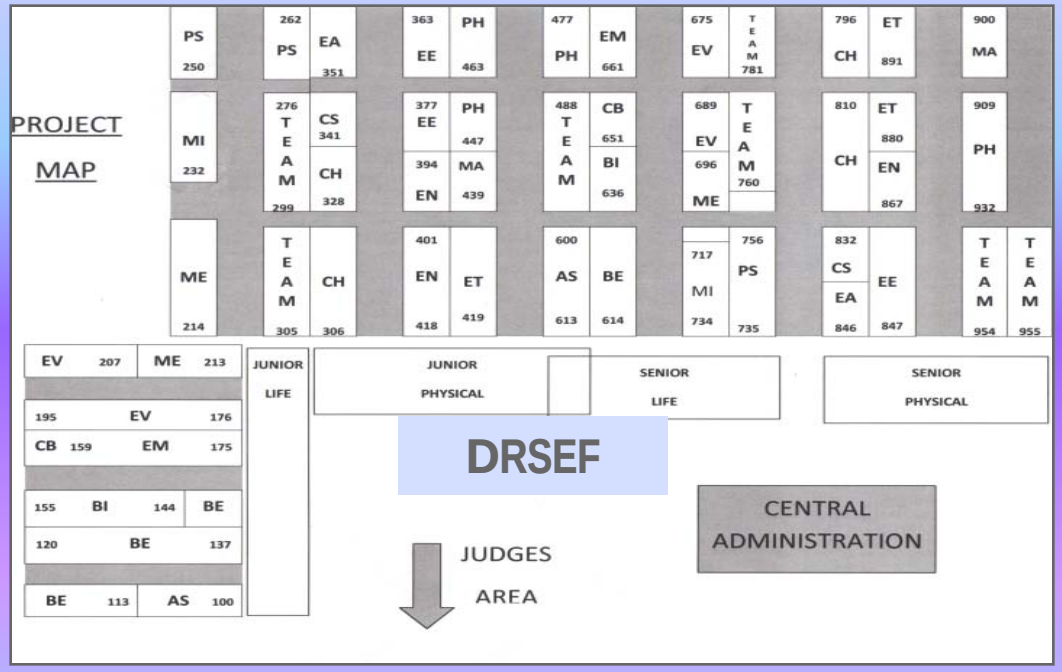


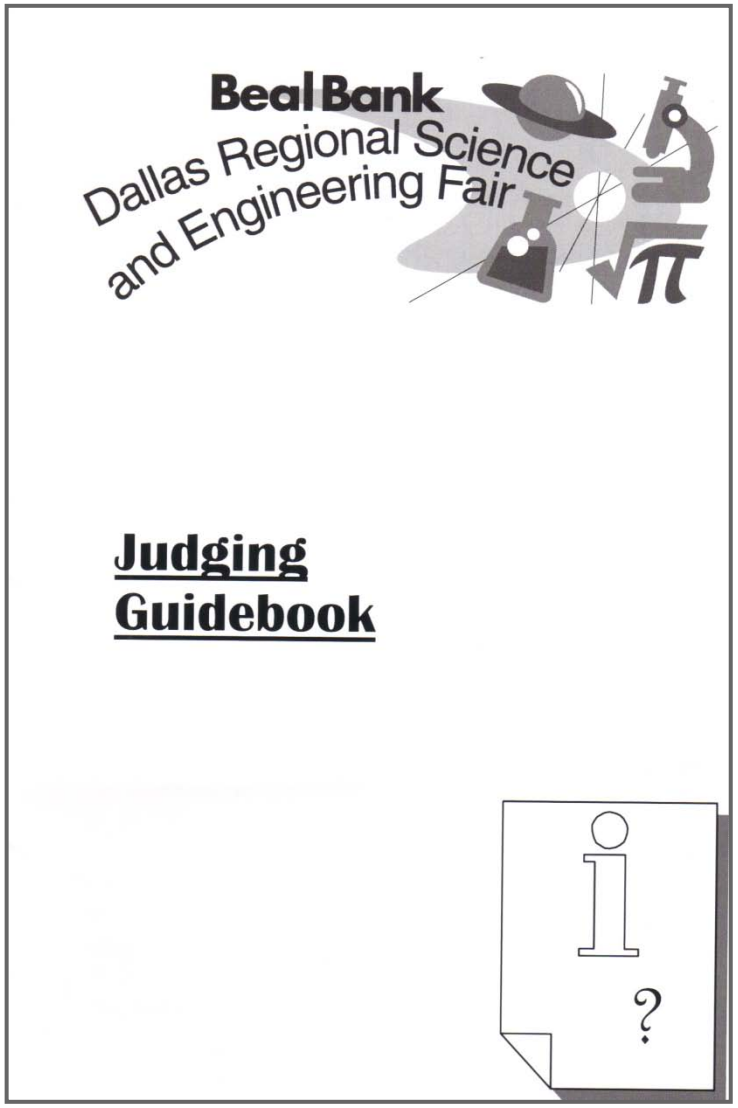
ISEF Judging Process

Agenda

- Judging Overview
- Judging Details
  - Scoring Sheet
    - Creativity
    - Scientific Thought / Engineering Goals
    - Skills
    - Thoroughness
    - Clarity
    - Teamwork
  - Judging DO's and DON'Ts
- Summary

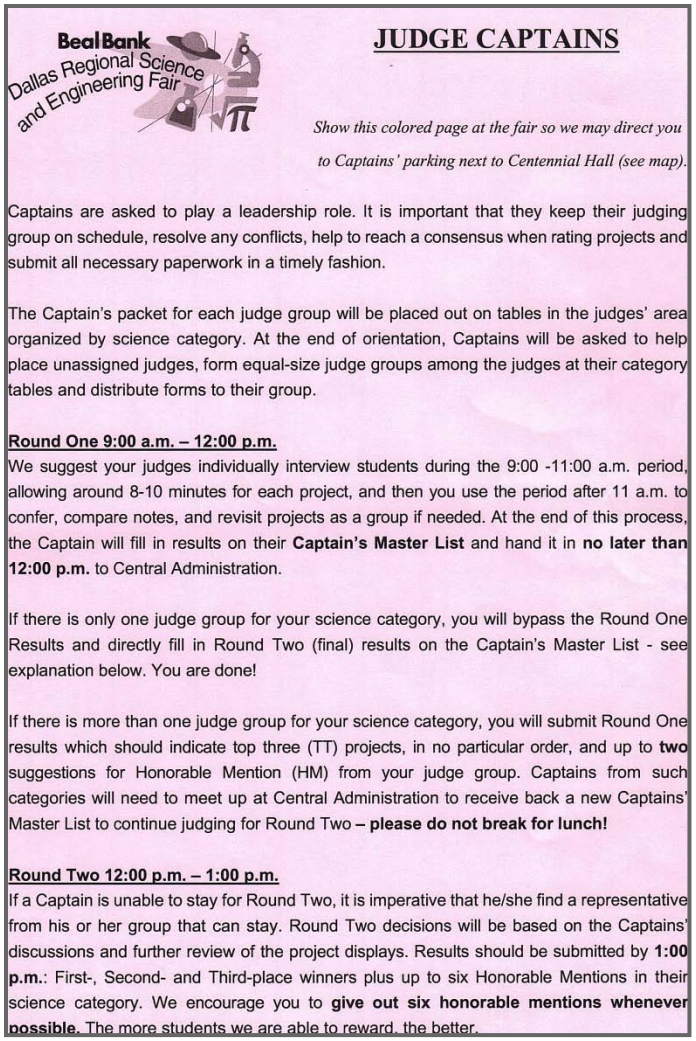
Judging Overview

Judging Guidebook



- "***Thou Shall NOT Judge***" by arbitrary means, but…
- "***Thou Shall Judge***" by following ISEF guidelines

Judge Groups and Judging Phases



Beal Bank
Dallas Regional Science and Engineering Fair

JUDGE CAPTAINS

Show this colored page at the fair so we may direct you to Captains' parking next to Centennial Hall (see map).

Captains are asked to play a leadership role. It is important that they keep their judging group on schedule, resolve any conflicts, help to reach a consensus when rating projects and submit all necessary paperwork in a timely fashion.

The Captain's packet for each judge group will be placed out on tables in the judges' area organized by science category. At the end of orientation, Captains will be asked to help place unassigned judges, form equal-size judge groups among the judges at their category tables and distribute forms to their group.

Round One 9:00 a.m. – 12:00 p.m.

We suggest your judges individually interview students during the 9:00 -11:00 a.m. period, allowing around 8-10 minutes for each project, and then you use the period after 11 a.m. to confer, compare notes, and revisit projects as a group if needed. At the end of this process, the Captain will fill in results on their **Captain's Master List** and hand it in **no later than 12:00 p.m.** to Central Administration.

If there is only one judge group for your science category, you will bypass the Round One Results and directly fill in Round Two (final) results on the Captain's Master List - see explanation below. You are done!

If there is more than one judge group for your science category, you will submit Round One results which should indicate top three (TT) projects, in no particular order, and up to **two** suggestions for Honorable Mention (HM) from your judge group. Captains from such categories will need to meet up at Central Administration to receive back a new Captains' Master List to continue judging for Round Two **– please do not break for lunch!**

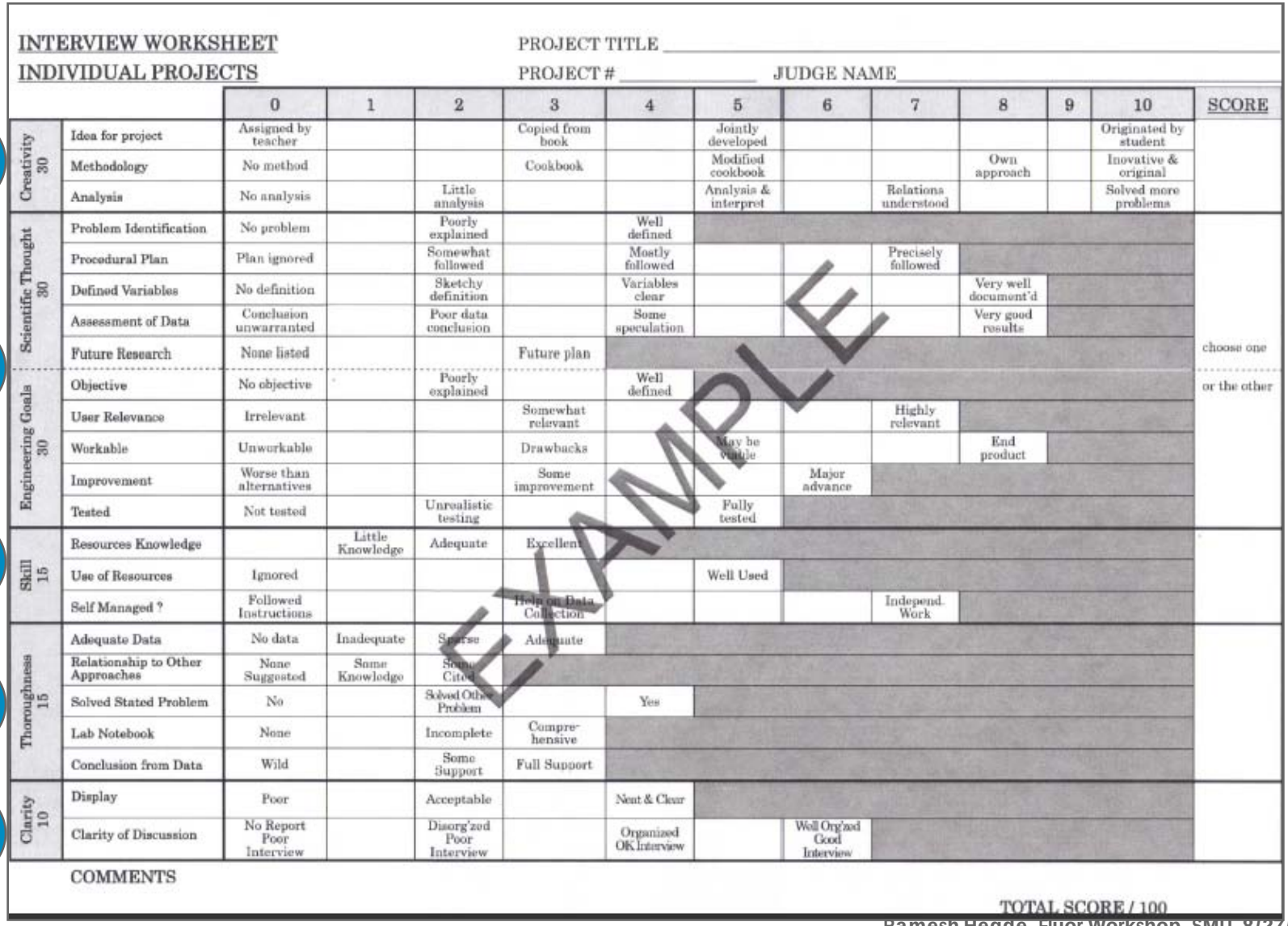
Round Two 12:00 p.m. – 1:00 p.m.

If a Captain is unable to stay for Round Two, it is imperative that he/she find a representative from his or her group that can stay. Round Two decisions will be based on the Captains' discussions and further review of the project displays. Results should be submitted by **1:00 p.m.**: First-, Second- and Third-place winners plus up to six Honorable Mentions in their science category. We encourage you to **give out six honorable mentions whenever possible.** The more students we are able to reward, the better.

- Judging in two rounds
  - Large number of projects in a Science category
  - More than one Judge Group
  - Availability of enough judges
- Round One (9:00 AM – 12:00 Noon)
  - 8 – 10 min per project
  - Individual one-on-one interviews or group interviews
  - Short list the top 3 and HM in the group
- Round Two (12:00 Noon – 1:00 PM)
  - Judge groups confer and compare the short lists from each group
  - Decide the final winners and HMs

Judging Details

Scoring Sheet



INTERVIEW WORKSHEET
INDIVIDUAL PROJECTS

PROJECT TITLE _____

PROJECT # _____ JUDGE NAME _____

		0	1	2	3	4	5	6	7	8	9	10	SCORE
Creativity 30	Idea for project	Assigned by teacher			Copied from book		Jointly developed					Originated by student	
	Methodology	No method			Cookbook		Modified cookbook			Own approach		Inovative & original	
	Analysis	No analysis		Little analysis			Analysis & interpret		Relations understood			Solved more problems	
Scientific Thought 30	Problem Identification	No problem		Poorly explained		Well defined							
	Procedural Plan	Plan ignored		Somewhat followed		Mostly followed			Precisely followed				
	Defined Variables	No definition		Sketchy definition		Variables clear				Very well document'd			
	Assessment of Data	Conclusion unwarranted		Poor data conclusion		Some speculation				Very good results			
	Future Research	None listed			Future plan								choose one
Engineering Goals 30	Objective	No objective		Poorly explained		Well defined							or the other
	User Relevance	Irrelevant			Somewhat relevant				Highly relevant				
	Workable	Unworkable			Drawbacks		May be viable			End product			
	Improvement	Worse than alternatives			Some improvement			Major advance					
	Tested	Not tested		Unrealistic testing			Fully tested						
Skill 15	Resources Knowledge		Little Knowledge	Adequate	Excellent								
	Use of Resources	Ignored					Well Used						
	Self Managed ?	Followed Instructions			Help on Data Collection				Independ. Work				
Thoroughness 15	Adequate Data	No data	Inadequate	Sparse	Adequate								
	Relationship to Other Approaches	None Suggested	Some Knowledge	Some Cited									
	Solved Stated Problem	No		Solved Other Problem		Yes							
	Lab Notebook	None		Incomplete	Compre-hensive								
	Conclusion from Data	Wild		Some Support	Full Support								
Clarity 10	Display	Poor		Acceptable		Neat & Clear							
	Clarity of Discussion	No Report Poor Interview		Disorg'zed Poor Interview		Organized OK Interview		Well Org'zed Good Interview					

COMMENTS

TOTAL SCORE / 100

EXAMPLE

1 2 3 4 5

1 Creativity

- Total => Individual = 30; Team = 25
- Spans project ideation, methodology and analysis
- Does the project show originality in the questions asked, approach used and/or problem addressed?
- Any new equipment designed or constructed?
- During interview, probe deeper to know:
  - Where did they get the project idea from?
  - The detailed process/questions asked/background research done prior to deciding on the project topic
  - Is it a cookbook approach or copied from a text?
  - If anyone helped in the “ideation” substantially

2. a Scientific Thought

- Total => Individual = 30; Team = 25
- Is the problem stated clearly? Any scientific literature search?
- Are the variables clearly defined, identified and categorized?
- Did they document the methodology well?
- If Controls were necessary and were they correctly used?
- Are multiple experimental units used in the experiment?
- Are there adequate data to support the conclusions?
- What are the limitations of the research? How are they planning to address them in future research?
- During interview, probe deeper to know:
  - Participant's/Team's understanding of experimentation fundamentals
  - Variables … Control vs. "Constant"

2. b

Engineering Goals

- Total => Individual = 30; Team = 25
- Does the project have a clear objective? Is the objective relevant to the potential user's needs?
- Is the proposed solution workable and economically feasible?
- Is the solution a significant improvement over previous alternatives?
- Has the solution been tested for performance under conditions of use?
- During interview, probe deeper to know:
  - Participant's/team's understanding of engineering concepts, theory and principles
  - If sound engineering principles and theory were leveraged in the design and construction of the gadget

3 Skills

- Total => Individual = 15; Team = 12
- Does the participant/team have the required lab/computer/design skills to obtain supporting data?
- Was the project completed under adult supervision or did the student/team do their work by themselves?
- Did they design/build the equipment independently or was it borrowed? Was the instrument part of the laboratory where the student worked?
- During interview, probe deeper to know:
  - If the participant/team received any assistance from parents, teachers, scientists and/or engineers
  - Details of the equipment/instrument design, construction and use

4 Thoroughness

- Total => Individual = 15; Team = 12
- Was the stated purpose carried to completion within the scope of the original intent?
- Are the data collected and conclusions drawn based on a single experiment or replications – experimental units and experiments?
- How complete are the project notes and/or activity logs?
- Did they do a thorough scientific literature search – to relate/compare their results with the ones already published? Did they propose any alternative explanations?
- During interview, probe deeper to discover:
  - Any discrepancies between their notes & activity logs (log book) vs. what is presented
  - Participant/team's understanding of the need for replication

5 Clarity

- Total = 10 (Individual/Team)
- How clearly are the data and results presented?
- Does the written material reflect the participant's (team's) understanding of the research project?
- How well does the display board explain the project?
- Did the project owner(s) perform all the work or did someone help?
- During interview, get to know:
  - Specifics of their presentation
  - Exploration of alternative methods of presentation
  - If anyone helped on the project substantially

6 Teamwork – Team Projects Only

- Total = 16 points
- Are the tasks and contributions of each team member clearly outlined?
- Was each team member fully involved with the project? Is each team member familiar with all the aspects?
- Does the final work reflect the coordinated efforts of all team members?
- During interview, watch for:
  - Any one member dominating
  - Make sure you moderate it such that your questions are directed at and spread evenly across other members as well

Judging DO's and DON'Ts

- Judging DO's

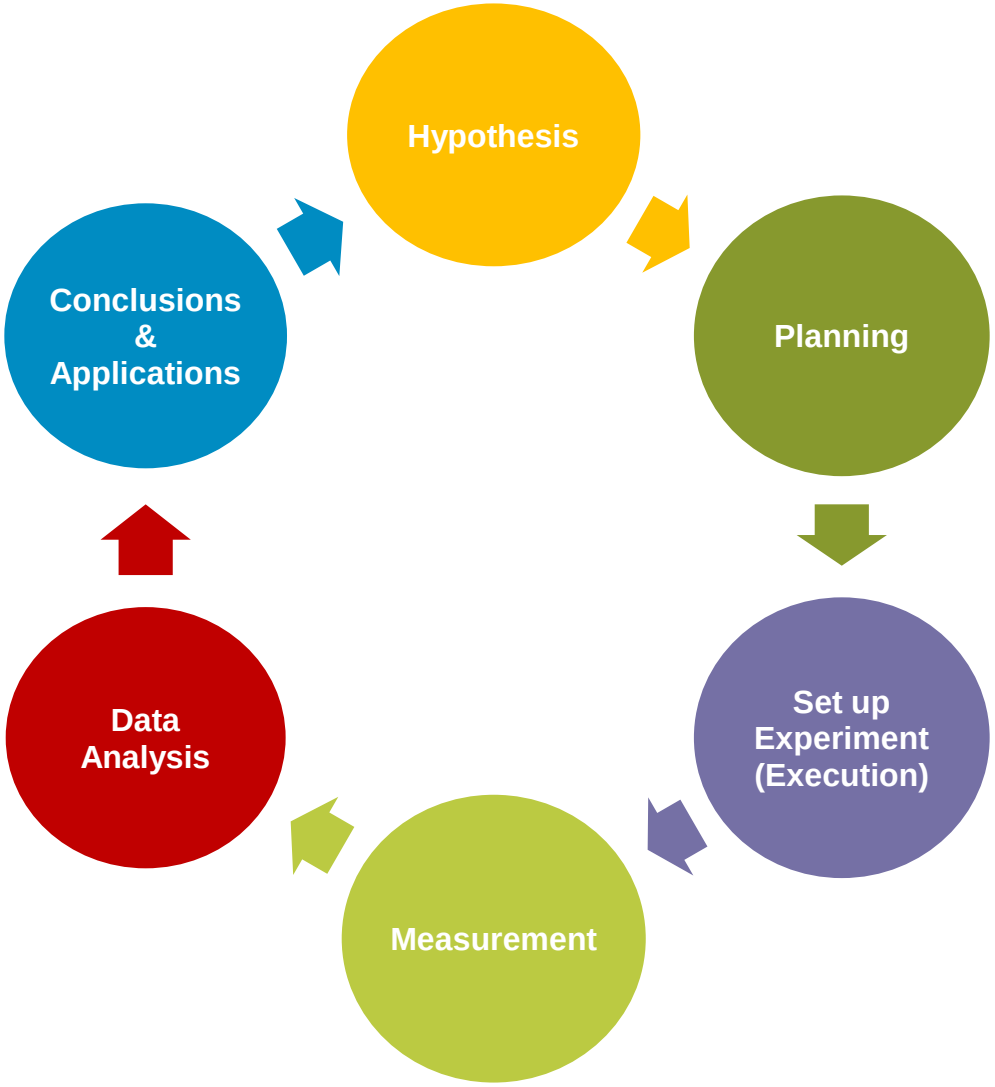
  - Be fair, professional and respectful
  - Spend same amount of time with each participant / project
  - Probe that covers the breadth of judging criteria
  - Interview all the participants regardless of project "qualification"

- Judging DON'Ts

  - Ask about their personal info - name, school, lab affiliation etc.
  - Lecture … not a good use of your limited time there!
  - Be judgmental, e.g., this project couldn't have been done by this individual!
  - Get carried away by the slickness of presentation
  - Award the project if red-dotted, i.e., disqualified

Summary

Experimentation: A Continuous Process

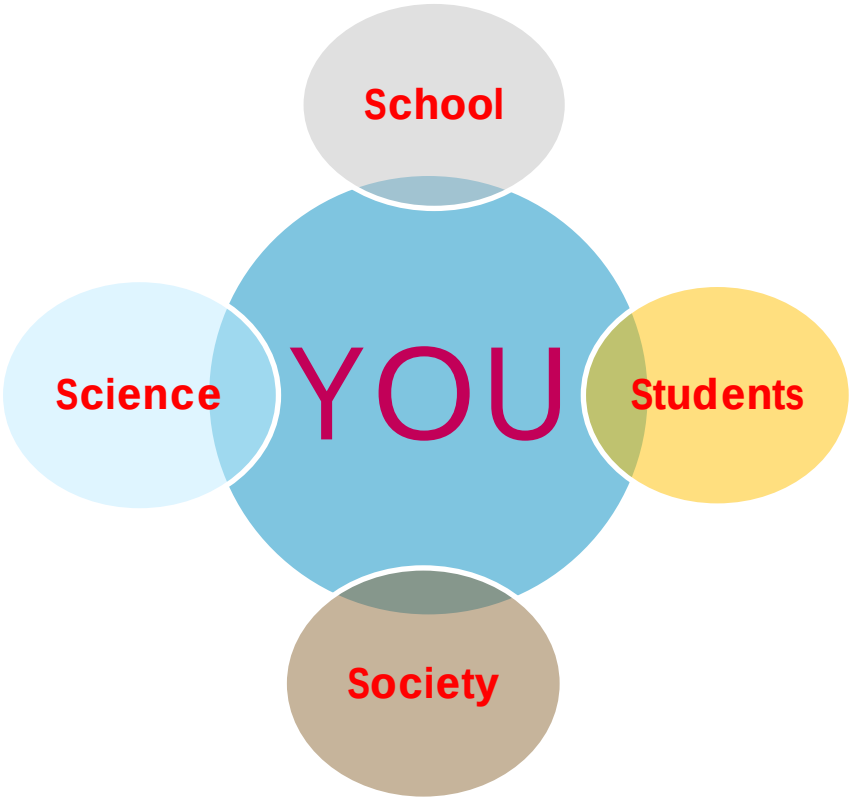


ISEF Judging Process

- Objective and unbiased guidelines
- Some things to look for:
  - Process of hypothesis formulation
  - Structured approach in planning and execution
  - Appropriate analysis
  - Good understanding of variables, e.g., control vs. constant
  - Use of multiple experimental units and observations
  - Validity of conclusion(s) supported by data gathered and analyzed

Your Role – YOU and the 4 S's

- YOU have a key role as a teacher and educator
  - Get the children excited about science
  - Make sure the "fundamentals" are understood and applied
  - Foster an environment of scientific thinking
  - Manage expectations



Our Society Today – Shifting Priorities

Poll: 1776 date puzzles some Americans
By: CNN Political Unit

(CNN) - A slight majority of Americans know what year the United States declared independence, according to a new national survey.

The Marist Poll released in honor of America's Independence Day, July 4, showed 58 percent of residents aware their country declared independence in 1776. Twenty-six percent were unsure and 16 percent named another date. **Younger Americans, those under 30 years of age, were less likely to have the correct answer with 31 percent, compared to Americans between the ages of 45 and 59 who said 1776 75 percent of the time.**

One in four Americans also didn't know from which country the United States seceded, with 76 percent correctly naming Great Britain, 19 percent unsure and 5 percent naming another country.

The survey of 1,003 adults was conducted between June 15 and June 23 via telephone and had a sampling error of plus or minus 3 percentage points.

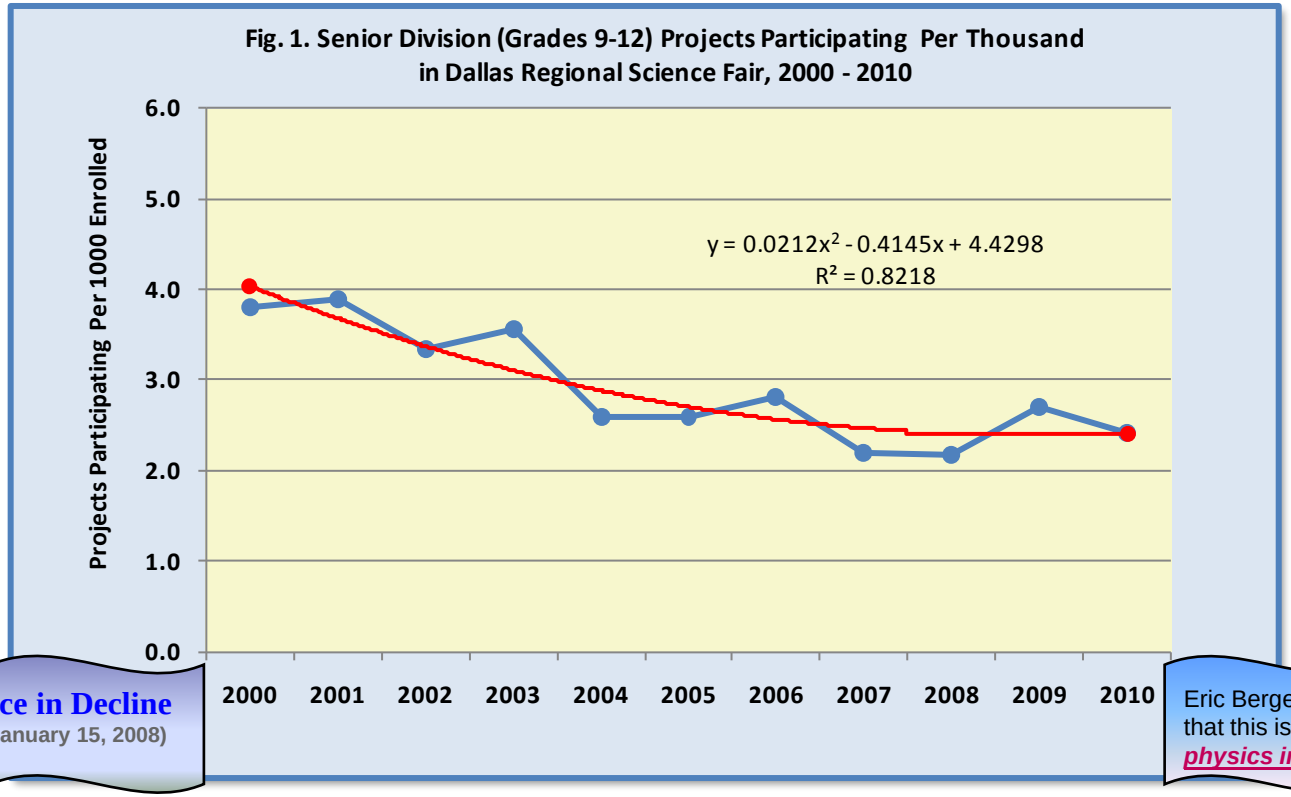
http://politicalticker.blogs.cnn.com/2011/07/04/poll-1776-date-puzzles-some-americans/?hpt=hp_t2

Our Society Today – Shifting Priorities

"… Schools have nothing to do with this. Education and learning are just not as important in our society as socializing and entertainment. If education was, then parents would be sending their children to cram-schools until 10PM like they do in Asian countries, rather than allowing them to stay up until midnight playing video games."

"This article and poll just proves how inadequate our American educational system is. We, in Texas, have plenty of money for football programs in high school with coaches and athletic directors making well into the six figure salaries, building a $60 million dollar football stadium all the while cutting teachers and real education programs."

Our Society Today – Consequences of Priority Shift



US Basic Science in Decline
... by *Mike Treder* (January 15, 2008)

Eric Berger's *SciGuy* blog tells us that this is... ***A dark time for "big" physics in America***

- Drop in participation at Dallas Regional Science Fair
- Declining interest in science? For more details refer – *Texas Science Teacher, Apr 2011 vol. 40(1): 25-32*

Our Society Today – Changing Competitive Landscape

- Performance of U.S. Teens in the International Context (PISA, 2006*) -
  - Ranked 21st in Science compared to their peers around the world
  - Scored lower than the OECD average
  - Lagged behind their peers in 6 of the 27 non-OECD countries in Science literacy

*** Program for International Student Assessment (PISA) 2006 – assessment of the ability of 15-year-olds to apply Math and Science knowledge in real-life situation**

Our Priorities and Responsibilities

- Set priorities right
- Take a more pro-active role – influence our leaders
- Good example - Washington State's STEM initiative

Local leaders look to boost interest in science, technology

By **ANDY JONES, Bremerton Patriot Staff writer** , Nov 26 2009, 11:41 AM · **UPDATED**

From Boeing to Microsoft to Amazon.com, it is no secret Washington state is a hotbed of technological innovation. As Carolyn Landel sees it,

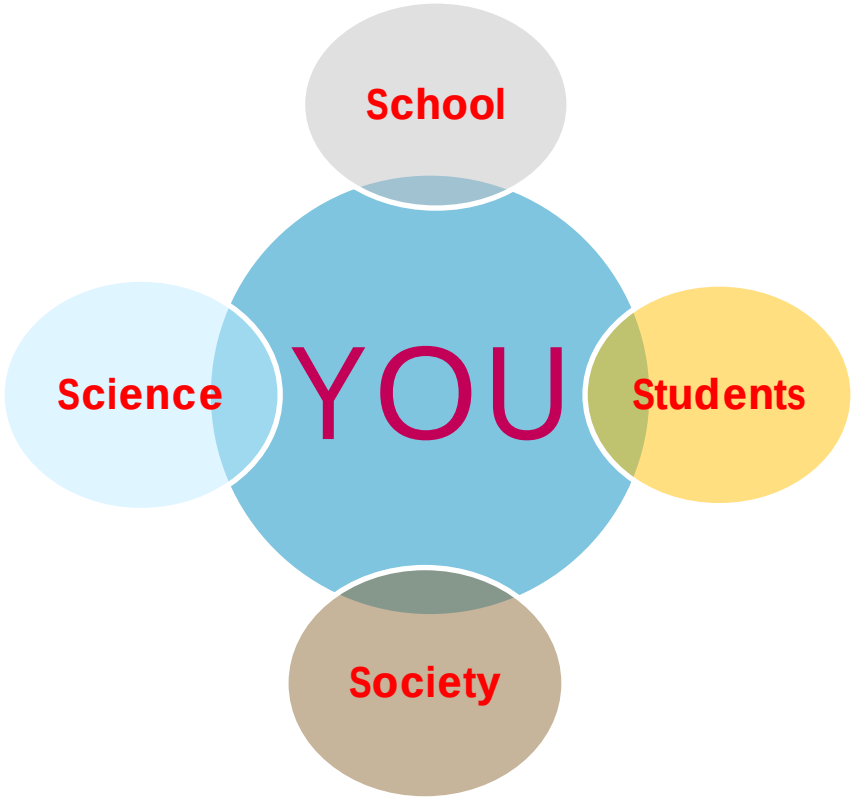
Washington state's education system is falling woefully short in providing its businesses proficient students in science, technology, engineering and mathematics, or STEM fields.

The state has the fourth-highest concentration of technology-based industries of any state in the United States, but ranks 46th in participation of its science and engineering graduate degree programs, according to the Technology Alliance's 2009 Washington State Innovation Policy Toolkit.

The Washington STEM Initiative, which began development in June 2008, aims to boost efficiency in these fields, from kindergarten to college, said Landel, the project's director. The initiative has so far received funding from multiple philanthropies, including the Bill & Melinda Gates and the Paul G. Allen foundations.

http://www.pnwlocalnews.com/kitsap/pat/news/74918247.html

When your role and our priorities and responsibilities are aligned …



We
can
expect to see
the "slide" seen in the
previous 4 slides
make a U-turn


Thank You!
Questions?