

Identify the Type of Project			
Project Category (<i>project must meet 2 of the 4 criteria</i>)			
Science _____	Technology _____	Engineering _____	Math _____

Experiment - Undertake an investigation to test a scientific hypothesis by the experimental method. One independent variable is manipulated; other variables are controlled

Part 1 - Project Vision

Level 4	Level 3	Level 2	Level 1
Complexity of Experiment			
Devise and carry out original experimental research in which most significant variables are identified and controlled. The data analysis is thorough and complete	Devise and carry out an original experiment. Identify the significant variables and attempt to control them. Analyse the results using appropriate arithmetic, graphical or statistical methods.	Extend a known experiment with modest improvements to the procedure, data gathering and possible applications	Replicate a known experiment to confirm previous findings
Content Understanding			
Student demonstrates mastery of content understanding and reflects deep understanding of current applications	Student demonstrates content understanding and reflects understanding of current applications	Content explanations is fair, however further attention to detail is required	Inconsistent evidence of content understanding
Creativity			
This highly original project demonstrates a novel approach. It shows resourcefulness and creativity in the design, use of equipment, construction and/or the analysis.	This imaginative project makes creative use of available resources. It is well thought out, and some aspects are above average	The project design is simple with some evidence of student imagination. It uses common resources or equipment. The topic is current or common one.	The project design is simple with little evidence of student imagination. It can be found in books, magazines, or on popular web sites
Innovative use of Technology			
Distinguish use of technology is evident both in product and project design	Use of technology is evident both in project and project design	Technology used simply as a presentation tool rather than integrated within project	Minimal use of technology
Evidence of Problem Solving			
Student uses a complex method of problem solving throughout project	Some problem solving evident	Inconsistent problem solving technique	Minimal use of effective problem solving

Part 2 - Planning the Project

Science Process Skills - Planning Phase			
Exceeding - 4	Meeting - 3	Approaching -2	Working Below -1
Testable Question			
	Testable and measurable/observable using specific language	Testable and measurable/observable form but not specific to the parameters	Any other answer
Prediction/Hypothesis			
<ul style="list-style-type: none"> • Makes a prediction or hypothesis statement which is testable; is specific with details • Makes a hypothesis using any format: <ul style="list-style-type: none"> -relevant to the question -testable -includes a plausible reason (refers to research) • Written in passive voice 	<ul style="list-style-type: none"> • Makes a prediction or hypothesis statement which is testable and specific • Makes a hypothesis using an “if, then, because” scaffold: <ul style="list-style-type: none"> -relevant to the question -testable -includes a plausible reason with some detail (may refer to reading or research) • Written in passive voice 	<ul style="list-style-type: none"> • Prediction or hypothesis is testable but is not specific • Makes a hypothesis using an “if, then, because” scaffold including a reason which may be relevant but lacks detail • Not written in passive voice 	<ul style="list-style-type: none"> Prediction or hypothesis is not clearly testable Makes a hypothesis but the reason is not clearly expressed, missing, or irrelevant Any other answer
Identifying Variables			
	Depending on the complexity of the investigation, most or all of the necessary variables are controlled and described in detail	Depending on the complexity of the investigation, most or all off the necessary variables are controlled	<ul style="list-style-type: none"> Only controls some of the relevant variables Control variables that are not relevant to the investigation Any other answer
	Students identify one independent variable that fits the question	Students identify one independent variable not relevant to the question	Any other answer
	Students identify one dependent variable that fits the question and is explained	Students identify one dependent variable that fits the question	<ul style="list-style-type: none"> Students identify one dependent variable not relevant to the question Any other answer

Science Process Skills - Planning Phase			
Exceeding - 4	Meeting - 3	Approaching -2	Working Below -1
Designing Investigations			
<p>Independently, student perform:</p> <ul style="list-style-type: none"> Procedures have a set of steps to test a single question Procedural design minimizes experimental bias Procedural design uses multiple trials to increase accuracy (if appropriate) Procedures are detailed enough to be repeated by someone else Procedures identify needed equipment and materials Procedures identify relevant measurements and/or observations to be made Procedures have one independent and one dependent variable and is written in a way that controls other major variables Procedures have an experimental group compared to a control group 	<p>Independently, student perform:</p> <ul style="list-style-type: none"> Procedures have a set of steps to test a single question Procedural design minimizes experimental bias Procedural design uses multiple trials to increase accuracy (if appropriate) Procedures are detailed enough to be repeated by someone else Procedures identify needed equipment and materials Procedures identify relevant measurements and/or observations to be made Procedures have one independent and one dependent variable and is written in a way that controls other major variables 	<p>Independently, student perform:</p> <ul style="list-style-type: none"> Procedures have a set of steps to test a single question Procedures are detailed enough to be repeated by someone else Procedures identify needed equipment and materials Procedures identify relevant measurements and/or observations to be made Procedures have one independent and one dependent variable and is written in a way that controls other major variables 	<p>Independently, student perform 3-4 of the following:</p> <ul style="list-style-type: none"> Procedures have a set of steps to test a single question Procedures are detailed enough to be repeated by someone else Procedures identify needed equipment and materials Procedures identify relevant measurements and/or observations to be made Procedures have one independent and one dependent variable and is written in a way that controls other major variables
	<ul style="list-style-type: none"> Students may require support using control and experimental groups 	<p>Students may require support with:</p> <ul style="list-style-type: none"> Procedural design minimizes experimental bias Procedural design uses multiple trials to increase accuracy (if appropriate) 	Any other answer

Part 3 - Analyzing the Results of the Data

Science Process Skills - Analysis Phase			
Exceeding - 4	Meeting - 3	Approaching -2	Working Below -1
Organizing and Displaying Data			
	<ul style="list-style-type: none"> Charts and graphs have all appropriate titles and labels and information is plotted correctly (Bar graph discrete, Line graph for continuous data) Graphs with proper x and y axis (convention in science is for IV on x axis and DV on y axis) 	Charts and graphs have all appropriate titles and labels and information is plotted correctly (Bar graph discrete, Line graph for continuous data)	Any other answer
Conclusion			
<ul style="list-style-type: none"> Is relevant to initial question and prediction/ hypothesis Distinguishes if independent variable is actual cause to support/refute the hypothesis States a relationship between variables and supporting evidence Reflects science understanding beyond that made available to students , indicating additional independent research Demonstrates analysis of data trends and relationships May included suggestions to improve experimental design based on discrepant data Compares finding of other similar investigations, if appropriate 	<ul style="list-style-type: none"> Is relevant to initial question and prediction/hypothesis States whether data supports or refutes initial prediction/ hypothesis States a relationship between variables and supporting evidence Reflects science understanding and gives some reason for results based on evidence Demonstrates analysis of data trends and relationships May included suggestions to improve experimental design based on discrepant data Compares finding of other similar investigations, if appropriate 	<ul style="list-style-type: none"> Is relevant to initial question and prediction/hypothesis States whether data supports or refutes initial prediction/ hypothesis Restates only the recorded results or is a result of flawed reasoning 	Any other answer

Part 4 - Project Presentation

Oral Presentation			
Exceeding - 4	Meeting - 3	Approaching - 2	Working Below - 1
Student gives a clear, logical, enthusiastic presentation about the topics. Student is able to respond to high level thinking questions related to the topic	Student gives a clear, logical, enthusiastic presentation about the topic. Student is able to answer general questions related to the topic	Student gives a somewhat clear/logical presentation about the topic. Student is able to answer rudimentary questions about the topic	Student gives a rehearsed presentation but cannot elaborate much on questions related to the topic.

Visual Display			
Exceeding - 4	Meeting - 3	Approaching - 2	Working Below - 1
The layout of the display flows in a logical manner. The exhibit is attractive and self-explanatory. The most relevant information is what is keyed on.	The layout of the display flows in a logical manner. The exhibit is attractive and self-explanatory	All elements of the scientific method related to the project type are present but display is convoluted. Physical demonstrations distract from key findings	A standard scientific method is displayed but may not include all key science skills and/or a physical demonstration is the focus

Feedback