



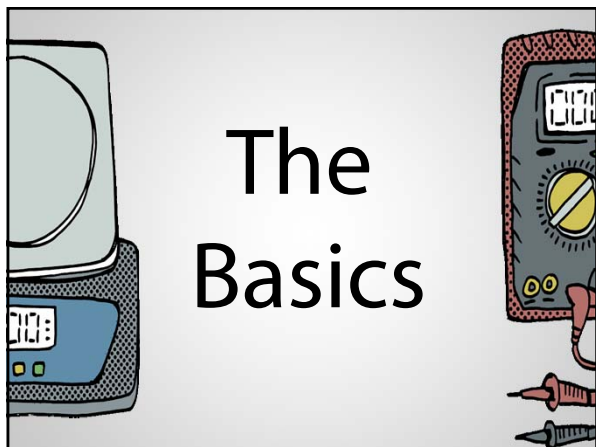
Goals & Agenda

Goals

- Help you plan a science fair from beginning to end.
- Address potential issues and challenges.

Agenda

- The Basics
- Organizing Student Projects
- Organizing a Schoolwide Fair
- District Science Fair Guidelines and Rules
- Resources & Questions



The Science Fair

Benefits?
Challenges?

Science is Cool

Real Benefits

- Give students a creative outlet
- Provide an opportunity to follow an interest
- Generate excitement for science
- Apply and extend concepts learned in class
- Encourage student collaboration
- Build positive school culture

OUSD Science Fair Overview

- **Non-competitive**
- All participants "win"
- Celebration @ Chabot Space & Science Center, May 20-22, 2013
- 6 Projects/school
- Food, family activities, planetarium show, exhibits

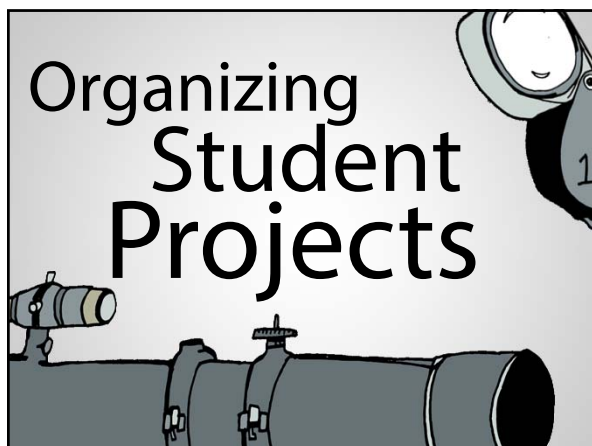
Types of Projects

1. Science Investigation
2. Systematic Observation
3. Engineering Challenge

Projects can use or build on existing curriculum (i.e. FOSS).



Organizing Student Projects



Project Teams

How comfortable are you managing multiple student projects **for quality?**

- K/1 Suggestion: whole class project
- 4/5 Suggestion: group project
- 2/3 Teacher discretion

OUSD *discourages* individual projects.

Identifying the Right Question

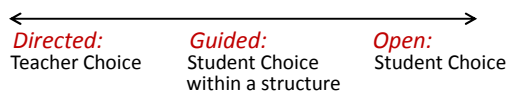
Developing a question

- Keep a running list during year
- Encourage student interests
- Encourage relevant or societally important questions
- FOSS focus questions (or extension)



Who Chooses the Question?

Spectrum:



Factors:

- Science experience?
- Comfort in managing group work?
- Comfort with 'not knowing?'
- Time

Materials Exploration

Observe & explore materials



- Materials down
- Record as many questions as possible
- One question/sticky note



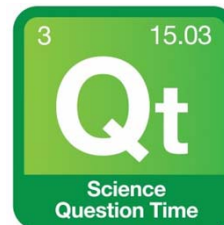
Sorting questions

- Investigable
- Non-investigable



Investigable questions

- Access to appropriate tools
- Enough time
- Discrete enough to be answered in single investigation
- Safe



"Measuring questions"
"Comparison questions"
"What happens if..."

Non investigable questions

- Unanswerable
- Not "scientific in nature"
- Too big (often "Why" or "How" questions)
- Answer already available - *"Ask an Expert" question*
- Not enough time - *"Million Year" question*
- Not enough money - *"Million Dollar" question*
- Too dangerous



The Variables Scan: Turning Questions

Ex: Why do seeds grow?

1. Identify the components of the original question

The Variables Scan: Turning Questions

Ex: Why do seeds grow?

1. Identify the components of the original question

- *Seeds*
- *(water, soil, sunlight)*

2. Ask "How can each variable be changed?"

- **Seeds:** size, type, number
*How does the **number** of seeds in my cup affect their growth?*
- **Water:** amount, chemistry, temperature
How does water salinity affect seed germination?

Sort Your Questions

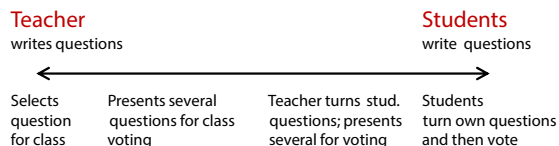
- **Sort** your questions into:
 - Investigable
 - Non-investigable*
- *If necessary, **turn** questions using the Variables Scan*



Guiding Students' Choice of Questions

1. ✓
2. ✓
3. ✓
4. ✓
5. Write each investigable question on sentence strip
6. Post on wall
7. Gallery walk to select a desired question

The Spectrum Revisited



Keeping Group Projects Doable

Another Spectrum:

- Same question, different "trials"
- Same umbrella question, different variables
- Different questions

Logistics – Making Time

- Backwards plan
 - Periodic check-ins/feedback
- Class time
 - Slow and steady
 - Dedicated focus
- As homework (!?)
- Lunch/after school club



Organizing a School-wide Fair



Advanced Planning: Big Picture



- Scheduling (Tues-Thurs)
- Timing (afterschool, custodial)
- Location:
 - Facilities Permit
 - Large Room (tables!)
- Administrator involvement
- Recognition (certs, ribbons, etc.)
 - Scan signature/mail merge
- Build excitement (signs, announcements)

Planning for Family/Community Event

- Invitations (flyer, wristbands, phone calls)
- Food as incentive (Dryers Ice Cream?)
- Program (student performances, raffle, photo board)
- Incentives (mandatory/extra credit to attend, stand/explain at board, remove on time)
- Students must attend with adults
- Plan ahead for afterschool program involvement

Planning for Project Evaluation

- Decide: Competitive or no?
- Adapt OUSD Rubrics for School Purposes
 - Broad: *inclusive but limited*
 - Science-focused: *targeted but valuable*
- Share rubric with faculty (& students) from beginning
- Confirm Judges (Science Prep/Lead, Principal, Community Scientists)

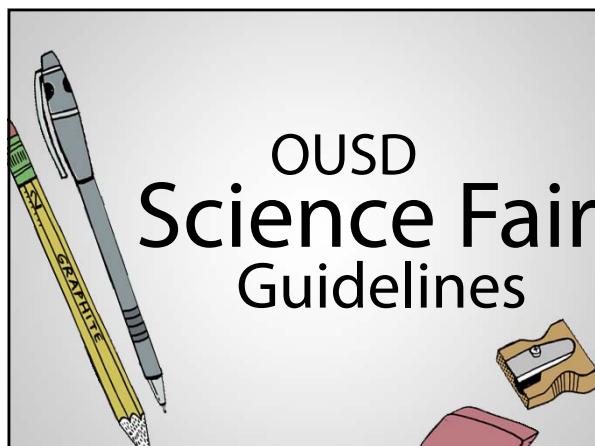


Day of Fair: Student Engagement

- Post & Review Rules for Self-Guided Tour
- Consider Adult Monitor for Orientation
- Tour with Buddy classrooms
- Focused Tour with Scavenger Hunt
- Students vote for Student Choice Award

Day of Fair: Project Evaluation

- Review rubric and calibrate with judges
- Select six to advance to OUSD Fair
- Identify awardees:
 - Top from each grade/class? Student/Principal choice?
 - Most original? Most creative? Best presentation?
- Finalize & Distribute Recognition Awards



OUSD Science Fair Guidelines

Safety Issues

- Animals, mold, body parts, blood
- Electricity, fire, water
- Human subjects
- Ed code violations

Important Dates

- Organize School Fair – Now until May 16
- Confirm Participation in OUSD Fair – Fax form by April 5
- Register Projects – Enter data online by May 16
- Deliver Projects to Chabot – May 20 between 2-6 pm
- Community Science Fair Celebration – May 22, 5-8 pm
- Take home ALL Projects – May 22, between 8-8:20 pm

Planning Resources

Request a site-based Science Fair PD (Principal to cvargas@ousd.k12.ca.us)

- Notes from today's PD
- Official OUSD Guidelines
- Question & project ideas
- Sample rubrics
- Sample student planning tools

Science Fair Project
Project Summary

6. Analysis & Conclusion

Analysis: What does your data mean?

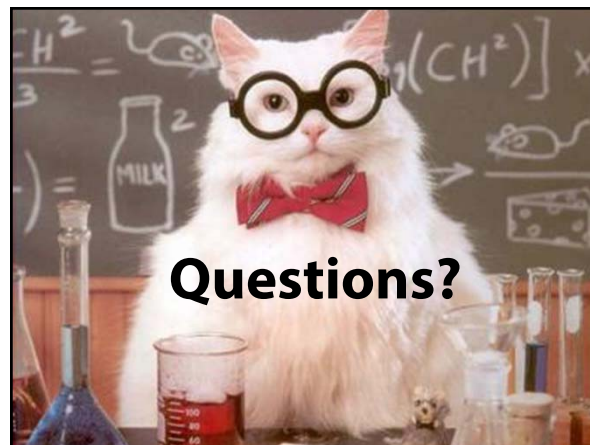
Claims	Evidence
What you think your data mean.	Specific data from the investigation that supports your claim.
I claim _____	I think this because _____
_____	_____
I also claim _____	I think this because _____
_____	_____

Conclusion: Now answer your research question.
I conclude that _____

Science in Oakland Website

<http://science.ousd.k12.ca.us>

- Category Descriptions
- Example Questions (related to FOSS)
- Rubrics
- Student Planning Packets
- Student Checklists
- Spanish-English Science Fair terms
- And more!



Evaluation



Thank you for your feedback as we GROW our science support for Oakland teachers.

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Logistics - Expenses

- Start with FOSS or existing classroom activities
- Promote low cost projects
- Support for financially challenged students
- Presentation Boards:
 - *Synopsis Outreach Foundation* donates (fall)
 - Poster paper & cardboard box as alternative
- Download photos instead of the actual items
- Ask for student contributions (money, items)
- School budget
- *Community Resources for Science*: Request for borrowing materials
- Donations (families, local business, *DonorsChoose.org*)