

Science /STEM Fair Handbook 2018-2019

Coming soon

Date and schedule TBA



Mandatory for all Pre –AP Science students!

If you have any questions please contact your science teacher Dperry@alvinisd.net

Science Investigation & Engineering Projects

Students Name: _____ Student Signature: _____

Parents Name: _____ Parents Signature: _____

My child and I have read this booklet in its entirety and will refer to it during the science fair process. We know and understand when each section is due and that it is the student's responsibility to turn work in on time.

Parent/Guardian phone number: _____

Parent/Guardian e-mail address: _____

TASK 1 - Select your project topic

1. Choose from "[Comparative Experiment](#)", or "[Engineering Design](#)" project categories.
2. Choose at least 2 topics and submit it to your teacher. Teacher will approve one of your choices.
 - Be sure to select topics that you are interested in. Also, consider amount of time it will require, types of materials, safety requirements and grade level appropriateness of the topics.
 - If you need help, your teacher may suggest or assign a project to you.

When Choosing a Project:

- To maintain the highest level of safety for our students, our district has placed some restrictions on certain project choices.

Topic	Allow	Not Allowed
Animals	<ul style="list-style-type: none">• The use of invertebrate animals, such as insects and worms	<ul style="list-style-type: none">• The use of vertebrate animals, dead or alive
Microorganisms	<ul style="list-style-type: none">• Use of baker's yeast, brewer's yeast, Lactobacillus, nitrogen-fixing bacteria, oil-eating bacteria, and algae-eating bacteria, and non-pathogenic protists	<ul style="list-style-type: none">• The use of bacteria or other microorganisms, unless listed in the allowed section
Body Tissues	<ul style="list-style-type: none">• Use of sterilized teeth if obtained from a dentist	<ul style="list-style-type: none">• The use of blood, DNA, tissue, or body fluids, unless listed in the allowed section
Hazardous Chemicals and Devices	<ul style="list-style-type: none">• The use of hazardous chemicals or devices (including Class I and Class II lasers) will require a Risk Assessment Form to be completed and turned into your teacher	<ul style="list-style-type: none">• The use of firearms or explosives, illegal or prescription drugs, tobacco, fireworks, Class III or Class IV lasers, or ethyl alcohol (drinkable alcohol)
Human Subjects	<ul style="list-style-type: none">• The use of human subjects will require a Human Subject Form to be completed and turned into your teacher	<ul style="list-style-type: none">• Some investigations that may harm a human, such as the ingestion of materials; certain types of exercises; certain types of psychological questions; exposure to inappropriate material; etc.

TASK 2 - Create/copy a Blank Google Slides Presentation

Step 1: Create a Google Slide Presentation OR compile a neatly hand written Science Fair bound Composition Notebook.

1. Sign-in to Google with your school email account. If you do not know your school email account, please check the database or ask your teacher for it.
2. Students wishing to participate in the Alvin ISD science fair are **required to compile written composition entries**. Students can do both power point and composition or just the composition notebook. Power point is used to help students keep up with thoughts and corrections made throughout the project.

Step 2: Share your presentation link with your teacher Dperry@alvinisd.net / attach to google classroom under the appropriate Task 1-12.

1. Go to the top right corner and click the blue share button.

TASK 3 – Project Proposal / Purpose

1. Add the purpose or goal of your project to your Google Slide presentation or in your Science Fair composition notebook.
 1. on the Purpose or Goal slide
 - Describe the main purpose(s) or goal(s) for your project

Proposal Example :

The grocery store, in my neighborhood, usually sales off brand products at a cheaper rate. My problem is most of the name brand items are too expensive. I want to test, Can students tell the difference between off brand drinks and name brand drinks of different companies. My independent variable is the different types of drinks, where my dependent variable is the amount of students that are capable of distinguishing the difference between a variety of drinks. I will test my experiment by offering 5 name brand drinks and comparing them to 5 off brand drinks. I will survey 20 students and record their responses.

TASK 4 - Background Research

2. Conduct background research and write a summary
 - 4-5 paragraphs
 - Include at least 2-3 references, and cite it properly
3. Include your background research in your Google Slides presentation on the Background Research slide or in your Science Fair composition notebook.
4. Your background information should include the following kinds of information:
 - a. **What is your topic?**
 - b. **What do we know about our topic/ What have you learned about your topic?**
 - c. **What is the history of your topic?**
 - d. **How is your topic Important to consumers?**
 - e. **How is your topic scientific?**

TASK 5 – Question/Problem

5. Add your question to your Google Slide presentation or in your Science Fair composition notebook.

TASK 6 – Hypothesis

6. Add your hypothesis/problem/question to your Google Slide presentation or in your Science Fair composition notebook.
 - If you are doing “Comparative Investigation”
 - Write hypothesis in an if.....then..... statement
 - If you are doing “Engineering Design” Project
 - Write the problem statement for your engineering project.
 - How do you plan to assemble, what do you plan to represent.

TASK 7- Design/plan your investigation

7. Design and plan your investigation or build your engineering design prototype. Add your materials, safety considerations, and procedures to your Google Slides presentation or in your Science Fair composition notebook.
 - Variables (Dependent, Independent, Control)
 - Material(s)
 - Procedure
 - Safety (if any)
 - This should include:
 - a. An explanation of all project **variables**:
 - **Independent variable**: the one you change
 - **Dependent variable**: the one that you observe or measure
 - **Constant variables**: other variables which could affect the outcome but which you keep constant
 - **Control Group**: the group in which the independent variable is not present or is in its normal state
- *Design /Engineering process

TASK 8 - Collect, Organize and Explain Data/Observations

1. Conduct your investigation or build and test your prototype.
Add the following information to your Google Slides presentation or in your Science Fair composition notebook.

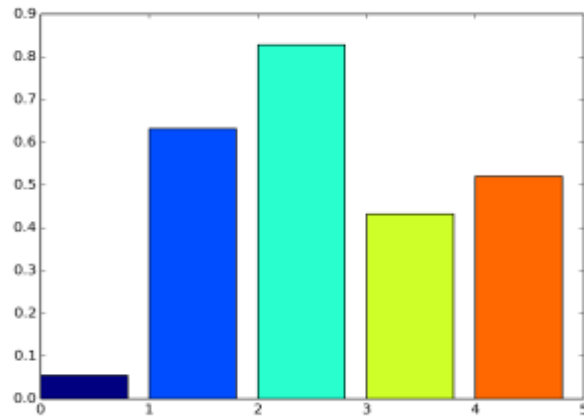
Comparative Experiment

- Observation and Pictures
- Data Table and Graph
- Engineering Design Construction Pictures

Data Table/Chart

Name of cereal	Amount of elemental iron from least to greatest
Coco Puffs	3
Total	5
Corn Pops	1
Cheerios	4
Fruit Loops	2

Data Graph



TASK 9 - Draw Conclusions and Explain

1. Add the following to your Google Slides presentation or in your Science Fair composition notebook.
 - Explain whether your observations support your purpose/goal or not.
 - If you had a hypothesis, state whether your data supported this hypothesis or not.
 - State the main points that you have learned from this experiment or project.

TASK 10 - Final Report * only Required for students wanting to compete at the district level.

- Where did you get your resources: Include books, articles, and websites
- Final report (Include your Problem, hypothesis, Materials, Variables, Procedures, Data ,Conclusion and Bibliography
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Students wishing to participate in the Alvin ISD science fair are **required to compile written composition entries**. Students can do both power point and composition or just the composition notebook. Power point is used to help students keep up with thoughts and corrections made throughout the project.

MS Science PBL Task Due Dates

TASK Number	Due Date
TASK 1 - Select your project topic	
TASK 2 - Create/copy a Blank Google Slides Presentation	
TASK 3 – Project Proposal	
TASK 4 – Background Research	
TASK 5 – Question	
TASK 6– Hypothesis(Educated Guess)	
TASK 7 - Design/plan your investigation (Materials, Variables, procedures)	
TASK 8 - Collect, Organize Data/Observations (Data chart and graph or pictures)	
TASK 9 - Draw Conclusions and Explain what happened in your project.	
TASK 10 – Final Report	
Task 11- Display Board (Creatively show your project off)	
TASK 12 - In-class Presentation to Peers teacher, and community judges	
TASK 13 – AISD District Science Fair	

After winter break, work with your teacher to decide which type of STEM competition is right for you to participate in.

Science Fairs

Participation in Science Fair is highly recommended for projects that are a comparative experiment or engineering design. Middle school students with these projects should prepare to participate in school-wide, cluster-wide, regional or even international science fair competitions. Check with your teacher for participation requirements and submission deadlines for competitions outside of the school. You will use your finished Google Presentation slides to create your tri-fold board.

STEM projects provide students an opportunity to design and perform independent investigations about a science topic that interests him/her, asks questions, creates investigations or engineering protocols to determine the answer, and communicates the results of their exploration and research.

STEM projects may be performed as an individual or a team. A team consists of 2 members. Prizes may include trophies, medals, and Alvin Community College Scholarships; scholarships are only awarded to students who are doing individual projects.

Categories:

Students must select a topic that is within one of the categories listed below and must be approved by their teacher before beginning any testing.

- Biological Sciences - Chemistry - Earth and Space - Engineering
- Environmental Science/Plants - Math/Computer Science - Physics

1. Project objective or goal is clearly stated and explained (Can be in the form of a purpose, hypothesis, question, or goal)	
2. Clear understanding of scientific principles relevant to the project (In written and oral presentations)	
3. Daily activity log (Daily journal of what the student did; this is not a copy of the presentation)	
4. Correct protocols were followed (Did the student follow safety rules and use correct engineering or experimental protocols)	
5. Research – minimum of 3 sources (Bibliography included in written presentation or in daily activity log; student must provide the title of the material, the author, website or publisher -if applicable; what information came from each sources; and how was each source useful)	
6. Presentation (Must have a visual presentation to accompany oral presentation; presentations can include but are not limited to trifold board, poster that can stand up on table, electronic presentation on laptop or similar device, models, etc.)	
7. Level of skill and effort used by the student(s) to carry out the project – consider the amount of time and work done by the student and the student’s understanding of the equipment used	
TOTAL SCORE	