

STEM Projects

STEM projects involve the integration of science, technology, engineering, and mathematical concepts applied to solve a real-world problem. Students will plan an investigation to solve a real problem then design and engineer a prototype they can test and improve that attempts to solve the problem. The labels and descriptions show what you will need to display and explain on your project board.

STEM LABELS	WHAT TO WRITE ON MY STEM BOARD
Problem/ Question	A problem is a statement/question explaining what you are investigating. Research your topic and learn more about the problem you are investigating, what has already been studied, and what questions still remain about your investigation topic. Your research will help you understand more about your problem and help you write a hypothesis that can be tested by collecting experimental data.
Explore/ Hypothesis	A hypothesis is a prediction that you make about the problem you are investigating. It uses the research you gathered in the last phase of the investigation to form your hypothesis and design an experiment that you can use to test your prediction.
Design/ Plan	A plan is your initial idea or brainstorm of how you might go about testing your hypothesis. It might include your initial design and general information about how it will help you investigate your problem, and/or technical drawings that you will use in the create/procedure phase.
Materials	This will include a list of all the equipment and materials you use in your investigation. List each item by quantity, in a column, and include the units of measure wherever applicable.
Create/ Procedure	The procedure is a list of all the steps in your experimental trials, in the exact order you perform them. Be clear, but keep it simple. Other scientists should be able to replicate your experimental results by following the same procedures.
Improve/ Test	Explain how your design has changed from the initial design/plan phase. Include information about how your tests have informed your design changes and include any other important information about modifications that you have made to your product, experiment, or procedures. Once you have determined the best experimental design for your investigation, conduct three trials (repetition) and gather data.
Data	Data is a written record of all the observations (qualitative data) and measurements (quantitative data) made in your experimental tests. It is important to record everything that takes place. Include photographs from various phases of the investigation (do not photograph any human faces). Include the data (including units) from all three trials that took place during your improve/test phase in a data table and/or graph (bar, line, and circle graphs are all excellent ways to display your data). You should include a sketch, image, or technical drawing of your final design using both accuracy and precision . Make sure your final design has a title, labels for the various parts of your product/process, and measurements (using units) for each sketch, image, or technical drawing. Note: drawings, tables/charts, and graphs can be layered on top of each other when taped on the project board.

STEM Projects *(continued)*

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Share/ Conclusion	The conclusions section includes statements explaining the results/outcome of your investigation (provide data from your investigation that supports these statements). Do your results support or reject your hypothesis? What issues/problems occurred during your tests that may have affected your results, if any? Any claims (assertions) you make must be supported by the data recorded in your tables/charts/graphs. Provide information about whether or not your design worked and how it could be improved.
Real World Connections	Explicitly identify the science, technology, engineering, and mathematical concepts utilized in your investigation. Explain how your investigation relates to the real-world and/or career.