

Ralph Dunlap Science Fair
March 12, 2020

FULL
STEAM
AHEAD

**Ralph Dunlap Science Fair
Thursday, March 12, 2020**

Dunlap students in grades K-6th are encouraged to participate in the 2020 Dunlap PTA Science Fair.

This year's theme is: Full STEAM Ahead

STEAM is an acronym for:

Science **T**echnology **E**ngineering **A**rt **M**ath

Projects for the Science Fair this year can relate to any of these "STEAM" areas and be either:

A) a **DEMONSTRATION** (including models) or B) an **EXPERIMENT**

(Demonstrations and experiments are explained in detail later in this packet.)

The level of parental involvement is the decision of the parent, but we would like students to take as much responsibility as possible. Younger children will generally require more help than older students. Individual science projects are encouraged, but students may work in pairs or up to three students.

PLEASE READ THIS PACKET COMPLETELY! Included are guidelines, category descriptions, and also some suggestions/ideas for science projects.

The number one priority of the Science Fair is to discover the **FUN** of science!

See you at the Science Fair!

PTA Science Fair Coordinators:

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Science Fair Calendar

Friday, February 21, 2020

Deadline to turn in the Intent to Participate Form.

Thursday, March 12, 2020 - **Science Fair Projects are Due**

8:15 am - 9:00 am

Science projects are to be dropped off in the Multiuse Room before school.

Please bring: 1) your display board, 2) any materials that support your project (in a bag or box clearly labeled with student's name/teacher), and 3) a completed "Project Form" (found near the end of this packet).

PTA volunteers will check in each display board and separate them into the four categories (Grades K-3 Demonstration, Grades K-3 Experiment, Grades 4-6 Demonstration, Grades 4-6 Experiment) for judging purposes.

1:00 pm - 6:00 pm

Judges will look at and score the science fair projects. Students are not present during judging. The board and the information it contains is what the judge(s) will be evaluating/judging. Unfortunately, due to space/time constraints students will not be doing physical demonstrations in front of the judges.

6:30 pm - 7:45 pm

All science fair projects will be on display in the Multiuse Room and Kindergarten classroom(s). Awards will be announced at approximately 7:15 pm.

Best in Show and Honorable Mention(s) ribbons will be awarded in four categories:

- Grades K-3 - Experiment
- Grades K-3 – Demonstration/Model
- Grades 4-6 - Experiment
- Grades 4-6 – Demonstration/Model

After the fair, you may take your science project home, or leave it and it will be returned to you on Friday.

Friday, March 13, 2020

We hope to give Dunlap teachers an opportunity to bring in their classes to view the science fair projects on Friday morning. Display boards and accompanying items not taken home Thursday evening will be returned/delivered to students' classrooms mid-day Friday.

General Guidelines and Rules

A science project is a presentation of an experiment or a demonstration. Doing a science project gives young students an opportunity to extend their knowledge of a particular scientific topic that they find interesting. It allows them to pose questions, search out the answers, and then share their results with others. Children are using critical thinking and problem-solving skills learned in science and in math.

There are two types of projects that students can prepare for our science fair: a **Demonstration** (including models) or an **Experiment**. The two types of projects are described in detail on the next two pages.

With both types of projects, students will be choosing, researching, and then conducting the experiment or demonstration at home. The student will then prepare a display board for our Science Fair on March 12, 2020. The display board explains the steps he/she took to demonstrate, or experiment with, the science concept.

We encourage parents/grandparents/adults to help, particularly in the selection of an appropriate topic. However, students should do as much of the work as possible.

Safety Rules:

1. Safety first! Before you start, safety must be a priority.
2. All experiments should be supervised by an adult. An adult especially needs to help if there are any potentially dangerous aspects of the experiment/demonstration (like using sharp tools or electricity).
3. Do not touch, taste, or inhale any chemicals, and never eat or drink during an experiment.
4. Wear protective goggles if you are doing an experiment that could lead to an eye injury.
5. Always wash your hands after doing an experiment, especially if you have been handling chemicals.
6. No project shall involve drugs, firearms, or explosives.
7. Any project that breaks district policy, and/or local, state or federal laws will not be permitted.
8. Do not perform an experiment that will harm an animal.

Science Fair Rules:

1. Individual science projects are highly encouraged, but students may work in pairs or up to three.
2. Students can mount things on a board in a type of 3D display, but remember that the board must be able to stand by itself.
3. Supporting materials (such as a model) can be placed in front of the display board. Keep in mind there is limited space, however.
4. Students are judged on their display board and the information it contains. Scoring is done out of a **possible 40 point maximum**. Categories include, but are not limited to: procedure and the science behind it, originality/creativity, board organization, use of pictures/diagrams, etc. Later in this packet you will find information on the judging criteria for Demonstration and Experiment projects. We reserve the right to make slight modifications to the criteria, but this is a very good example of what the judges will be using.
5. All decisions of the judges and science fair committee are final.

'Demonstration Project' Category (including Models)

A demonstration project illustrates or explains a concept. Doing a demonstration type of project does not require the student to formulate a hypothesis. The process of doing it allows the student to learn about and see the principles of science firsthand. Then on their display board they must explain what is going on, how the system works, etc., so when someone looks at it they will also understand and learn something.

Some demonstration examples:

- Showing how a baseball's spin affects its behavior in flight
- Explaining how to measure a faraway or extremely large object's height
- Showing the capillary action in plants using dyed water and carnations

Students can construct a model as part of their science project if it helps show/explain the science behind their project. A model is a small object usually built to scale that represents an already existing object. A model-type project will be judged under the demonstration category.

Things to think about and do when preparing your demonstration project/model:

1. What science question are you trying to demonstrate or model?
2. What materials will you need?
3. Write a description of what you plan to do.
4. How will you show it on the display board: photos? drawings?
5. What do you hope to teach others with your demonstration or model?

Once you have completed the demonstration, you will be constructing your exhibit on a display board. A *demonstration/model* display board should include the following:

- Project Title, Name, Teacher, Grade
- Project purpose (Scientific Question or Problem)
- Materials you used
- Procedure: list the steps you took when you did the demonstration or the procedures you followed to make the model.
- Graphics (charts, graphs, photos, illustrations, other)
- Conclusion: what did you learn/show with your demonstration or model?
- Bibliography: please include books, websites, etc., you referred to, if applicable.

Important reminder: your display board explains the steps you took to demonstrate the science concept. **The board and the information it contains is what the judge(s) will be evaluating/judging.** Unfortunately, due to space/time constraints students will not be doing physical demonstrations in front of the judges.

'Experiment' Category

An experiment is usually more involved than a demonstration and in most cases you are comparing results. It can be a test made to demonstrate a known scientific fact or it can also be a test to determine if a hypothesis (your educated guess of what will happen) is accurate. To conduct a proper experiment, you must follow the scientific method.

The Scientific Method

The scientific method is a way for scientists to study and learn things. No matter what the scientist is trying to learn, using the scientific method can help them come up with an answer.

The first thing to do with the scientific method is to **come up with a question**.

Next you need to **observe and gather information** in order to **come up with one or more guesses** to the answer (called a hypothesis).

Now you **run experiments** to see if your guess is right. As you run experiments you can change your guess, or hypothesis, to fit your results. A key to running good experiments is to only change one thing, or variable, at a time. This way you can check your results and know what it was that you changed that affected the end result.

Finally, after running all the tests you can think of, you **present your final answer**.

By going through this process, scientists have a way to verify their guesses and to double-check each other. In this way another scientist can take a look at your tests and add some more tests and continue to refine your answer to the question.

Scientific Method Steps:

In summary, these are the steps you take when using the scientific method:

1. Ask a question
2. Gather information and observe (research)
3. Make a hypothesis (guess the answer)
4. Experiment and test your hypothesis
5. Analyze your test results
6. Present a conclusion

Once you have finished your experiment, you will be constructing your exhibit on a display board. An *experiment* display board should include the following:

- Project Title, Name, Teacher, Grade
- Problem/Background
- Hypothesis
- Materials
- Procedure (experiment)
- Data/Results
- Graphics (charts, graphs, photos, illustrations, other)
- Conclusion
- Bibliography (please include books, websites, etc., you referred to, if applicable)

Where Can I Find Science Fair Project Ideas?

Below are some suggested resources in your search for either type of science project (Demonstration/Model project or Experiment):

1. Look at what others have done before. There are several websites that have great science project ideas.

<http://www.education.com/science-fair/>

<https://www.sciencebuddies.org/science-fair-projects/science-projects>

<http://www.sciencekids.co.nz/>

<http://www.all-science-fair-projects.com>

<https://www.exploratorium.edu/explore/>

<https://www.stevespanglerscience.com/science-fair-project-ideas/>

<http://tinkerlab.com/science-fair-project-ideas/>

<https://lemonlimeadventures.com/50-totally-awesome-steam-projects-to-boost-creativity/>

<https://www.steamsational.com/>

Please be safe on the internet. An adult should be aware of the websites a student is visiting.

2. Use your experiences. Remember a time you noticed something and thought, "I wonder how that works?" or "I wonder what would happen if ... ", then turn that into a project.
3. Check the science section of the school library. Browse and look at book titles, then look inside the ones that look interesting to you. Good magazines for ideas are: *National Geographic, Discover, Omni, Popular Science, Popular Mechanics, and Prevention.*
4. Think about current events. Look at the newspaper or watch the news.
5. Watch commercials on TV. Test their claims.
6. Try putting different words in these blanks ...

What is the effect of _____ on _____ ?
1) refrigeration the taste of tomatoes?
2) exercise memory?

How/to what extent does _____ affect _____ ?
1) the type of turf how a soccer ball bounces?
2) the type of water used (distilled, tap) how fast sugar crystals will grow?
3) color of a material its absorption of heat?
4) packaging the ripening of fruit?

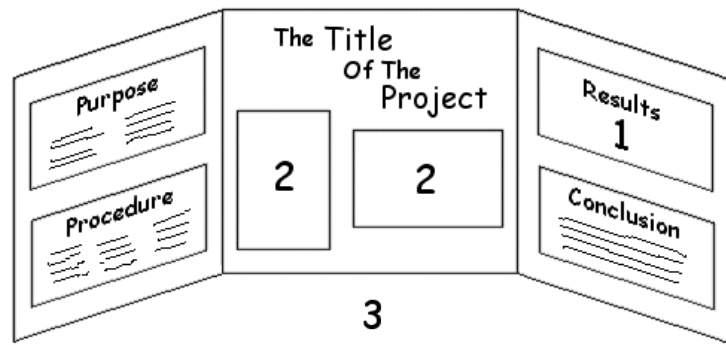
Which/what _____ (verb) _____ ?
1) fruit has the most vitamin C?
2) kinds of foods are best to eat to help an athlete achieve the best results?

Displaying Your Project

The exhibit itself must be contained within a display board of some type. We suggest a three-sided display board (available at Michael's, office supply stores, etc.). Your display should be free standing.

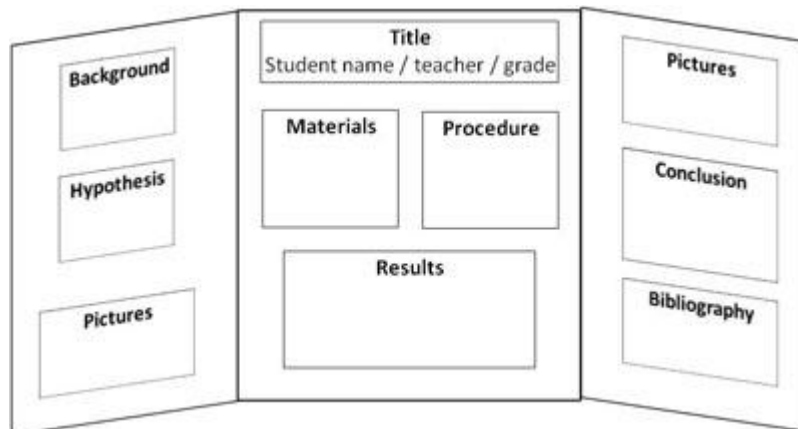
Your display will be best if it shows what you did at each step in summary form, not in detail. Arrange information so that it is easy to read and it flows in a logical manner - left to right and top to bottom. Make sure you check the spelling of everything in your display. Include your name, grade, and teacher under the title.

Example of a display for Demonstration Project/Model type projects:



1. Graphics and Charts
2. List of materials, display of photographs or drawings
3. Equipment and/or model can be placed on table

Example of a display for an Experiment:



How Dunlap PTA Science Fair Projects will be Evaluated

Project boards will be looked at by our judges and given numeric scores using the criteria shown below. Each line item will be scored 0 (minimal) to 4 (impressive) points, with each project receiving a maximum of 40 points total.

For Demonstration / Model Projects:	0 (minimal) - 4 (impressive)
<u>Procedure & Science Behind it</u>	
Clear & Specific Project Purpose	
List of Materials . Included a photo or drawing.	
Procedure - student described steps followed	
Did/does the model or demonstration work as intended?	
Student effectively describes what was learned or observed	
<u>Originality/Creativity</u>	
Original topic or approach	
<u>Presentation</u>	
Student shows interest and enthusiasm in topic	
Board is well organized and visually appealing	
Board is free of spelling and grammar mistakes	
Good use of photos or drawings	
Total	<i>Up to 40 maximum</i>

For Experiment Projects:	0 (minimal) - 4 (impressive)
<u>Scientific Procedure</u>	
Presented a question that could be answered through experimentation	
Clear & specific Hypothesis	
Good procedure for testing hypothesis: Variables? Controls?	
Data (scope, appropriate sample size)	
Conclusion supported by data & relevant to hypothesis?	
Was the scientific principle explained and understood?	
<u>Originality/Creativity</u>	
Original topic or approach	
<u>Presentation</u>	
Board is well organized and visually appealing	
Board is free of spelling/grammar mistakes	
Effective use of pictures and diagrams	
Total	<i>Up to 40 maximum</i>

**Please fill out this form and turn it in with your project board on March 12th.
Don't forget any materials that help support your project!

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Project Title:

Student's Name: _____

Grade: _____ Room #: _____

Teacher: _____

My project's category (circle one)

Grade K-3 Demonstration

Grade 4-6 Demonstration

Grade K-3 Experiment

Grade 4-6 Experiment

Brief description of the science behind my project:

I learned...

Fill out and turn in this page to the Dunlap School Office by **Friday, February 21** if you plan to participate in this year's Science Fair by submitting either a Demonstration/Model or Experiment project.

Intent to Participate in Science Fair

If your child intends to submit a project for the Science Fair on Thursday, March 12, **please complete and return this sheet** to your child's teacher or to the school office **by February 21**. This way we have an idea of how many projects to expect on March 12.

My child intends to submit a project for the 2020 Ralph Dunlap PTA Science Fair on March 12

Child's Name: _____

Grade: _____

Teacher: _____

Room #: _____

Category (check one):

_____ Grades K-3 - Experiment

_____ Grades 4-6 - Experiment

_____ Grades K-3 - Demonstration or Model

_____ Grades 4-6 - Demonstration or Model

Brief Description of Proposed Science Fair Project:

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Each student who participates in the Science Fair will receive a special Science Fair t-shirt!

We will be preordering "Full STEAM Ahead" Ralph Dunlap Science Fair T-shirts and will distribute them to participating students on March 12th once their project display is turned in. We encourage students to wear their shirts to the Science Fair that evening!

Student's shirt size (please circle one):

Youth Small

Youth Medium

Youth Large

Adult Small

Adult Medium

Adult Large

Adult XL

