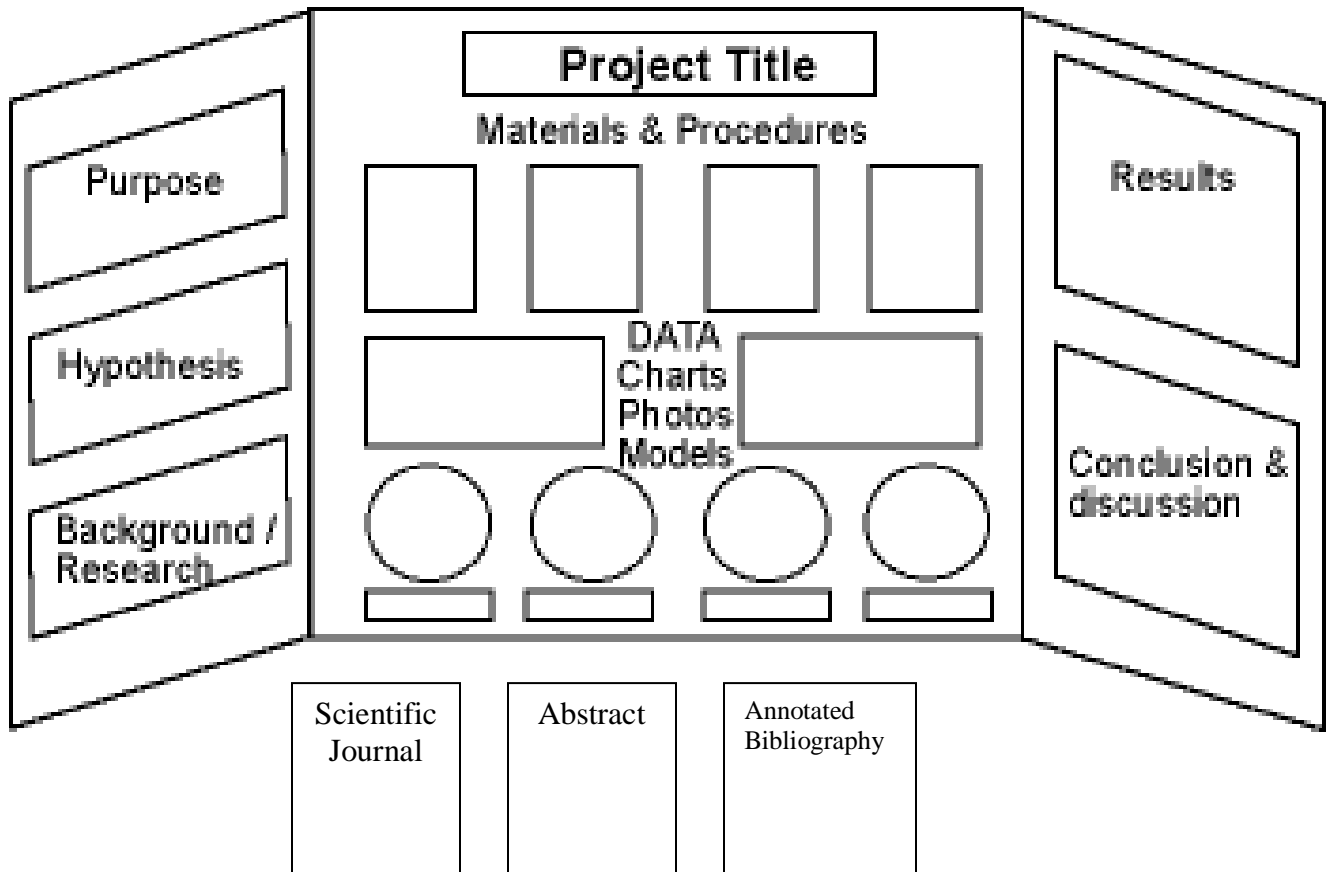


St. Elizabeth Ann Seton
Science Fair Project Handbook
2018-2019



SEAS Science Fair Committee

Robin Landon-----5th Grade Teacher
Rebecca Luczyk -----JH Teacher

8650 N. Shannon Road
Tucson, AZ 85742

September 12, 2018

Dear Parents and Guardians,

The St. Elizabeth Ann Seton Catholic School Science Fair Committee has selected the following dates for this year's science fair projects. Displays will be due between 7:00AM and 8:00AM Wednesday January 24, 2018 in the gym. Public viewing will be held on Parish Appreciation Day Sunday January 28, 2018 in conjunction with the School Book Fair Kick Off. Classrooms will have the option to visit the Science Fair on Monday January 29, 2018. All science projects must be picked up Monday January 29th at 2:30 and taken home. Winners may leave their projects with their teachers.

Individual grade level science teachers will give you due dates for the following areas at the beginning of the year:

Science Fair Contract

Research Question

Hypothesis

Purpose Statement

Materials List

Procedures

Proposal Bibliography

IRB/SRC Approval forms if student is using people or animals in his or her research

Results

Conclusion

Annotated Bibliography

Abstract

Project display

A detailed explanation of each of the required elements of the science fair project can be found in the SEAS Science Fair Handbook which is posted on RenWeb. Please see one of the science fair committee teachers if you have any questions.

Sincerely,

Robin Landon
5th Grade Teacher

Rebecca Luczyk
JH Teacher

SEAS Science Fair Project Handbook

Project Timeline

August 16 th	Introduction to SEAS Science Fair. Project Proposal due date is decided by teacher.
January 7 th	Project Display due to classrooms.
January 23 rd	Project Set-up in Gym
January 24 th & 25 th	SEAS Judging Day
January 27 th	SEAS Science Fair opens for viewing
January 28 th	Project pick-up in gym after 2:30
February 20 th	Registration deadline for SARSEF Competition SEAS teachers will submit online registration
March 6 th	Project set-up 12 pm- 8 pm at TCC Winners of SEAS Science Fair go to Tucson Convention Center -260 S Church Ave HUB in Exhibition Hall
March 7 th	Judging Day -Middle School (6-8) Interviews 10:00- 11:30
March 8 th	9 am-8 pm: Fair Open to Public- Exhibition Hall 5:30- 8:00 “Future Innovators Night”: Hands-on Demonstrations and fun events 8 am- 10pm Pick-up Projects
March 9 th	TBA: Middle School Awards

Please note: Dates for project selection, proposal, data gathering, analysis, and project write-ups will vary according to grade level. Please see the appropriate grade level teachers for these very important deadlines and any other questions you have about the science project.

Science Fair Project Process

1. Select a topic.
2. Develop a question about your topic that you want to answer and write the question on the project proposal worksheet. (See p.7)
3. Research your topic. Read books, magazines, and newspaper articles having to do with your topic and question. Be sure you write the author, title, date of publication, volume number, name of the publication or publisher, page numbers where you found your information, and the website where you found any internet information. (See p.10)
4. Hypothesis: use research and common sense to predict what the answer to your question will be. This is your hypothesis. Write the hypothesis on your proposal worksheet. (See p.11)
5. Plan your experiment. What materials will you need? (See p.12)
6. How will you complete your project? Write your procedure, step by step directions, of what you will do on your proposal worksheet. (See p.13)
7. Turn in your proposal worksheet. (Check with your science teacher for this deadline) *Wait for approval.* (See p. 7)
8. *After* your proposal has been approved, gather your materials and complete your experiment. Be sure to run trials more than once to be sure your results are accurate.
9. Display your results through photographs, drawings, tables, charts, and graphs. Report your results in writing. (See p. 15-16)
10. Write your conclusion: what you learned in the project; explain how your results prove, disprove, or fail to fully address your hypothesis. (See p.17)
11. Write the abstract, which is made up of a brief statement of the most important thoughts about your project and acknowledgement (See p.18-19).
12. Create your science fair project display board. Do not put anything on your board that identifies you as the owner or researcher of the project. (See p.6)
13. Bring your completed science fair project to SEAS on January 24, 2018. Some projects will be chosen to compete at the SARSEF competition in April.

STUDENT SCIENCE FAIR PROJECT CHECKLIST

STUDENT: _____

TEACHER: _____

PROJECT TITLE: _____

SRC/ARB Approval Required: Yes or No If Yes, Date obtained: _____

Proposal Approval Date: _____ Teacher Signature: _____

Components after SRC/IRB & Teacher Approval	Date Due	Date Completed	Points received
1. Topic Selection			
2. Background Research			
3. Problem Statement			
4. Hypothesis Formed			
5. Materials List			
6. Procedures Set			
7. Experiment Conducted and Data Gathered			
8. Project Journal Complete			
9. Data Analysis Complete			
10. Conclusions			
11. Possible Applications			
12. Abstract Written			
13. Bibliography Assembled			
14. Display Planned			
15. Display Completed			
16. Classroom Presentation			
17. Suggested Improvements			

Comments:

Project Display Guidelines

Display Board Requirements: (bolded terms should be titles for sections of the board)

- **Project Title**
- **The Purpose Statement** (See p.9)
- **Research**- gathering information on your topic to guide you in writing your hypothesis (See p.10)
- **Hypothesis** (See p.11)
- **Materials and Procedures** (See p.12-13)
- **Data**- recorded on charts, tables and made into graphs (See p.15)
- **Results**- verbal description of data (See p.16)
- **Conclusions**- interpretation of the relationship between your hypothesis and the results of your study (See p.17)
- **Bibliography**- APA formatted listing of all sources (See p.21-22)
- **Abstract**- a 250 word or less summary of your entire project (See p.18)

Additional components of the display- these do not go on the board but should be placed on the table in front of the display:

- Applicable permission forms (IRB or SRC approval forms).
- Discussion of what the researcher would do next if the project were done again.
- Scientific Journal- This is the hand-written account of your project from idea conception through to conclusion including development and brainstorming for how to extend/expand your work next time. Date and initial all entries. This is proof you did the work!

Specifications:

Projects in Grades K-8 must be no more than:
30 in. deep (front to back)
36 in.- 46 in wide (side-side)
36 in - 42 in. high (only for table-display)
Electrical power is not provided for K-8 projects.

Backboard:

Any freestanding design within the allowed dimensions, Pre-made, tri-fold, corrugated cardboard display boards are available. But, backboards may be made from large boxes, hinged wooden panels or other materials.

Hints & Suggestions:

Text may be handwritten or computer generated. It should be clear and readable from 1 meter away. Consider using double stick tape, glue or Velcro to attach items to your display board.

Acknowledgements are not to be on the display board, except for credits to images. Consider putting your acknowledgement and mentor appreciation in your composition book, but not on the board.

Your teacher will give you an ID sticker to place on your board. Wait for your teacher to tell you if and where you are to place your name.

Project Proposal

I, _____, propose the following investigation for my science fair project.

1. My idea, question, or problem.

2. What questions do I need to ask? 5 or more

3. How do I think I would measure my question, idea or problem?

4. How do I think I would test my question, idea or problem?

This is the Science Fair Project that I want to do.

_____ Date _____
Student Signature

I support my child's efforts in doing this science fair project.

_____ Date _____
Parent Signature

The project meets the requirements for the science fair.

_____ Date _____
Teacher Signature

Please return this form to your science teacher. A copy of your proposal will be made and returned to you. Project proposals must be attached to the back of the science fair project display board. If you need to make a change to your original proposal, you must clear this through your classroom teacher.

Writing the “Purpose Statement”

The Purpose Statement should explain what it is you are trying to discover or prove. The Purpose should be written in the form of a statement. Try to make your statement original and creative.

The statement should clearly explain:

1. Write about a problem that you are trying to solve with your experiment.
2. Why you want to do this experiment?
3. How you think the information gained from the experiment will help other people?

Example of a Purpose Statement:

The purpose of this experiment was to find out how the density of plant cover affects soil erosion. I became interested in this experiment when the hillside next to our yard began to erode. The information from this experiment will help people to determine how many plants they should plant on their yards hillside.

Fill in the blanks below to create a quality Purpose Statement.

The purpose of this experiment was to _____

I became interested in this experiment when _____

The information gained from this experiment will help others by _____

Writing the “Hypothesis”

The Hypothesis is an educated guess that tries to answer a question or solve a problem that you are trying to find out more about. The hypothesis is done after you do your research on a specific topic and before you do any experimenting.

The Hypothesis should follow these rules:

1. A hypothesis is a question, which has been reworded into a form that can be tested by an experiment.
2. There is usually one hypothesis for each question you have.
3. You must do at least one experiment to test each hypothesis. This is a very important step.

Example of a Hypothesis:

My hypothesis is that grass will do a better job at preventing soil erosion on the hillside than shrubs. I base my hypothesis on the idea that there are more roots in the grass than the shrubs.

Fill in the blanks below to create a quality Hypothesis.

My hypothesis is _____

I base my hypothesis on _____

Writing the “Materials List”

The materials list is a complete list of all materials including details and amounts. Be sure to include quantities (how much), length, volume, and mass. List these in metric units. Be specific in your description of the item needed. Include photos or drawings of the materials if it helps the person to identify the material needed in the project.

The Material List should follow these rules:

1. Be specific to amount, size and length.
2. Listed in metric units where appropriate.

Example of a Material List:

Bad Material List:	Good Material List:
Water Watch Ruler Dirt	20 Liters of Water Stop watch with second hand Metric Ruler with millimeters listed 3 cubic meters of potting soil

Fill in the blanks below to create a quality Materials List.

<u>Amount;</u>	<u>Description of Item:</u>
20 L	water
1	watch
1	metric ruler
3 cubic meters	potting soil

Writing the “Procedure / Methods”

The Procedures should follow these rules:

1. Label each step with a number or letter.
2. Write your procedures in a cookbook format.
3. Be very specific with quantities, amounts and the order that things need to be done or completed.

Example of a Procedures / Method list:

1. Prepare three trays by putting an equal amount of potting soil in each tray. If you are using pans or cookie sheets, spread a layer of gravel on the bottom of the pan before adding the soil. This will allow for drainage since you will be watering all three pans while the grass is growing.
2. Set Tray 1 aside. In Tray 2, cover the soil with a layer of leaves and grass clippings. In Tray 3, sprinkle grass seed on the top of the soil.
3. Place the three trays in a place where they are level and have similar light and temperature conditions. (The temperature must be above 50°F (10°C) for the grass to grow.)
4. Use the sprinkling can to give each tray the same amount of water. Continue watering all three trays approximately every 3 days until the grass in Tray 3 is about .5 inches (1.25 centimeters) tall. This may take one week or longer. You may have to adjust your watering schedule depending on how fast the soil dries. Check the soil daily to see if it looks and feels moist.

Fill in the blanks below to create quality Procedures / Methods.

1 _____

2 _____

3 _____

4 _____

5 _____

6 _____

7 _____

8 _____

9 _____

10 _____

11 _____

12 _____

13 _____

14 _____

15 _____

16 _____

17 _____

Writing the "Project Experimental Log/Journal"

Use a Composition Book

Please use the following to be sure that you keep track of all the important facts in your experiment so that you will be able to provide an interesting account of what happened.

Writing the "Project Experimental Log "

Use a composition book. Like a diary, write down all the things you have done on your project each day. Be sure to include any and all details. A good scientist keeps careful, detailed records of findings and test results. Include such things as topic selection, brainstorming, amounts / quantities used, color changes, growth etc... Record any procedure that you carry out during the experiment. Include the date and time that this was completed. Example of Project Experimental Log:

Date:	Time	Procedures/ Observations
1-02-05	6:32pm	<pre> graph TD Erosion --- soil1[soil] Erosion --- rain[rain] Erosion --- soil2[soil] Erosion --- shrubs[shrubs] </pre>
1-05-05	10:45 am	Began research on soil. Checked out book on grass & shrubs. — 45 mins
1-09-05	4:25pm	Worked on cutting plywood sheets to build slopes. — 1 hour

Data

Data is the information gathered and recorded on a chart or table from your experimentation. This data is then used to create a graph. Bar and Circle graphs show comparisons while line graphs show change over time. Photographs can be included.

Note the bar graph below. The red arrows describe the important parts of the graph. The figure legend briefly describes the experiment. This bar graph also includes statistical information. This is not necessary, but strongly recommended for those that are able to perform this type of analysis.

The effect of different physical and chemical processes on the germination rate of seeds

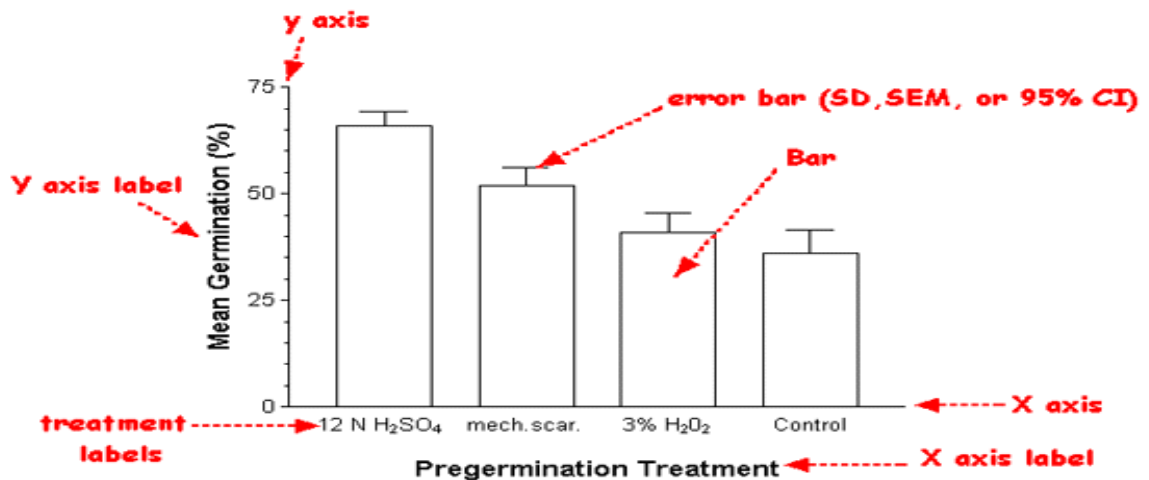


Figure 1. Mean germination (%) of gourd seeds following various pregermination treatments. N=10 groups of 100 seeds per treatment and control. Treatments: 12 hour soak in 12 N H₂SO₄, 90 second scarification of seed coat with 80 grit sandpaper, 6 hour soak in 3% H₂O₂.

figure legend

- **Title or no title?** When you are making a poster or projected images, where people may have a harder time reading the small print of a legend, a larger font title is very helpful.

- **Big or little graph?** A good rule of thumb is to size your figures to fill about **one-half of a page**. The viewer should not have to get a magnifying glass to make out the details.

- **Color or no color?** Most often black and white is preferred. The idea is that if you need to photocopy or fax your paper, any information conveyed by colors will be lost to the reader. However, for a poster presentation or a talk with projected images, color can be helpful in distinguishing different data sets. Every aspect of your Figure should convey information; **never use color simply because it is pretty**.

Writing the "Conclusion"

What is a conclusion? A conclusion is a reexamination of your original hypothesis in regards to the data you have collected. Your conclusion will continue by describing how your results prove or disprove your hypothesis. Your conclusion included what questions you have developed in doing the experiment. It also includes how you might change your experiment if you were to continue this topic in order to explore those questions that you developed during the experiment.

Example of a conclusion:

My hypothesis was that grass would do a better job at preventing soil erosion on the hillside than shrubs. I base my hypothesis on the idea that there are more roots in the grass than the shrubs. The results indicate that this hypothesis should be considered false. The dense amount of shrub cover shielded the underlying dirt better than the grass. Because of the results of this experiment, I wonder if different kinds of shrubs have the same effect on preventing erosion. If I were to conduct this science fair project again I would try both deciduous as well as coniferous shrubs.

Fill in the following lines to create a successful Conclusion:

My hypothesis was _____

The Results indicate that this hypothesis should be considered _____

Because of the results of this experiment _____

If I were to conduct this science fair project again I would _____

Possible applications include _____

Writing the “Abstract”

What is an Abstract? The Abstract is a summary of your science fair project. Your abstract is made up of a brief statement of the essential, or most important, thoughts about your project. Abstracts should summarize, clearly and simply, the main points of the experiment. Spelling, grammar, punctuation, neatness, and originality are important. It should be 250 to 300 words in length. It is one of the last parts of your science fair project that you will complete. It is an easy part if you are using a computer to record and type your journal entries and other parts of the project. If you are using a computer then you will only have to cut and paste this information into the abstract.

Include the following to create your abstract:

1. Your projects purpose statement.
2. The hypothesis.
3. A description of your variables and the control / constants.
4. A description of what variable you are manipulating (changing) in your experiment.
5. How you went about measuring and observing the variable and control.
6. Your results and data collected from your experiment.
7. Your conclusion statement.

Fill in the following lines to create a successful Abstract:

The purpose of my science fair project was _____

My hypothesis for this project was _____

The constant or control in my experiment was _____

The independent variable (what I changed) in my experiment was _____

The way that I measured the responding or dependent variable was _____

The results of this experiment were _____

The results show that my hypothesis should be (give brief reason why to accept or not)

If I were going to do this experiment again in the future or expand on this experiment I would _____

Writing the “Acknowledgements”

What is an Acknowledgment? This is the space where you thank those that have given you help with your project. If you received any significant help in thinking up, designing, or carrying out the project, or received materials from someone who did you a favor by supplying them, you should acknowledge their help and the service or material provided. You never know if you might need their help again in the future and thanking them is one way of possibly receiving their help again.

Example of an Acknowledgment:

I would like to thank the following: My Mom and Dad, for their encouragement and advice; Don Franklin at Home Building Supplies, for supplying so much invaluable information and materials; and Mr. Donaldson, for help with my English and writing.

Other expressions you might use include:

1. I am (most/very) grateful to ...
2. I wish to (warmly) thank the following ...
3. This paper could not have been written without the invaluable help of ...
4. I acknowledge my gratitude to ...

“Writing the Bibliography”

What is a Bibliography? The bibliography is an alphabetical list of the sources that you used to research your topic, design the experiment and form the hypothesis. Look at the format that each example is typed. Use this format exactly when you type your bibliography. An extremely helpful link for writing a bibliography is found on the homework help page. It is called the bibliography citation machine. **Use the APA format when using this source.**

Homework Help Resource Link:

www.bibme.org

Examples of how to cite your sources in a bibliography:

BOOKS

SINGLE AUTHOR

Author (Last Name, First Name). Title of Book. City: Publishing Company, Date.
Duggan, Alfred. The Castle Book. New York: Dodd, Mead & Co., 1991.

BOOK BY TWO OR MORE AUTHORS

First Author (Last Name, First Name) and Second Author (First Name, Last Name). Title of Book. City: Publishing Company, Date.
Jacobson, Morris K. and Rosemary K. Pang. Wonders of Sponges. New York: Dodd, Mead, 1997.

PERIODICALS

MAGAZINE ARTICLE WITH AUTHOR

Author (Last Name, First Name). "Title of Article." Title of Magazine. Volume or Edition (Month and Year of Publication), page(s).
Severy, Merle. "The World of Bees." National Geographic. 172 (November 1997), 552.

MAGAZINE ARTICLE WITHOUT AUTHOR

"Title of Article." Title of Newspaper. Volume or Edition (Month and Year of Publication) page(s).
"New Human Life." Science News. 132 (December 26, 1994), 391.

NEWSPAPER ARTICLE WITH AUTHOR

Author (Last Name, First Name). "Title of Article." Title of Newspaper. Date.
Anderson, Jack. "Nuclear Regulators." Rocky Mountain News. January 5, 1998.

NEWSPAPER ARTICLE WITHOUT AUTHOR

"Title of Article." † Title of Newspaper. † Date.

"Asian Nations Putting Pressure on France." *New York Times*, July 30, 1995.

ENCYCLOPEDIAS

"Title of Article." Complete Title of Encyclopedia, year.

"Laser," *World Book Encyclopedia*, 1995.

ELECTRONIC SOURCES

CD ROM

"Name of Article" Complete Title of Encyclopedia or Program. City: Publishing Company, Date.

"Astronomy." *Compton's Interactive Encyclopedia*. Danbury: Grolier Electronic Publishing Co., 195.

WWW SITES

Author (Last Name, First Name). "Title of Work. " Date posted on WWW (Latest date if available). URL//and full address (date you obtained information).

Go to Bibme.org copy and paste browser address and the program cites the correct format.

Burka, Lauren P. "Hypertext History."1992.

<http://www.ccs.new.edu/home/lpd/mud>, (Dec. 5, 1994).

OTHER SOURCES

INTERVIEW

Last Name, First name. Interview. Interview location. City, Sate, Month, Day, Year.

Schweitzer, Brian. Interview. Governors Office. Helena, Montana, Feb. 4, 2005.

VIDEOTAPE

Title of program. city: Production or Publishing company. Date, Type of media.

Joan of Arc; A Portrait of a Legend. New York: Vid American, Inc. 1985.

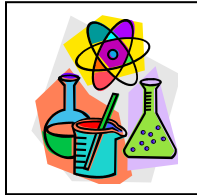
Videocassette.

TV PROGRAM

Title of Program. Staton. Month, Day, Year, City, State. Type of Program.

USA Tonight. CBS, Dec. 4, 1997. New York City: New York. Television broadcast.

SEAS Science Fair Judging Form- Grades K-8



Project # _____ Judge's Name: _____

Points & Comments _____

Earning Points: *Excellent =5 Good = 4 Fair =3 poor =2*

Sliding scale 5-----3-----0
Excellent Fair Omitted

Categories	points earned	Comments
Creativity/Curiosity		
1. Is the investigation idea genuine or is copied from other sources? 2. Has the student shown creativity in design of the display?	----- -----	
Scientific Thought/Engineering Goals		
3. Is the problem clearly stated? 4. Is the hypothesis clearly stated? 5. Is the procedure appropriately explained? 6. Are the materials appropriately listed? 7. Is the control and variable clearly labeled? 8. Is a conclusion stated and discussed? 9. Is the collected data adequate to support the conclusion? 10. Was the topic thoroughly researched? 11. Is there a bibliography or listing of literature survey & references?	----- ----- ----- ----- ----- ----- ----- ----- ----- -----	
Thoroughness		
12. Is data clearly presented & analyzed? Use of tables, charts, and graphs. 13. Is the information accurately displayed? Headings & measurement units. 14. Does the notebook/journal sufficiently document the student's work? 15. Does the conclusion analyze the results? 16. Does the abstract describe the general idea of the project well? 17. Does the display represent a complete story in a logical orderly manner?	----- ----- ----- ----- ----- -----	
Organizational Skills & Clarity		
18. Is the project well planned & reflective of student's own work? 19. Is the project clearly written with accurate grammar and spelling? 20. Is the presentation of the project legible (neatness, lettering, signs and diagrams)?	----- ----- -----	
TOTAL	-----	

