

2018 STEAM Expo: Project Timeline & Guidelines

(To be used with the *Project Planning Packet*)

November 1st - December 20th:

STEP 1: Choose a Topic & Write a Project Question (for a science project) or Suggest a Solution (for an engineering project)

STEP 2: GET APPROVAL FROM YOUR TEACHER

STEP 3: Find Out More – Do Some Research and Write Key Words and Paragraph

STEP 4: Write a Hypothesis (for a science project) or Suggest a Solution to a Problem (for an engineering project)

December 21st - January 8th: WINTER BREAK – a *great* time to begin your project!

STEP 5: Design an Experiment or Solution to a Problem: List Variables & Write Procedure

STEP 6: List and Gather Materials

STEP 7: Conduct an Experiment: Test Your Hypothesis or Problem Solution

STEP 8: Collect and Record Data and Observations – **DUE WEDNESDAY JANUARY 17th**

STEP 9: Create a Table, Chart or Graph of the Data

STEP 10: Draw Conclusions – **DUE WEDNESDAY JANUARY 24th**

STEP 10: Make a Project Display - Write and Print Abstract

Friday, February 2nd: ALL PROJECTS DUE TO CLASSROOMS (complete and ready to be present)

Tuesday, February 6th: Wheat Ridge PROJECT SET-UP / Cafegymitorium

Wednesday, February 7th: Wheat Ridge Campus STEAM Expo - 9:00-11:00

Wednesday, February 7th: Golden PROJECT SET-UP / Elementary Commons

Thursday, February 8th: Golden Campus STEAM Expo - 9:00-11:00

Whole-School STEAM Expo Celebration / Golden - 6:00-7:15



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STEAM Expo: *Project Planning Packet*

Use this planning packet to guide your project. Follow each step. Steps specific to Science Experiments will be followed by an (S); steps specific to an Engineering Problem will be followed by an (E).

Name or Group Members: _____

	Due Dates	Things To Do
		Choose topic & write Project Question (S) or Problem Statement (E).
		Get approval from your teacher.
		Research your topic and write key words and paragraph.
		Write a Hypothesis (S), or suggest a Problem Solution (E).
		Design an Experiment (S) or Test (E); list Variables, Write your Procedure.
		List & gather your Materials.
		Conduct Experiment (S) or Test (E); record Data and Observations.
		Create a Table, Chart, or Graph of the data.
		Draw Conclusions.
		Make the Project Display.
		Write and Print Abstract
		Turn in Planning Packet to teacher.
		Present your project at the Science Fair.

1. Think of a Project Question (S) or Problem Statement (E) - Your question or solution will drive your entire project. Make sure that your question or solution is something that can be measured and answered by following the scientific process. Your question will also be the title of your project.

Project Question (S) or Problem Statement (E):

2. Research Your Topic – Spend some time with your group learning more about your topic. Use reliable Internet sources, books from the library, your science book, or other resources. Not only do you want to be an expert on your topic, but you want to teach others about your topic.

A. *Key Words* - Locate at least 3 key science or engineering words related to your topic. Make sure that the words you choose are directly related to your topic. Provide a definition of each key word **IN YOUR OWN WORDS**.

Key word	Definition

B. A Paragraph Describing the Science or Engineering behind Your Project - After you have completed your research give us (your audience) some background information on your topic in a complete and well-written paragraph (5-7 sentences). Give us specific, rather than general information. Use the space provided to write a draft. You will edit a final copy to place on your display board.

Research Description:

3. State Your Hypothesis (S) or Suggest a Problem Solution (E) –

- A. For a Science Experiment (S): Decide what you think the outcome of the project will be and make a good guess as to what you think the answer to your question will be. This is called the Hypothesis. Write it in a complete sentence.
- B. For an Engineering Project (E): Decide what you think the solution will be for the problem you observe. This is called the Problem Solution. Explain WHY you think that will be the outcome. Write it in a complete sentence.

Remember, it is ok if you don't have the right answer; that is how scientists and engineers make discoveries.

Hypothesis or Problem Solution:

4. Design an Experiment (S) or Test (E) - Clearly write out the procedure you will follow.

(For Science Experiments: Remember that a Science Experiment needs to follow the Scientific Method, and that you need to change only one “variable” :

Variables - List the variables that you are going to keep the same, and the one variable that you are going to change. In changing this one variable you are seeing if your hypothesis is correct.

- 2. *Write Your Procedure* - Think through each step very carefully and list them in numbered order.

Variables (S)

Variables to keep the same:

Variable to change (Independent Variable):

Procedure:

5. Gather Materials - List all the materials that you will need to complete your Experiment (S) or Test (E).

Materials

6. Conduct Experiment (S) or Test (E) - When you do your experiment or test you need to collect data and make observations.

1. *Collect Data* - You will need to collect numerical data; that means you need to take measurements during the experiment or test. It can be temperature, distance, height, etc. You will analyze the data later to determine the results of your experiment or test.
2. *Make Observations* - As you conduct your experiment or test you will use your senses (sight, smell, touch, etc.) and write down any observations you make during the process.

Data

Observations

7. Determine the Results - Now it is time to review your data and observations to find out what happened. Think about the best way to show your data: bar graph, line graph, chart, etc. and then create a table or a graph using your data. Write out the results of each part of the experiment or test in a paragraph using complete sentences. Make sure that you include the numerical data (measurements) as well as any other important observations that you made.

Results (graph or chart)

Use this space, or a separate sheet, to sketch one or more tables, charts, or graphs to analyze your data. You may also do this using a computer.

Results (paragraph)

8. Draw Conclusions - After you have determined the results it is time to decide the answer to your original Project Question (S) or Problem Solution (E). Write in complete sentences. You also need to tell whether your hypothesis was correct or incorrect (S), or if your solution was successful (E). If it was incorrect explain why you think so. End this paragraph by saying how you could change or improve your experiment in the future.

Conclusions

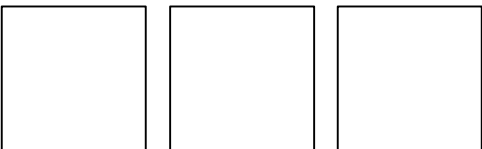

Answer to your original question or problem:

Was your hypothesis correct or incorrect? Was your suggested solution to the problem successful? If incorrect or not successful, why?

If you were to complete this experiment or test again, what changes would you make?
How would you improve this experiment?

9. Display board - Now that you have completed your experiment you will begin setting up your display board to communicate the results of your experiment to others. Remember, the board is graded on the information not how colorful or pretty it looks. Your display board must have ALL of the following components located in the same places. Other board guidelines:
- Font should be easy to read and at least a size of 16pt or greater.
 - Photos should not include faces of students
 - Information on the board can be typed or written neatly by hand.

Display Board

<p>Hypothesis</p> <div data-bbox="131 1087 443 1234"></div> <p>Key Words and Research</p> <div data-bbox="131 1327 443 1495"></div> <p>Procedure and Materials</p> <div data-bbox="131 1612 443 1875"></div>	<p>Question</p> <div data-bbox="537 1087 1039 1161"></div> <p>Photos or Drawings</p> <div data-bbox="561 1276 1039 1423"></div> <p>Graphs</p> <div data-bbox="597 1537 979 1858"></div>	<p>Results</p> <div data-bbox="1133 1087 1446 1375"></div> <p>Conclusion</p> <div data-bbox="1133 1516 1446 1803"></div>
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10. Abstract – The abstract is a short version of your science and engineering fair final report. It should be no more than 250 words. Most of the information you will put in your abstract is already written, you will just need to copy it over. You must have the following five components in your abstract:

- Introduction
- Project Question or Problem Statement
- Procedures
- Results
- Conclusions

The only new thing you will need to write is the **Introduction**. This is where you describe the purpose for doing this experiment (S) or test (E). Tell why people should care about the work you did. How does your experiment give us new science or engineering information? Can this information be used to improve our lives? If so, how? This is where you want to interest the reader in your project and motivate them to read the rest of it.

Abstract Introduction

Finally, you will type up the abstract, edit and revise it, and then print it. Make sure that your abstract is written in Times New Roman or Arial font at size 12pt.

STEAM Expo Rubric

Name or Group Members: _____

STEAM Expo Project Components

Component	Points Possible	Points Received
Science & Engineering Fair Project Planning Packet	10 pts	
Display Board with: <ul style="list-style-type: none"> • Question/Title • Hypothesis or Solution • Key Words • Research • Procedure and Materials • Photos/Drawings • Chart or Diagram • Results • Conclusion 	10 pts	
Record of Data & Observations Gathered	10 pts	
Abstract	10 pts	
TOTAL	40 pts	

STEAM Expo Project Content

Content	Points Possible	Points Received
Question or Statement * Question or Statement is relevant and testable	5 pts	0 1 2 3 4 5
Hypothesis or Suggested Solution * Hypothesis or Solution is based on observations	5 pts	0 1 2 3 4 5
Research * Key words and research are relevant to the hypothesis or solution	5 pts	0 1 2 3 4 5
Procedure * Procedure is clearly outlined and, for an experiment (S) presents a controlled experiment	5 pts	0 1 2 3 4 5
Results * Results are communicated clearly through graph/chart and well written explanation	5 pts	0 1 2 3 4 5
Conclusion * Conclusion includes appropriate evaluation of data and - proves or disproves the hypothesis (S) or - indicates success or failure of suggested solution (E)	5 pts	0 1 2 3 4 5
TOTAL	30 pts	

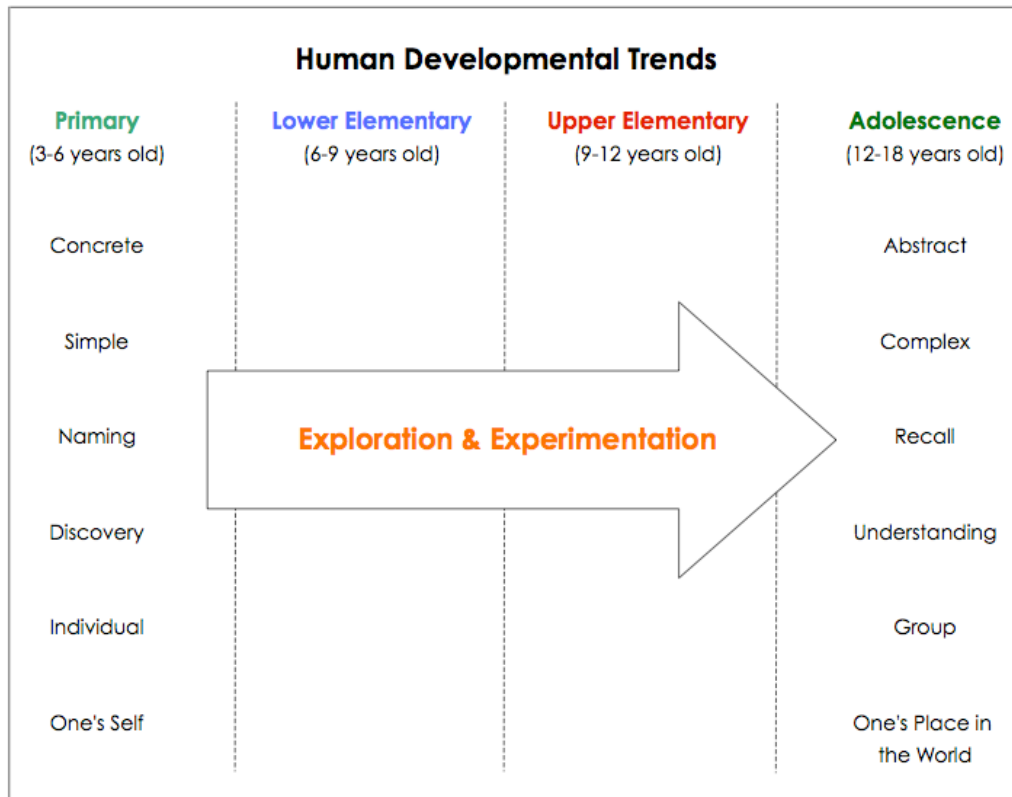
Goals of Compass Montessori School's STEAM Expo

It is our desire that the annual STEAM Expo is a time for playful and purposeful investigation of the Sciences, Technology, Engineering, the Arts, and Mathematics.

We intend that the Expo:

- supports children's natural curiosity,
- broadens children's understanding of science as a way of knowing, and
- promotes the importance of scientific literacy as a critical tool to understanding the universe and our place in it.

As such, we wish to assist children and their families in creating projects that meet each child's developmental needs.



The STEAM Expo is about exploration and experimentation. It is a time when authentic and important questions can be asked and solutions attempted. The focus is not on being right or figuring everything out; it's about the process of scientific inquiry.

Use the Project Timeline and Planning Packet as a guide to help your child be successful: age appropriate self-direction, critical thinking, inventiveness, collaboration, and information literacy.

Enjoy the process and have fun!