Emerson Elementary Science Fair

2019-2020

Welcome to **Emerson's Science Fair 2019-2020**! The Science Fair is an opportunity to practice the scientific method and share the answers to the questions of your choice with others.

***Participation is Mandatory for all 5th Graders, and reflects ½ of their science grade. ***

For Kinder through 4th grade it is an introduction to participating in and exploring science

The Science Fair Committee will be hosting two workshops. Providing information about Science Fair criteria, timeline, and general help Dates TBD.

Submit your applications for Science Fair online from **Nov. 1-15**, 2019 at:

http://www.emersonstarspta.org/event_sciencefair.html

All applications will be given approval/feedback in the order in which they were received, so submit early! Do not start your projects until you have received approval.

Please contact **Jamie Duly**, SF Chair**,** at emersonstarsscience@gmail.com, with any questions.

SCIENCE FAIR PACKET: Emerson Elementary Science Fair 2019-2020

All Science Fair projects will be evaluated with these 3 important things in mind:

1. **Personal Interest and Originality -** We encourage students to choose projects that spring from their personal interests**.** Even if it is not a traditional science topic, ANYTHING can be researched using scientific methods! We value original projects that students think up on their own.

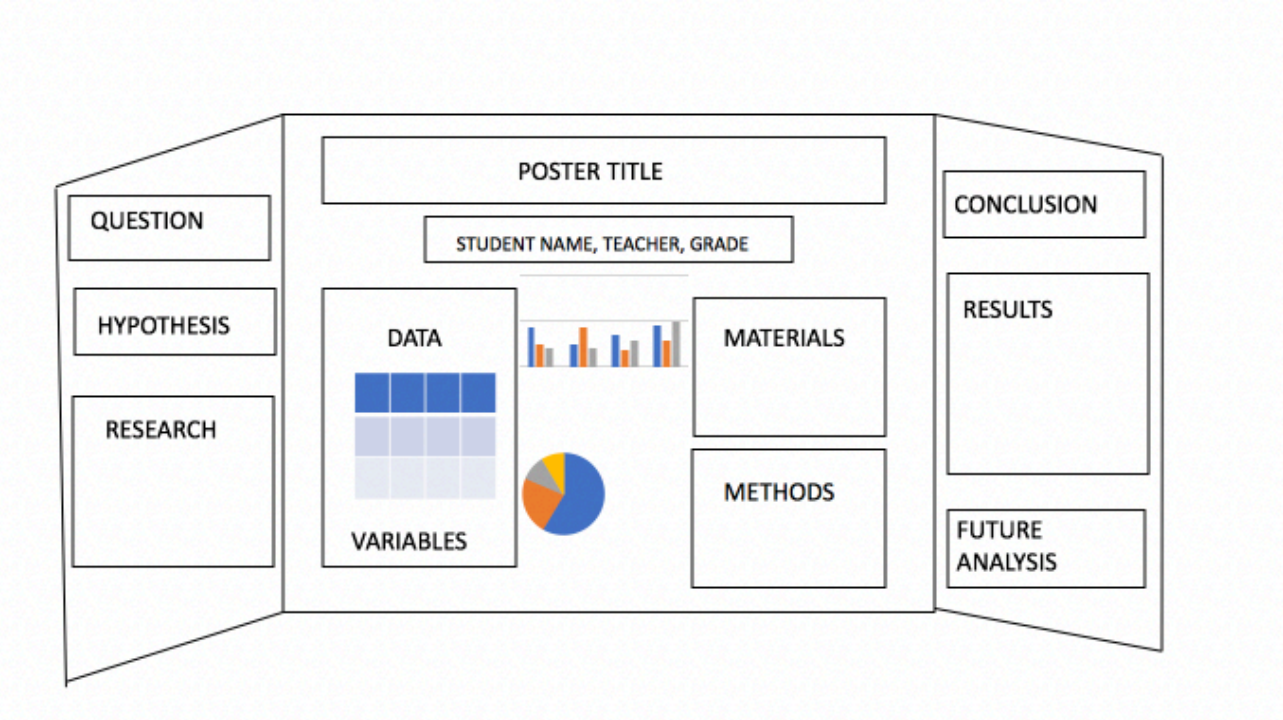
2. **Use of the Scientific Method** – The project should reflect the logic and methods of science so that questions raised are answered confidently, even if an answer means the hypothesis is incorrect. There should be one clear dependent measure that reflects the outcome measure you are looking for. There should be one well-defined independent variable. All other variables should be controlled (as much as possible) and not interfere with the results of the experiment.

> [1] Experiments can, and often do, have MORE than one Dependent Measure (DM), but focusing on one DM helps simplify the initial experimental design; after the initial design, additional Dependent Measures can be considered.
>
> [2] Experiments can have MORE than one Independent Variable, but when that happens, a proper design of the experiment becomes complex and analysis of data collected can be far more challenging.

3. **Ownership** – Know your project! Do most of the work **yourself**, and if a parent or other adult assists you, make sure you understand what is happening in the experiment. You will have the opportunity to show your project to interested judges, and we want you to be confident so that you can tell the judges all about what you learned!

What to Include on Your Display Board

There are a few things that you MUST include on your display board. Your board can help the judges understand your project in a clear and organized way. Here's what a project display board needs to include:



Title or Question – The question your project was trying to answer. This also makes a great Title. (If you use it as your Title, you do not need to also have a "Question" section on your poster.)

Student Name, Grade, Teacher, Date – Please put this information on the front **AND** back of the board.

Hypothesis – Describe what you thought would happen before you did the experiment.

Variables (Controlled, Independent, and Dependent Measure) **-** The variables are any factors that can change in an experiment. Remember, you should only test one variable at a time in order to get accurate results. **Independent Variable:** the one factor that you purposely change in an

experiment. **Dependent Measure:** what you are measuring – the factor you think could change as a result of your experiment. **Controlled Variables**: factors which are held constant (controlled) throughout an experiment. For example, if you want to test the effect that the amount of water (**Independent Variable**) has on plant growth (**Dependent Measure**), then all the plants you test should be in the same conditions such as the same type of dirt, type of plant, location, amount of sunlight, etc. (**Controlled Variables**).

Research- Share any background information you found when researching your topic. The judges value appropriate research!

Materials and Methods– Describe exactly how you did your experiment - what equipment, materials, and procedures you used. This is like a recipe for your experiment. Be detailed enough so that another person could repeat your experiment. Use lists and photos to help make it clear how you did your experiment.

Results – Describe what you found out from your experiment. Present the data you collected from your experiment in photos, graphs, and/or tables that will help people understand your results.

Conclusions – Once your experiment is done and you have the results, what does it all mean? Compare your results to your hypothesis... were you right? Was your hypothesis proved or disproved? If your hypothesis was not correct, why do you think you got a different answer than you expected? (It is OK for a hypothesis to be incorrect! This happens all of the time in science and is a valuable result.) If your hypothesis was correct, why do you think it was correct? What did you learn?

Acknowledgements – List all the people who helped you with the project, and thank them. **References** – List any books, articles, or websites that you used to help you with your project.

Informed Consent – If you used human subjects, attach a written signed consent form from each participant (and/or parent). These forms should be placed in an envelope attached to the back of the board. (see attached form)

Science Fair Rules

• ALL EXPERIMENTS MUST BE SAFE! Experiments with explosives, dangerous chemicals, or drugs will not be allowed. All electrical equipment must conform to electrical safety laws.

• Animals may be used in experiments. However, ABSOLUTELY NO HARM, DANGER, or DISCOMFORT may be done to them.

• Experiments involving humans are permitted, but there can be ABSOLUTELY NO HARM, DANGER, or DISCOMFORT to the human. You must get written signed permission from each human subject before you perform the experiment. If the human subject is a minor (under 18 years old), you must get their parent's written permission for them to participate. The originals of the permission forms must be attached to the display board.

• **Demonstration projects are not allowed** (e.g., a "volcano"). Also, projects that have been over- represented (that means we see these types of projects all of the time) in science fairs (e.g., Mentos in Diet Coke) will not be approved.

Helpful Information

• The following websites are useful guides to help you through the Science Fair process, from project idea to presentation.

http://www.jpl.nasa.gov/edu/teach/activity/how-to-do-a-science-fair-project/

Participation is MANDATORY for all 5th Graders. It is HIGHLY ENCOURAGED for all Kinder through 4th graders. Awards will be given for 1st, 2nd, and 3rd place for each grade.

Projects may be done in pairs (maximum of two students) but workload must be shared equally.

Students will present their project display boards to judges. Students should be able to explain their project and findings clearly in about 3-5

minutes.

• Take pictures of your board before turning it in in case the student wants to review.

Investigation projects (summarizing facts about a particular topic) will only be allowed for grades K-4! They will be eligible for Honorable Mention, but not 1st, 2nd, or 3rd Place awards. Investigation is only the first step in experimental science.

Students do not need to bring in apparatus used for their project on presentation day. However, you may, if you feel it's necessary to explain your project and has been approved by your teacher_____

Important dates:

Applications due: Nov. 1-15, 2019

Projects due by Dec. 20, 2019

Presentation to judges 2nd week of January

- Dates for preliminary and final Judging, the Display of Boards to the school, and the Awards Assembly are TBD and will be announced later in the year.

***Parent volunteers** for the fair are greatly appreciated! If you would like to help, please contact Jamie Duly at emersonstarsscience@gmail.com ***

Science Fair Project approval form - to be filled out online

STUDENT 1	STUDENT 2
STUDENTS NAME:	STUDENTS NAME:
PARENTS NAME:	PARENTS NAME:
PHONE NUMBER:	PHONE NUMBER:
E-MAIL:	E-MAIL:
TEACHER: GRADE:	TEACHER: GRADE:

Your **QUESTION** (what do you want to find out)

_____

_____

Your **HYPOTHESIS** (what do you think the answer will be to your question)

_____

_____

Your **METHODS** (Briefly describe your experiment, what equipment and materials you will use to test your hypothesis)

Dependent Measure(s): _____ **Independent Variable**(s)_____

Where did you get your idea for your project from? (ie: note the website, or book)

_____

I acknowledge awareness of my child's science fair project and will support them in accomplishing it.

Parents name of student 1:_____

Parents name of student 2:_____

Please contact Jamie Duly for any questions at emersonstarsscience@gmail.com

Human Informed Consent Form

Instructions to the Student Researcher(s): An informed consent/assent/permission form should be developed in consultation with the Adult Sponsor, Designated Supervisor or Qualified Scientist.
This form is used to provide information to the research participant (or parent/guardian) and to document written informed consent, minor assent, and/or parental permission.

- When written documentation is required, the researcher keeps the original, signed form.
- Students may use this sample form or may copy ALL elements of it into a new document.

If the form is serving to document parental permission, a copy of any survey or questionnaire must be attached.

Student Researcher(s): _____

Title of Project: _____

I am asking for your voluntary participation in my science fair project. Please read the following information about the project. If you would like to participate, please sign in the appropriate box below.

Purpose of the project:

If you participate, you will be asked to:

Time required for participation:

Potential Risks of Study:

Benefits:

How confidentiality will be maintained:

If you have any questions about this study, feel free to contact:

Adult Sponsor: _____ Phone/email: _____

Voluntary Participation:
Participation in this study is completely voluntary. If you decide not to participate there will not be any negative consequences. Please be aware that if you decide to participate, you may stop participating at any time and you may decide not to answer any specific question.

By signing this form I am attesting that I have read and understand the information above and I freely give my consent/assent to participate or permission for my child to participate.

Adult Informed Consent or Minor Assent Date Reviewed & Signed: _____
Printed Name of Research Participant: Signature:
_____

Parental/Guardian Permission (if applicable) Date Reviewed & Signed: _____
_____
_____

Parent/Guardian Printed Name: Signature:
_____ _____