

Name: _____

Englewood Cliffs Upper School Science Fair 2020

for 5th - 8th grade students



Student Information Packet

Registration Form (page 9)

Date of Science Fair: Thursday, March 12th 2020

Registration Deadline: Friday, January 24th 2020

This document is not intended for reproduction or distribution outside of the students of the Englewood Cliffs Upper School.

All information was written and arranged by Mrs. Angela Ahn and cites the following sources:

Common Core State Standards. Common Core State Standards Initiative, 2015. Web. 2 Oct 2015.

Discovery Education Science Fair Central. Discovery Education. Web. 23 Sep. 2015.

Tierney, Lanay. "How to Create a Science Fair Project." *Massachusetts State Science & Engineering Fair*. Massachusetts State Science & Engineering Fair, Inc., 2012. Web. 23 Sept 2015.

The Next Generation Science Standards. Achieve, Inc. Web. 2 Oct 2015.

Bergen Academies Science Challenge Judging Criteria. Print. 9 Sept 2016.

Alignment of Content Standards:

CCSS.ELA-Literacy.WHST.6-8.1: Write arguments focused on discipline-specific content.

CCSS.ELA-Literacy.WHST.6-8.2: Write informative/explanatory texts, including the narration of historical events, scientific procedures/ experiments, or technical processes.

CCSS.ELA-Literacy.WHST.6-8.8: Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation.

NGSS Practice 1.6-8.: Asking questions and defining problems in 6–8 builds on K–5 experiences and progresses to specifying relationships between variables, and clarifying arguments and models.

NGSS Practice 3.1.6-8: Plan an investigation individually and collaboratively, and in the design: identify independent and dependent variables and controls, what tools are needed to do the gathering, how measurements will be recorded, and how many data are needed to support a claim.

NGSS Practice 3.2.6-8: Conduct an investigation and/or evaluate and/or revise the experimental design to produce data to serve as the basis for evidence that meet the goals of the investigation.

NGSS Practice 3.5.6-8: Collect data about the performance of a proposed object, tool, process or system under a range of conditions.

NGSS Practice 4.3-5: Analyzing data in 3–5 builds on K–2 experiences and progresses to introducing quantitative approaches to collecting data and conducting multiple trials of qualitative observations. When possible and feasible, digital tools should be used,

NGSS Practice 4.6-8: Analyzing data in 6–8 builds on K–5 experiences and progresses to extending quantitative analysis to investigations, distinguishing between correlation and causation, and basic statistical techniques of data and error analysis.

NGSS Practice 6.1.6-8: Construct an explanation that includes qualitative or quantitative relationships between variables that predict(s) and/or describe(s) phenomena.

NGSS Practice 8.5.6-8: Communicate scientific and/or technical information (e.g. about a proposed object, tool, process, system) in writing and/or through oral presentations.



Englewood Cliffs Upper School Science Fair Rules 2020

1. Safety first! Have an adult with you, wear goggles, don't eat or drink during an experiment, and keep chemicals away from your face.
2. Respect all life forms. Animals are not allowed to be used in experiments. Do not perform an experiment that will harm a person.
3. Be clean! Wash your hands and area after working and dispose of waste properly. Be considerate of your immediate environment, as well as the Earth.
4. Any project that involves drugs, weapons, or explosives is NOT permitted. Any project that breaks district policy, and/or local, state, or federal laws is NOT permitted.
5. Be safe when using the Internet. Let an adult know which websites you will be visiting.
6. Participation in the Science Fair is only open to 5th-8th grade students and each student must submit an individual project. Students in the 5th grade will be judged within the Junior Division whilst students in the 6th-8th grades will be judged within the Senior Division.
7. All projects must be presented on a tri-fold cardboard, which is **not** provided to each registrant this year, and must follow these MAXIMUM size limitations:
 - Depth (front to back): 30 inches or 76 centimeters
 - Width (side to side): 48 inches or 122 centimeters
 - Height (floor to top): 108 inches or 274 centimeters

******* Recommended Dimensions: 48 inches x 36 inches**
8. Adult supervision & guidance are encouraged, but students are responsible for doing their own work. Plagiarism, forgery, or fabrication of data are grounds for disqualification.
9. All students must follow the instructions for the display board as detailed in the rubric.
10. Materials must fit in front of the tri fold board. No electricity will be provided. Please do not leave any valuable items unattended.
11. Once you have registered, attendance at the Science Fair is mandatory. For extenuating circumstances, contact Mrs. Ahn - aahn@englewoodcliffs.org or Ms. Lorenc – mlorenc@englewoodcliffs.org If you are unprepared for the Science Fair and are therefore unable to participate *after* registering, the following year's application will be considered through a more challenging application process.

Name: _____ Date: _____ Class: _____

8 STEPS OF THE SCIENTIFIC METHOD



- [] **STEP 1 - Ask a scientific question:** Scientific questions are answerable, repeatable, and testable. Reflect on a topic that interests you and narrow your thoughts down to a specific question you can extend into an investigation.
- [] **STEP 2 – Do background research:** Find out as much background information as you can about your topic and the investigation you will carry out. Has someone else already answered your question? If so, how can you add on to what has already been learned and discovered? Use multiple sources of information (books, internet, etc.)
 - Be sure to start a 'References' page in your science notebook to record all the sources you gather information from. All sources should be cited in MLA format.
- [] **STEP 3 – State a hypothesis:** Write a possible answer to your scientific question using the If-Then-Because format. Your statement should identify your independent variable, dependent variable, and their relationship.
- [] **STEP 4 – Design an experiment:** Create and collect a list of materials (what kind and how much) and write a scientific procedure that describes how you will conduct your investigation. Also, before performing the experiment, ask yourself these questions:
 - Is this experiment safe?
 - Do I have enough time and resources to conduct and analyze this experiment?
 - How will I keep track of the investigation?
 - Have I prepared an appropriate data table to gather the data?
- [] **STEP 5 – Collect and analyze data:** Organize your data in a visually appealing way using tables, graphs, and digital tools. Analyze your data and explain any relationships and patterns you find and/or any experimental errors that occurred.
 - Quantitative data: Uses numbers to describe the amount of something.
 - Qualitative data: Uses words and the five senses to describe something.
- [] **STEP 6 – Draw conclusions:** How does your data relate to your hypothesis? How did or didn't your independent variable affect the dependent variable? What new information have you learned from this investigation?
- [] **STEP 7 – Repeat and redo trials:** Conduct the investigation at least 3 times for accuracy and reliability.
- [] **STEP 8 – Publish findings:** Create a Science Fair poster according to the guidelines given and cite all sources of information.

SELECTING A SCIENCE FAIR TOPIC



- ❖ **Choose a research topic:** Your topic should be personal, original, and thoughtful. *If your topic has already been researched by someone else previously, you are **not allowed** to repeat the investigation but **are allowed** to continue the investigation by testing a new hypothesis or independent variable.*

The following is a list of resources that may guide your search:

- Science Buddies: http://www.sciencebuddies.org/science-fair-projects/project_ideas.shtml#browseallprojects
- Education.com: <https://www.education.com/science-fair/>
- Do you have a hobby – music, sports, art, performance – that might lead to an investigation?
- Is there a branch or field of science that has always interested you?

❖ **Checkpoints for project approval:**

- Has your topic already been investigated by someone else previously? How can you document new and different research by continuing the investigation?
- Can the investigation be completed within the time allowed (including re-trials)?
- Can the investigation be completed within your budget? What is the potential cost of materials?
- Are there any environmental concerns? (For example, can your experiment run during the winter?)
- Do you have the right materials to conduct the investigation?
- Does your investigation abide by all of the restrictions on Science Fair materials (see below)?
- Did your parents approve your Science Fair topic?

❖ **Restrictions on investigation materials:**

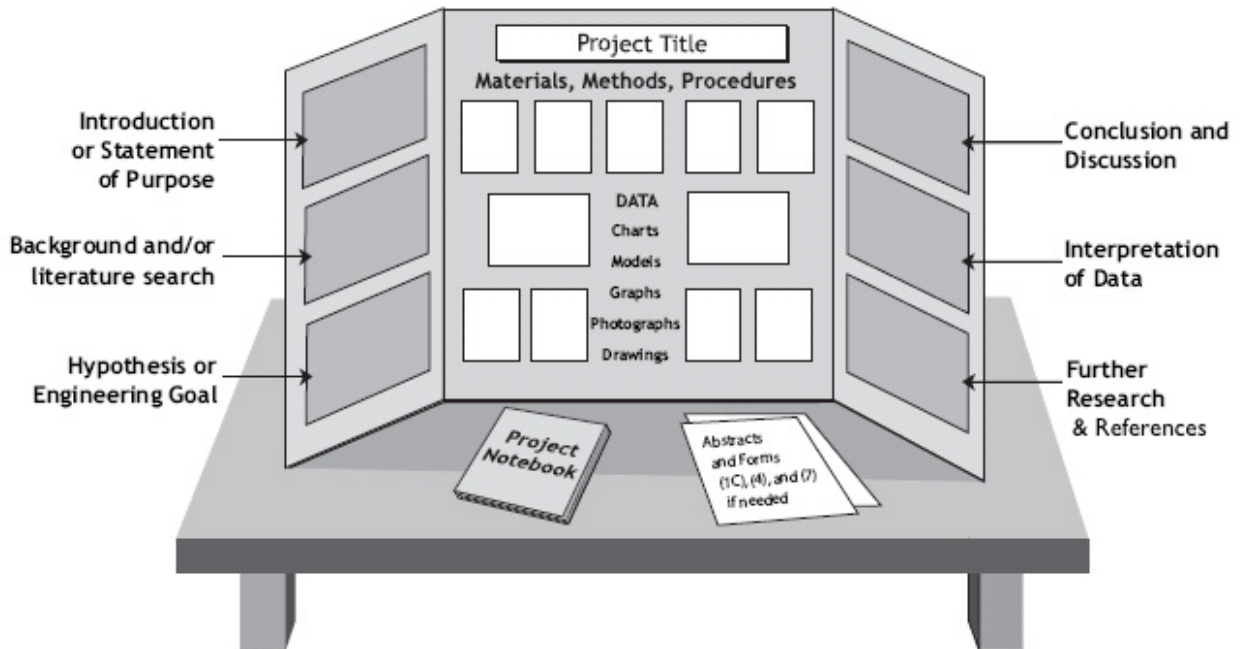
- Potentially hazardous biological agents (microorganisms, DNA, human and vertebrate animal tissue, blood, bodily fluids, etc.)
- Living animals
- *Human subjects – Please check in with Mrs. Ahn or Ms. Lorenc about what is and isn't allowed*
- Potentially hazardous chemicals
- Potentially harmful activities or devices



Judging Criteria

Category	Description of Criteria	Possible Score	Score
Title	Title presents a clear and focused research question. DO NOT include student or school names on the board.	5	
Introduction	Concise describes background information and current research that led to the development of the research question and identifies contribution to field of study.	5	
Hypothesis	Includes a testable hypothesis that describes the relationship between the independent and dependent variables, and controls.	5	
Materials and Methods	Well-designed plan and data collection methods. Variables and controls are defined and appropriate.	10	
Results	Systematic data collection and analysis that includes multiple trials and appropriate application of mathematical and statistical methods.	10	
Discussion	Includes sufficient data to support interpretation and conclusions.	10	
References	Cites all resources used in clear, MLA format.	5	
Display Board	Has logical organization of material, clarity of graphics and legends, and supporting documentation is displayed.	20	
Interview	<ul style="list-style-type: none"> • Clear, concise, thoughtful response to questions. • Understanding of basic science relevant to project. • Understanding interpretation and limitations of results and conclusions. • Degree of independence in conducting project. • Recognition of potential impact in science, society, and/or economics. • Quality of ideas for further research. 	30	
TOTAL SCORE =			

DISPLAY BOARD FORMAT



- **Left side of Tri-fold board**
 - INTRODUCTION
 - BACKGROUND RESEARCH (can be incorporated into the Introduction)
 - HYPOTHESIS
- **Middle of Tri-fold board**
 - TITLE
 - MATERIALS AND METHODS
 - RESULTS (data tables and graphs)
- **Right side of Tri-fold board**
 - CONCLUSION/DISCUSSION
 - REFERENCES (must be in MLA Format- see p.8)
 - FURTHER RESEARCH

Name: _____ Date: _____ Class: _____

How to use the MLA Format to Cite References

Directions: After you've decided on a Science Fair topic, immediately start a running list of books, websites, and resources you are using to gather information. Eventually, you must include these citations in MLA format in your references section on your display board.

- **Academic Integrity** - It is of utmost importance to give credit where credit is due! Never, ever, ever copy or use something that someone else has said, written, or done without giving him/her/them credit.
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Purdue University's MLA Formatting Guide: <https://owl.english.purdue.edu/owl/resource/747/05/>

1) Citing a Web Site

Editor, author, or compiler name (if available). *Name of Site*. Version number. Name of institution/organization affiliated with the site (sponsor or publisher), date of resource creation (if available). Medium of publication. Date of access.

Example: *The Purdue OWL Family of Sites*. The Writing Lab and OWL at Purdue and Purdue U, 2008. Web. 23 Apr. 2008.

2) Citing a Book

The author's name or a book with a single author's name appears in last name, first name format. For more than one author, the first given name appears in last name, first name format; any other authors' names appear in first name last name format.

Lastname, Firstname. *Title of Book*. City of Publication: Publisher, Year of Publication.
Medium of Publication.

* Book with One Author

Example: Gleick, James. *Chaos: Making a New Science*. New York: Penguin, 1987. Print.

* Book with More Than One Author

Example: Gillespie, Paula, and Neal Lerner. *The Allyn and Bacon Guide to Peer Tutoring*. Boston: Allyn, 2000. Print.



ENGLEWOOD CLIFFS UPPER SCHOOL SCIENCE FAIR REGISTRATION 2020

Thank you for registering for the Englewood Cliffs Education Foundation (ECEF) Upper School Science Fair. Please be sure to review the Rules and Judging Criteria in this packet. We hope you will enlighten us with your investigation and discover a passion for science.

“To raise new questions, new possibilities, to regard old problems from a new angle, requires creative imagination and marks real advance in science.” - Albert Einstein

NAME _____ GRADE _____

HOMEROOM (ie. 6C) _____

PROPOSED TITLE/QUESTION _____

A parent or guardian must sign and approve their child's Science Fair Project. Once the registration form is submitted, the participant is making a commitment to complete and present their project at the Science Fair on **Thursday, March 12th 2020**.

By allowing my child to participate in the Science Fair, I consent to the use of any photographs or video taken of my child during his/her participation, as well as his/her name, for promotional materials, websites, and social media related to the Englewood Cliffs Education Foundation.

Student Signature _____ Date _____

Parent/Guardian Signature _____ Date _____

Parent/Guardian E-mail Address _____

Registration Deadline: Friday, January 24, 2020