

The background of the slide is a light gray gradient with several realistic water droplets of various sizes scattered across it. The droplets have highlights and shadows, giving them a three-dimensional appearance. The main title is centered in the upper half of the slide.

SCIENCE FAIR EXPO A JUDGE'S PERSPECTIVE AND ORAL SPEAKING

DR. GUILLERMO AGUILAR

MECHANICAL ENGINEERING

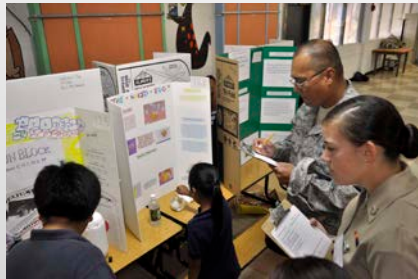
UNIVERSITY OF CALIFORNIA RIVERSIDE (UCR)

OUTLINE

1. HOW TO PICK A GOOD SCIENCE PROJECT?
 - GO TO LANDIS II AT 11:00 AM TO HEAR MICHAEL HORTON, ASSISTANT PRINCIPAL, HEMET USD
2. WHAT ARE JUDGES LOOKING FOR?
 - SCIENTIFIC METHOD
3. WHAT KIND OF QUESTIONS DO JUDGES ASK?
4. THE DO'S AND DON'TS OF JUDGING INTERVIEWS
5. TIPS ON HOW TO PRESENT YOUR PROJECT
6. EXAMPLES
7. QUESTIONS AND ANSWERS

WHAT ARE JUDGES LOOKING FOR (1)

- SCIENCE BUDDIES ([HTTP://WWW.SCIENCEBUDDIES.ORG/SCIENCE-FAIR-PROJECTS/TOP SCIENCE-FAIR JUDGING PERSPECTIVE.SHTML](http://www.sciencebuddies.org/science-fair-projects/top_science-fair_judging_perspective.shtml)) BY SANDRA SLUTZ
- NO TWO JUDGES WILL APPROACH YOUR SCIENCE PROJECT FROM THE SAME PERSPECTIVE.
- THEY COME FROM DIFFERENT PERSONAL AND PROFESSIONAL BACKGROUNDS.



- THEY MIGHT OR MIGHT NOT HAVE JUDGED AT THIS TYPE OF COMPETITION BEFORE, AND THEY MIGHT BE MORE OR LESS INFORMED ABOUT YOUR TOPIC.
- BUT, JUDGES WILL BE TRYING TO DETERMINE THE SAME GENERAL THING:

YOUR ABILITY TO INDEPENDENTLY CONDUCT AND COMMUNICATE ORIGINAL, MEANINGFUL SCIENCE OR ENGINEERING RESEARCH.

WHAT ARE JUDGES LOOKING FOR (2)

Factors judges use to make decisions

Creativity / originality

Scientific thought / engineering process

Background information / thoroughness

Skill / independence

What the judges are trying to determine

Is this work novel?

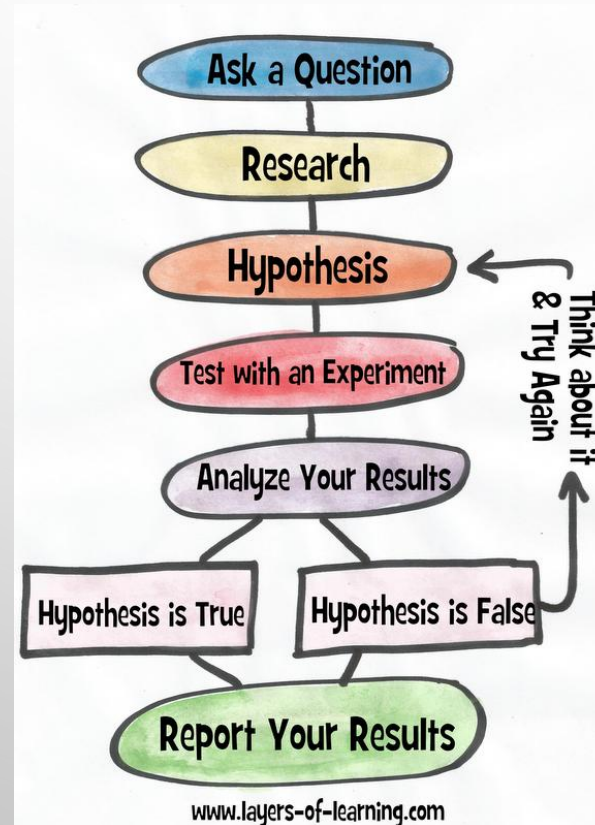
Did the student understand the **scientific/engineering method** and apply it appropriately?

Does the student understand what was done previously in the field?

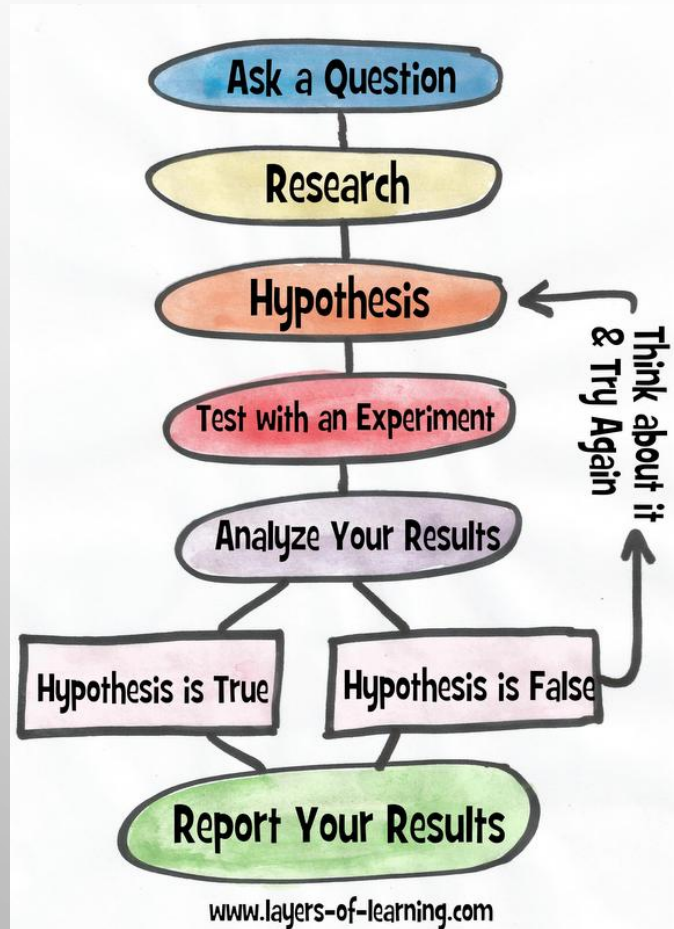
Who designed and carried out the bulk of the work?

SCIENTIFIC METHOD

- IT IS A SERIES OF STEPS THAT LEAD YOU FROM A QUESTION TO AN ANSWER.

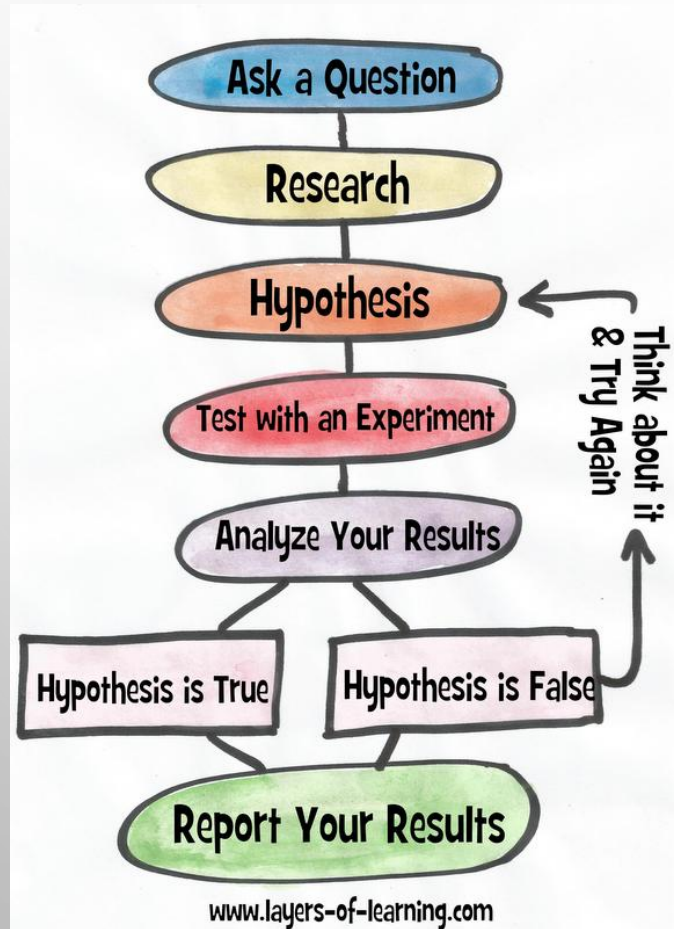


EXAMPLE OF SCIENTIFIC METHOD APPLIED TO AN OBSERVATION



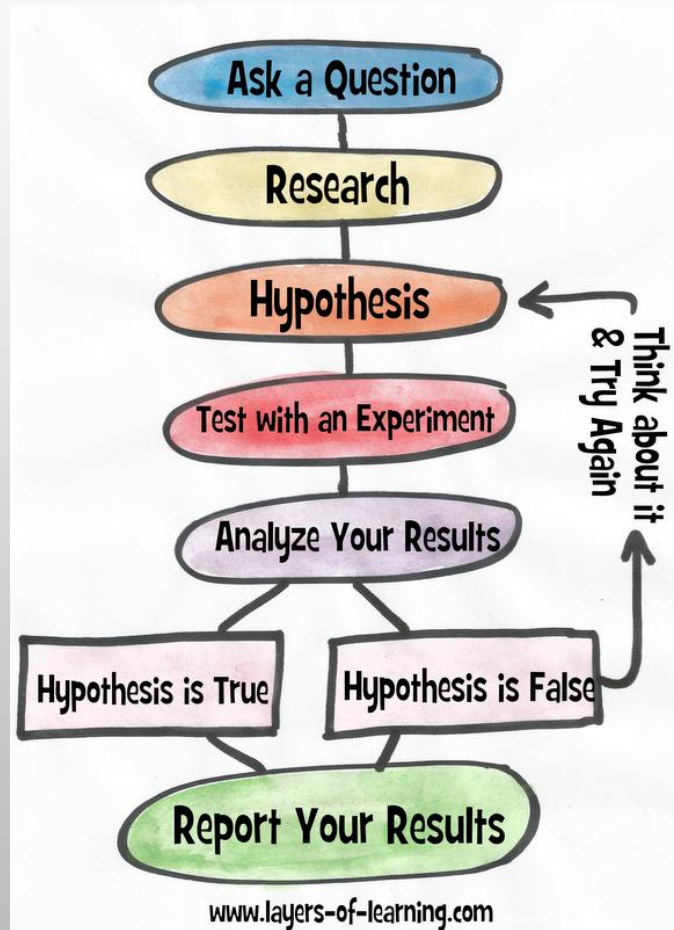
- OBSERVATION-QUESTION: WHAT MATERIAL IS THE BEST INSULATOR?
 - COPPER, STAINLESS STEEL, WOOD
- RESEARCH: METALS ARE GOOD CONDUCTORS IN GENERAL. WOOD IS NOT. WOOD IS A VERY POROUS MATERIAL.
- HYPOTHESIS: IF I HAVE DIFFERENT BLOCKS OF THE SAME SIZE BUT DIFFERENT MATERIALS AND I EXPOSE ONE OF THEIR SIDES TO THE SAME HEAT SOURCE, THEN THE TEMPERATURE OF THE OPPOSITE SIDE OF A GOOD INSULATOR WILL NOT INCREASE AS FAST AS THAT OF A BAD INSULATOR.

EXAMPLE OF SCIENTIFIC METHOD APPLIED TO AN OBSERVATION



- TEST HYPOTHESIS: DESIGN EXPERIMENTS TO
 - VERIFY THE SAME DIMENSIONS OF MATERIALS
 - PROVIDE THE SAME HEAT SOURCE
 - MEASURE THE TEMPERATURE OF ALL BLOCKS AND TIME IT TAKES TO REACH A MAXIMUM OR CONSTANT TEMPERATURE
 - RECORD MEASUREMENTS
- ANALYZE: PLOT THE TEMPERATURES AS A FUNCTION OF TIME FOR ALL MATERIALS.

EXAMPLE OF SCIENTIFIC METHOD APPLIED TO AN OBSERVATION



- DRAW CONCLUSIONS: THE WOOD BLOCK REACHED THE LOWEST TEMPERATURE AND TOOK THE LONGEST TIME. STAINLESS STEEL REACHED THE SAME TEMPERATURE AS COPPER BUT IT TOOK A LOT LONGER.
- CONFIRM HYPOTHESIS
- REPORT YOUR RESULTS: EXPLAIN IN CONNECTION WITH YOUR PREVIOUS KNOWLEDGE.

WHAT ARE JUDGES LOOKING FOR (3)

Factors judges use to make decisions

What the judges are trying to determine

Thoroughness

Is the completed work sufficient to move the field forward?

Clarity

Can the student clearly and easily discuss all aspects of his or her project? During an interview, judges might want to make sure that a student can think and speak well when thrown a curve.

Teamwork (only applicable for team projects)

Was each member of the team fully involved? Does each member, regardless of his or her specific experimental role, understand all aspects of the science project?

WHAT KIND OF QUESTIONS DO JUDGES ASK (1)

- FROM SCIENTIFIC AMERICAN ([HTTPS://BLOGS.SCIENTIFICAMERICAN.COM/GUEST-BLOG/HOW-TO-ANSWER-THE-5-MOST-COMMON-QUESTIONS-FROM-A-SCIENCE-FAIR-JUDGE/](https://blogs.scientificamerican.com/guest-blog/how-to-answer-the-5-most-common-questions-from-a-science-fair-judge/))
 1. WHERE DID YOU GET THIS IDEA?
 2. WHAT WOULD YOU DO DIFFERENTLY NEXT TIME?
 3. WHAT WOULD YOU DO NEXT?
 4. WHO HELPED YOU?
 5. ARE YOUR FINDINGS SIGNIFICANT?

WHERE DID YOU GET THIS IDEA?

- *GOOD ANSWER:* EVEN IF YOU GOT THE IDEA FROM A WEBSITE OR BOOK, HIGHLIGHT ALL THE CREATIVE ASPECTS OF THE PROJECT'S DEVELOPMENT. DESCRIBE **CHANGES** YOU MADE AND WHAT MAKES YOUR PROJECT **UNIQUE**.

- *BAD ANSWER:* MY SISTER DID IT LAST YEAR AND WON!

WHAT WOULD YOU DO DIFFERENTLY NEXT TIME?

- *GOOD ANSWER:* RECOGNIZE THAT ALL PROJECTS HAVE LIMITATIONS AND YOU COULD ALWAYS HAVE DONE BETTER IF YOU HAD MORE TIME, MORE RESOURCES, AND/OR BETTER EQUIPMENT. IN ADDITION, MOST EXPERIMENTS WOULD BENEFIT FROM MORE REPLICATION.

- *BAD ANSWER:* NOTHING, IT WAS PERFECT.

WHAT WOULD YOU DO NEXT?

- *GOOD ANSWER:* REALIZE ALL SCIENCE IS BUILT ON EXISTING SCIENCE AND PROPOSE THE NEXT LOGICAL EXPERIMENT. LOOK AT THE RESULTS YOU OBTAINED AND THINK ABOUT NEW QUESTIONS. PERHAPS YOU WOULD MEASURE A DIFFERENT VARIABLE OR EVALUATE A NEW INDEPENDENT VARIABLE.
- *BAD ANSWER:* NOTHING, IT'S NOT REQUIRED NEXT YEAR

WHO HELPED YOU?

- *GOOD ANSWER:* ACKNOWLEDGE YOUR TEACHERS, MENTORS, EXPERTS, PARENTS, FRIENDS, AND ANYONE ELSE THAT GAVE YOU ADVICE, EQUIPMENT, OR ASSISTANCE INCLUDING HELPING FIND THE IDEA TO PRACTICING FOR YOUR INTERVIEW.
- *BAD ANSWER:* MY MOM FINISHED MY BACKBOARD WHILE I DID MY HISTORY REPORT.

ARE YOUR FINDINGS SIGNIFICANT?

- *GOOD ANSWER:* IDENTIFY THE GROUPS OF PEOPLE (FARMERS, ENGINEERS, MANAGERS, LAW MAKERS, ETC.) THAT MIGHT BENEFIT FROM WHATEVER QUESTION YOU TRIED TO ANSWER AND DESCRIBE WHY THEY MIGHT NEED TO KNOW THIS INFORMATION.

- *BAD ANSWER:* NOPE.

THE DO'S AND DON'TS OF JUDGING INTERVIEWS (1)

- **MAKE SURE YOUR DISPLAY BOARD CONVEYS INFORMATION EFFICIENTLY.**
 - CONVEY AS MUCH INFORMATION AS QUICKLY AS POSSIBLE
 - GET THE BASIC DESCRIPTION OF YOUR SCIENCE PROJECT ACROSS QUICKLY SO THAT THE JUDGES CAN FOCUS ON ASKING YOU QUESTIONS

THE DO'S AND DON'TS OF JUDGING INTERVIEWS (2)

- **GET STARTED IMMEDIATELY.** INTRODUCE YOURSELF AND ASK THE JUDGE WHETHER HE OR SHE WOULD LIKE YOU TO START DESCRIBING YOUR WORK.
- **DON'T IGNORE A QUESTION.** IF YOU'RE IN THE MIDDLE OF A SPEECH AND A JUDGE ASKS YOU A QUESTION, IMMEDIATELY SWITCH TO TRYING TO ANSWER IT.
- **PRACTICE WHAT YOU HAVE TO SAY ABOUT YOUR SCIENCE PROJECT.** IT IS *VERY* IMPORTANT TO RELAY INFORMATION CONFIDENTLY AND SUCCINCTLY, BUT REMEMBER THAT A JUDGE WANTS MORE THAN JUST A CANNED SPEECH.
- **PRACTICE VARIOUS EXPLANATIONS OF YOUR SCIENCE PROJECT, AND PRACTICE BEING INTERRUPTED TO ANSWER QUESTIONS.**

THE DO'S AND DON'TS OF JUDGING INTERVIEWS (3)

- **PRACTICE YOUR TONE.** EVERY INTERVIEW SHOULD HAVE A PROFESSIONAL BUT CONVERSATIONAL TONE.
- **DON'T LET SILENCE REIGN.** IF A JUDGE APPEARS TO BE OUT OF QUESTIONS, THEN YOU SHOULD KEEP THE CONVERSATION GOING. FOR EXAMPLE: POINT OUT SURPRISING DATA POINTS OR TALKING ABOUT WHAT YOU'D DO NEXT WITH YOUR DATA
- **TALK ABOUT THE PROCESS AND NOT JUST THE PRODUCT.** DESCRIBE HOW AND WHY YOU ARRIVED AT THAT PARTICULAR EXPERIMENTAL SETUP OR PRODUCT DESIGN. IF PRELIMINARY DATA ENCOURAGED YOU TO RE-DESIGN YOUR SCIENCE PROJECT, EXPLAIN HOW THAT EVOLVED.

THE DO'S AND DON'TS OF JUDGING INTERVIEWS (4)

- **FINISH WITH A BRIEF CONCLUSION.** SUMMARIZE WHAT YOU JUST SAID INTO A SENTENCE OR TWO. YOU MAY WANT TO CONCLUDE WITH WHAT YOU LEARNED FROM THE PROJECT OR WHAT PARTS OF IT YOU FIND ESPECIALLY EXCITING.
- **INCLUDE SUGGESTIONS FOR FUTURE WORK.**
- **ASK IF THE JUDGE HAS ANY QUESTIONS.**



TIPS ON HOW TO PRESENT YOUR PROJECT (JUDGING CRITERIA)

PRESENTATION QUALITY

- CLEAR PRESENTATION
- CONCISELY SUMMARIZES THE PROJECT
- INFORMATION IS RELEVANT AND PERTINENT

DYNAMICS

- SPEAKS FLUENTLY WITH GOOD EYE CONTACT
 - POLITE
 - INTERESTED IN THEIR PROJECT
- 

WHAT NOT TO DO

- DON'T USE SLANG OR UNEXPLAINED JARGON
- DON'T SAY FILLER WORDS “LIKE” OR “YOU KNOW” OR “UM.”
PAUSE FOR A MOMENT IF YOU NEED TO COLLECT YOUR
THOUGHTS
- DON'T WEAR TOO MUCH OR GAUDY JEWELRY, NO CHAINS

PRACTICE

- THE KEY TO A GOOD PRESENTATION IS GOOD PREPARATION. ONE OF THE BEST WAYS TO PREPARE IS TO PRACTICE.
- PRACTICE IN FRONT OF A MIRROR OR IN FRONT OF A FRIEND.
- PRACTICE WHEN YOU ARE IN THE SHOWER.
- PRACTICE ON YOUR WAY TO SCHOOL.
- PRACTICE! PRACTICE WHEREVER YOU CAN UNTIL YOU CONFIDENT IN YOUR PRESENTATION.

EXAMPLES

- [HOW TO PRESENT BY VARIOUS STUDENTS:](#)

[HTTPS://WWW.YOUTUBE.COM/WATCH?V=MHNAFPXFJCS](https://www.youtube.com/watch?v=MHNAFPXFJCS)

- [TIPS BY YOUNG STUDENT \(WINNER\):](#)

[HTTPS://WWW.YOUTUBE.COM/WATCH?V=-WHTUTFRK2O](https://www.youtube.com/watch?v=-WHTUTFRK2O)

- [6TH GRADER PRESENTATION \(EMMA\):](#)

[HTTPS://WWW.YOUTUBE.COM/WATCH?V=COEXRWJZXYU](https://www.youtube.com/watch?v=COEXRWJZXYU)

- [SAMPLE IDEAS FOR SCIENCE FAIR PROJECTS \(JPL-NASA\)](#)

[HTTP://WWW.JPL.NASA.GOV/EDU/LEARN/ACTIVITIES/SCIENCE-FAIR-PROJECT/](http://www.jpl.nasa.gov/edu/learn/activities/science-fair-project/)

The image features a light gray background with a subtle gradient. In the top-left and bottom-right corners, there are several realistic-looking water droplets of various sizes, some overlapping. The text "QUESTIONS FOR ME?" is centered in the upper half of the image.

QUESTIONS FOR ME?

The image features a light gray background with a subtle gradient. In the top-left and bottom-right corners, there are several realistic water droplets of various sizes, rendered with soft shadows and highlights to give them a three-dimensional appearance. The word "THANKS!" is centered in the upper half of the image in a bold, black, sans-serif font.

THANKS!