and opportunities to inspire and reward participants each year.

SSVEC continues to organize and carry out each fair with the help of numerous employees and many volunteers. Local professionals helped us create and continue to support the fair program. Judges from the military, scientific, technical, governmental and academic fields review and select the prize-winning exhibits. Many thanks to those that have helped make the YES Fair a success each and every year. Being involved in all 20 YES Fairs to date, I've seen many doors open for our students. They go on to become doctors, teachers, engineers, soldiers, farmers, scientists, public officials and, yes, parents. Past participants share that their YES Fair experience was valuable both at the time and later in life.

Science and its discoveries are learned from setbacks as well as successes. The YES Fair, through the efforts of SSVEC and AFCEA encourages, motivates and rewards our youth, the foundation of our future.

The Roles of a Judge

The Judging role is multifaceted. Judging is more than putting scores on paper. As a judge you will step into a number of roles through the judging day. Fulfilling all of these roles is important for having a successful science fair. You may not fill all of these roles as a judge when interviewing a student, but through the day you may 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. 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 (9-12 Division only)

In the afternoon, 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 quality of your facilitation will result in amount of information you will receive to make an accurate evaluation of the project as a whole.

Counselor (9-12 Division only)

When a student asks you, "What could I have done better in this project?", you have 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 some compliments that will make them feel good about their work and 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, a leader in the community, from business or academia. Your actions portray to the students what the science fair 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 using the following tips:

- Be Genuine
- Let the contestants 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:

- Examine the quality of the students work. Look for evidence of laboratory, field or theoretical work, not just library research or gadgeteering.
- Keep in mind that competing in a science fair is not only a competition, but an educational and motivating experience for the students.
- If the project is a continuation of a prior project ONLY the work done in the past year is to be evaluated. Prior work is important but should not unduly impact the judging of this year's project.
- 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, (Sit Down) If students are intimidated, they will not speak freely
- 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 14 years old, and you had to talk to an "adult."
- Let the student teach you something.

Sample Questions

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?

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 a typical Judging Day

7:00 am to 8:00am	Judges arrive and get ready Judges assignments and score sheets distributed Judges begin project category review Judging of assigned projects begin
10:30 am – 12:00 pm	Lunch is served and Judges are welcome to take a break to eat
12:00 pm	High school judges meet to get interview assignments
12:15 pm	9-12 interviews begin
12:00 pm	5-6 & 7-8 category judging completed.
1:00pm	5-6 & 7-8 Lead Judges begin Grand prize judging for lower divisions
2:00 pm	9-12 Judging completed and projects are ranked
2:30 pm	Second round of interviews begin if needed

Judging Hints & Tips

- Look at all of your category exhibits before starting to judge your exhibits.
- Don't be late and pace your work to keep on schedule.
- Set timing goals for your exhibits (10-15 min per project)
- Contestants understanding is as important as the look of the project.
- Every Project must receive a passing Mark.
- Revise your scores as many times as you need.
- Don't tally judging sheet in front of Contestants.
- If stuck on a project, see the Judges Host
- Lower Division Judging is expected to finish about 2:30 to 3:00. Lead Judges remain to select Grand prize winners and must be prepared to stay until 4:00

How to Judge a Project

After you have reviewed all the projects in your category you can now focus on your assigned projects. Before starting take a quick second look 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.) Lower Division: look for something that looks close to an abstract
- Read through the workbook (journal and/or full report). Assess it.
- Write down your questions and compliments, for use in the Interview, and add to comments section of the judging form.
- Note your points on your summary sheet.

- Remember not to "team-judge" but be sure to ask your Judges Host or another experienced judge if you have any questions during judging.
- Turn in your score sheet.
- Once all projects judged:

    1) Review your summary sheet.
    2) Which one is best?
    3) Which should be at the bottom of the list?
    4) Is your impression consistent with the points you've assigned?
    5) Decide if you need to revise scores and if so give your revisions to the Judging Host.

Goals for using this scoring system

The judging forms we use at the YES Fair are also used by Science Fair Central with some of our own edits. The following section explains how the sheet works and we feel it will help you as a Judge accurately “grade” the project.

Our goal is to reduce the amount of time spent in determining the placements of awards.

The purpose of the interview process is to prepare the students for ISEF. All High School projects will have an interview with two to three judges. These Judges will have already read and scored the project. The projects with the higher scores (ISEF potential) will be interviewed by a second interview round with all Judges.

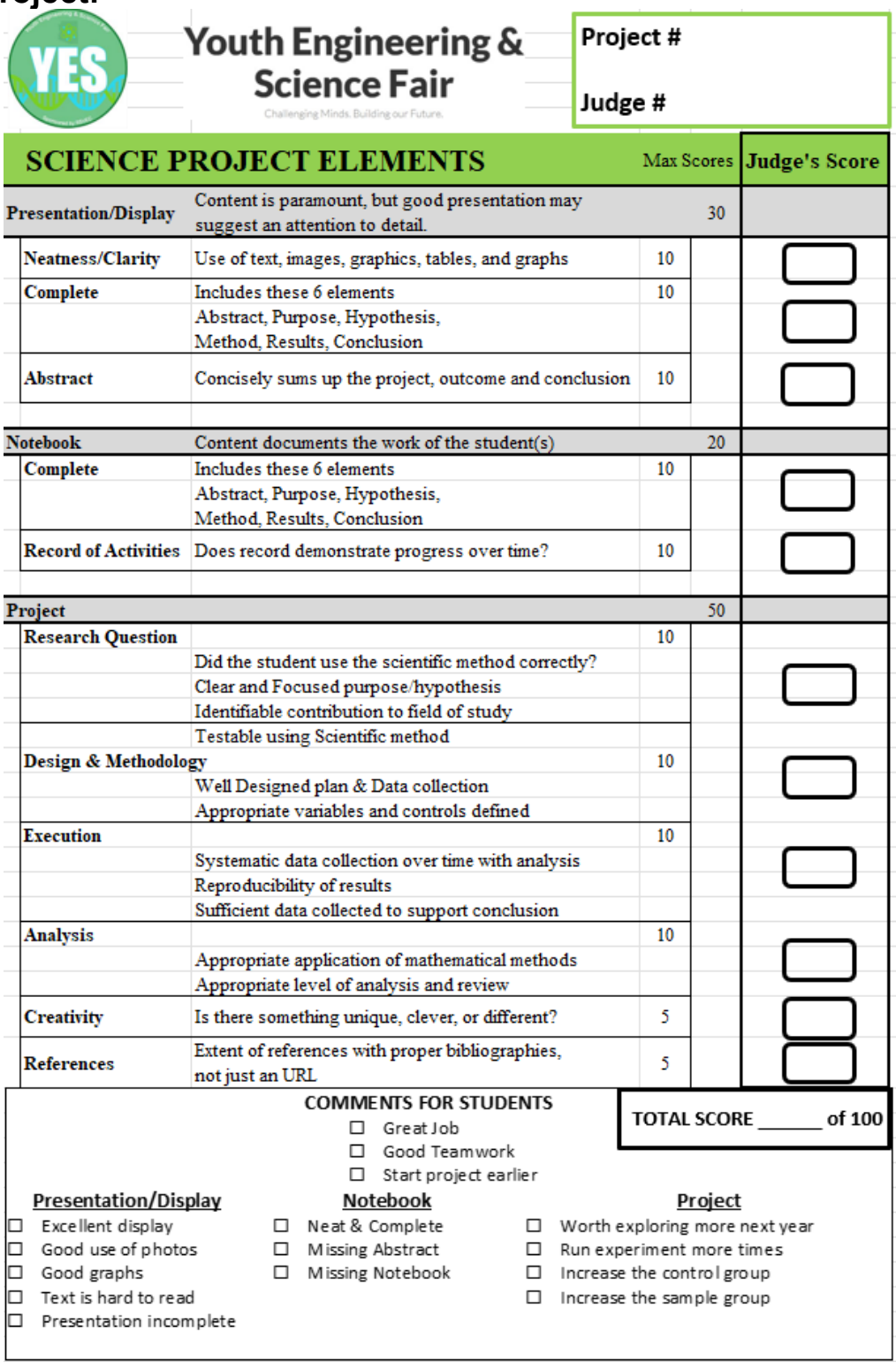
Score sheets will then be tallied, and the projects ranked by score. In the case of a tie at a specific award level, discussion and consensus of the Judges will determine final ranking.

Thanks to workshops at the International Science & Engineering Fair we will be using a scoring method to take the scores entered by the Judges and converting them to single Standard Deviation. So variances in how the Judges score projects will be normalized for project placements. We have tested this scoring change using a prior year sample and it does balance out the scores very well.

Using the Judging Form

The judging sheets have been updated and split into two categories: science project and engineering project. You will need to use the correct one depending on the type of project.

Science Project:



Youth Engineering & Science Fair

Challenging Minds, Building our Future.

Project #

Judge #

SCIENCE PROJECT ELEMENTS			Max Scores	Judge's Score
Presentation/Display	Content is paramount, but good presentation may suggest an attention to detail.		30	
Neatness/Clarity	Use of text, images, graphics, tables, and graphs	10		☐
Complete	Includes these 6 elements Abstract, Purpose, Hypothesis, Method, Results, Conclusion	10		☐
Abstract	Concisely sums up the project, outcome and conclusion	10		☐
Notebook	Content documents the work of the student(s)		20	
Complete	Includes these 6 elements Abstract, Purpose, Hypothesis, Method, Results, Conclusion	10		☐
Record of Activities	Does record demonstrate progress over time?	10		☐
Project			50	
Research Question	Did the student use the scientific method correctly? Clear and Focused purpose/hypothesis Identifiable contribution to field of study Testable using Scientific method	10		☐
Design & Methodology	Well Designed plan & Data collection Appropriate variables and controls defined	10		☐
Execution	Systematic data collection over time with analysis Reproducibility of results Sufficient data collected to support conclusion	10		☐
Analysis	Appropriate application of mathematical methods Appropriate level of analysis and review	10		☐
Creativity	Is there something unique, clever, or different?	5		☐
References	Extent of references with proper bibliographies, not just an URL	5		☐

COMMENTS FOR STUDENTS

- ☐ Great Job
- ☐ Good Teamwork
- ☐ Start project earlier

TOTAL SCORE _____ of 100

Presentation/Display

- ☐ Excellent display
- ☐ Good use of photos
- ☐ Good graphs
- ☐ Text is hard to read
- ☐ Presentation incomplete

Notebook

- ☐ Neat & Complete
- ☐ Missing Abstract
- ☐ Missing Notebook

Project

- ☐ Worth exploring more next year
- ☐ Run experiment more times
- ☐ Increase the control group
- ☐ Increase the sample group

Engineering Project:

Youth Engineering & Science Fair

Challenging Minds. Building our Future.

Project #

Judge #

ENGINEERING PROJECT ELEMENTS		Max Score		Judge's Score
Presentation/Display	Content is paramount, but good presentation may suggest an attention to detail.		30	
Neatness/Clarity	Use of text, images, graphics, tables, and graphs	10		☐
Complete	Includes these 6 elements Abstract, Introduction, Problem, Goals, Results, Conclusions	10		☐
Abstract	Concisely sums up the problem, proposed solution, and conclusion	10		☐
Notebook	Content documents the work of the student(s)		20	
Includes: 5 elements	Includes these 6 elements Abstract, Introduction, Problem, Goals, Results, Conclusions	10		☐
Record of Activities	Does record demonstrate progress over time?	10		☐
Project	The quality of the project from conception to review		50	
Research Problem		10		
	Description of a practical need or problem to be solved Definition of criteria for proposed solution Explanation of constraints			☐
Design & Methodology		10		
	Exploration of alternatives to address need or problem Identification of a solution Development of a prototype/model			☐
Execution		10		
	Prototype demonstrates intended design Prototype has been tested in multiple conditions/trials Prototype demonstrates engineering skill & completeness			☐
Analysis		10		
	Appropriate application of mathematical methods Appropriate level of analysis and review			☐
Creativity	Is there something unique, clever,or different?	5		☐
References	Extent of references with proper bibliographies, not just an URL	5		☐

COMMENTS FOR STUDENTS

- ☐ Great Job
- ☐ Good Teamwork
- ☐ Start project earlier

TOTAL SCORE _____ of 100

Presentation/Display

- ☐ Excellent display
- ☐ Good use of photos
- ☐ Good graphs
- ☐ Text is hard to read
- ☐ Presentation incomplete

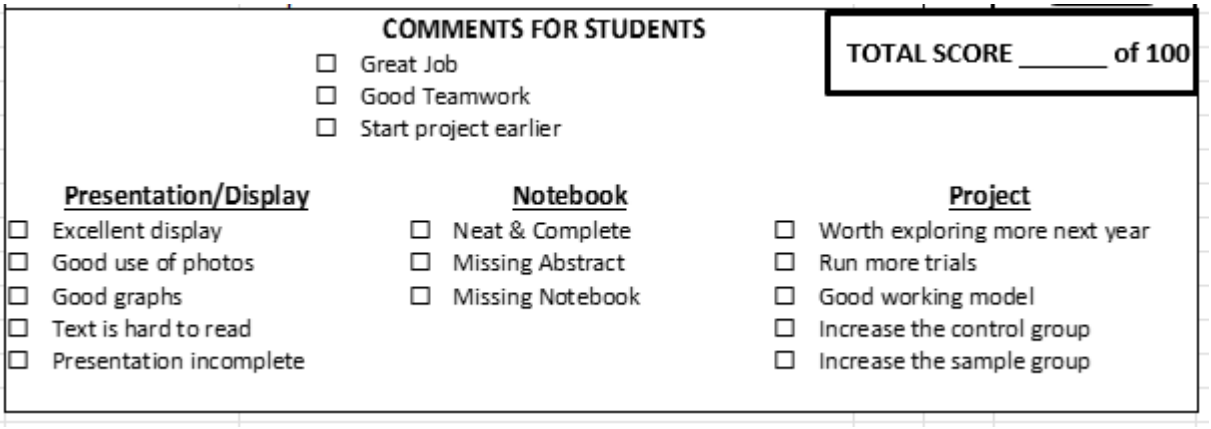
Notebook

- ☐ Neat & Complete
- ☐ Missing Abstract
- ☐ Missing Notebook

Project

- ☐ Worth exploring more next year
- ☐ Run more trials
- ☐ Good working model
- ☐ Increase the control group
- ☐ Increase the sample group

Feedback to the Student:



COMMENTS FOR STUDENTS

- ☐ Great Job
- ☐ Good Teamwork
- ☐ Start project earlier

TOTAL SCORE _____ of 100

Presentation/Display	Notebook	Project
☐ Excellent display	☐ Neat & Complete	☐ Worth exploring more next year
☐ Good use of photos	☐ Missing Abstract	☐ Run more trials
☐ Good graphs	☐ Missing Notebook	☐ Good working model
☐ Text is hard to read		☐ Increase the control group
☐ Presentation incomplete		☐ Increase the sample group

The students will see these comments. They get a report card that will list their low, high, and average score on each of the scoring sections along with these comments.

Final Word

We would like to thank you for your participation as a volunteer judge. We could not have a successful fair without your time and effort.

The Yes Fair would also like to thank the Science Fair central, Society for Science, and Bay Area Science and Engineering Fair of Ontario Canada for development of our scoring sheet and judge's manual.