Puyallup School District

STEM Showcase: Planning a Scientific Investigation Checklist

This is a checklist to help you plan/complete your science investigation. **All but the final two items on the checklist are part of your journal.** Judges are looking for a "working journal" when they judge your science fair project. A working journal is a place where you write down everything you do related to your project. You should write in your journal everyday you work on your project. Everything should be in your own writing. If you make a mistake, cross it out. Don't worry about erasing and making everything perfect. It is NOT a final copy. A journal that is written out after you have completed the experiment is NOT a working journal. Please look at the Journal Checklist and the Journal Rubric for specifics.

Checklist:

- ☐ Brainstorm a list of ideas for possible experiments.
- ☐ Select a topic from your brainstormed list.
- ☐ Research your topic. Take notes in your journal. Do not copy or print documents. Do not use Wikipedia as a primary source.
- ☐ Decide on your testable question. My testable question is:_____
- ☐ Write a hypothesis. Be sure to include a reason why you think this will happen.
- ☐ Identify the variables for your project:
    - Manipulated variable (What is the 1 thing that is being changed?)
    - Responding Variable (What will you be measuring? – Use a scientific tool)
    - Controlled Variables (What will you keep the same in your experiment?)
- ☐ Make a materials list.
- ☐ Decide how you will set up your materials. You might want to draw a picture of your setup in your journal.
- ☐ List the step by step procedures you will follow to complete your experiment.
- ☐ Conduct the experiment.
- ☐ Record the observations/results.
- ☐ Repeat the experiment
- ☐ Write your conclusion.
- ☐ Identify any questions that you still have.
- ☐ Create your display board. Your display board is considered to be your final copy.
- ☐ Practice for your oral discussion with the judges.

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STEM Showcase: Scientific Practices Journal Checklist

These are the **required** components of your journal:

Checklist:

- ☐ Dated daily entries: observations, measurements, data, and diagram/chart
- ☐ Brainstorm of possible topics
- ☐ Handwritten research notes and sources
- ☐ Testable question
- ☐ Prediction/hypothesis
- ☐ Variables
- ☐ Procedures
- ☐ Safety statement
- ☐ List of materials
- ☐ Diagrams/pictures
- ☐ Results
- ☐ Conclusion
- ☐ Reflection
- ☐ Repeated trials: 3x minimum

Possible dated daily entries ***may*** include:

- ☐ Trips to the library
- ☐ Books checked out
- ☐ Notes from people you interview
- ☐ Phone calls made
- ☐ Why you chose this topic
- ☐ Trips to the store for any needed materials
- ☐ Complications or unexpected events
- ☐ Mistakes made
- ☐ Misspelled words
- ☐ Crossed out mistakes (don't erase!)
- ☐ Incomplete sentences

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STEM Showcase: SP Discussion and Board Rubric

Name: **Project Number:**

Standard	Developing (1)	Competent (2)	Proficient (3)	Points
Testable Question	The testable question is not included OR the question is not testable. Responding variable may not be measured with a scientific tool.	The testable question may/may not include both the manipulated and responding variables. Variables may/may not be measured with a scientific tool.	The testable question includes both the manipulated and responding variables. Responding variable is measured with a scientific tool.	/3
Prediction/ Hypothesis	The prediction for the testable question is not included.	The prediction for the testable question does not include reasons for the prediction or is vague and unclear.	The prediction for the testable question includes reasons for the prediction.	/3
Variables	Experiment does not contain three variables.	Experiment contains of one or two of the three variables.	Experiment contains all three variables.	/3
Procedure	Step-by-step instructions are not included.	Step-by-step instructions are included but are incomplete or unclear.	Step-by-step instructions are included and are clear enough that others could do the investigation.	/3
Materials	Material list is not included.	Material list is incomplete.	Material list is complete and includes a list of tools needed for gathering data.	/3
Safety Statement	Safety statement is not included.	Safety statement is incomplete; some potential hazards are not identified.	Safety statement is complete and includes potential hazards.	/3
Results	The data/observations are not included.	The data/observations are unclear OR are incomplete.	The data/observations are clearly organized using tables, charts, graphs, or illustrations.	/3
Trials			Experiment was performed one or more times.	/3
Conclusion	Conclusion is not complete.	The conclusion states a claim, but is missing the evidence and/or the reasoning.	The conclusion contains claims, evidence, and reasoning.	/3
Reflection	Reflection is not complete.	The reflection shows some evidence of analysis and evaluation.	The reflection is a complete evaluation of the experiment, including what was successful, what could be done differently, and the experiment's application to the real-world.	/3
			Total Points (30 Points Possible)	/30

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STEM Showcase: Journal and Presentation Rubric

Grade: **Project Number:**

Standard	Judging Criteria	Points
Background Information & Daily Entries	☐ Journal contains handwritten notes and research about the science topic from **at least 3 different types of sources.** ☐ **Entire experiment** is documented. ☐ There are **at least 3 daily entries.**	/3
Scientific Practices	☐ Brainstorm of possible topics ☐ Handwritten research notes and sources ☐ Testable question ☐ Prediction/hypothesis ☐ Variables ☐ Procedures ☐ Safety statement ☐ List of materials ☐ Diagrams/pictures ☐ Results ☐ Conclusion ☐ Reflection ☐ Repeated trials: 3x minimum	/13
	Subtotal	/16
Presentation skills (2 pts. each)	☐ Experiment is explained clearly in complete thoughts. ☐ Student stands facing judge, makes eye contact, and is not chewing gum or eating food while presenting. ☐ Answers the judges questions with appropriate speed, volume, and expression; student is having a conversation with judges, not merely presenting a rehearsed speech.	/6
If both the journal and board meet expectations, then the student scientist must be able to clearly speak with the judges in order to be considered eligible for prizes or further movement to the district showcase.		
	Total Points (22 Points Possible)	/22