

High School Science Research Process Rubric

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Research Problem	<p>I describe my research question clearly, completely and in great detail.</p> <p>I make pertinent predictions that can be researched and tested.</p> <p>My hypothesis is based on conjectures with conditions.</p>	<p>I describe my research question clearly.</p> <p>I make reasonable predictions that can be researched and tested.</p> <p>My hypothesis is based on conjectures with some conditions.</p>	<p>I describe my research question but some elements are missing.</p> <p>My predictions may be difficult to research or test.</p> <p>My hypothesis lacks some conjectures or conditions.</p>	<p>My research question is missing, flawed or incompletely described.</p> <p>My predictions are not testable.</p> <p>My hypothesis is missing or not based on conjectures.</p>
Information Gathering	<p>My collection of relevant scientific background information focuses on the research question.</p> <p>My search of the literature includes many diverse, relevant sources: books, magazines, Internet, interviews.</p> <p>My gathered information has been described completely, with no content errors, misstatements of fact, or misconceptions.</p>	<p>My collection of scientific background information is related to the research question.</p> <p>My search of the literature includes an adequate amount of relevant, diverse sources.</p> <p>My gathered information has been described completely, with only minor content errors, misstatements of fact, or misconceptions.</p>	<p>My collection of scientific background information includes some information that is not relevant to the research question.</p> <p>My search of the literature includes some diversity of sources and/or the quantity is minimal.</p> <p>My gathered information has not been described completely or there are major content errors, misstatements of fact, or misconceptions.</p>	<p>My collection of scientific background information is not relevant to the research question.</p> <p>My search of literature is limited by lack of diversity and quantity of sources.</p> <p>I provide a limited description of the background information.</p>
Experimental	My investigation is a well	My investigation is a	My investigation is an	My investigation is

<p>Investigation</p>	<p>constructed test of the hypothesis and includes a detailed experiment that answers the research question completely.</p> <p>I include a clear step-by-step description of the experimental procedures:</p> <ul style="list-style-type: none"> • identify, address, and control all relevant independent and dependent variables, • include materials with labeled diagrams and drawings of any equipment used to carry out the experiment, • describe safety measures in detail <p>My investigation can be replicated exactly as described.</p>	<p>reasonably constructed test of the hypothesis and includes an experiment that answers the research question.</p> <p>I include a step-by-step description of the experimental procedures:</p> <ul style="list-style-type: none"> • identify and address most of the independent and dependent variables; control of variables is included, • include materials and diagrams and drawings, but not clearly labeled, • mention safety measures employed <p>I've organized the information so that the investigation can be replicated.</p>	<p>incompletely constructed test of the hypothesis which has small errors or answers the research question to some extent.</p> <p>I include a step-by-step description of the experimental procedure that misses some key details:</p> <ul style="list-style-type: none"> • identify and address some of the independent and dependent variables; attention given to the control of variables, • include materials; equipment might be mentioned, but not shown, • describe some safety measures <p>I've organized the information, but some parts are missing, making it difficult to replicate.</p>	<p>not relevant to the hypothesis or has serious errors.</p> <p>My description of the experimental procedure lacks key details:</p> <ul style="list-style-type: none"> • fails to address key independent and dependent variables; does not provide adequate attention to control of variables, • no mention of equipment used to carry out experiment, • no mention of safety measures <p>My information is not sufficient to replicate the investigation.</p>
<p>Data Collection and Display</p>	<p>I have a detailed description of my methods for collecting data and it has been collected in the most efficient and appropriate ways.</p> <p>My statistical analysis</p>	<p>I have a description of my methods of collecting data and a reasonable amount of data has been collected in a sufficient manner.</p> <p>My statistical analysis</p>	<p>My description of the methods of data collection is incomplete and a minimum amount of data has been collected.</p> <p>I include some statistical</p>	<p>My description of the methods of data collection is absent and insufficient data has been collected.</p> <p>I do not include</p>

	<p>procedures are clearly organized and I explain my reasons for choosing them. All of my original data is included.</p> <p>My data is accurately recorded and displayed and all variables are labeled.</p>	<p>procedures are valid and organized and contain few errors. Most of my original data is included.</p> <p>My data is recorded and displayed but my variables are unlabeled.</p>	<p>analysis procedures and some original data.</p> <p>My data is recorded and displayed but may not include labels or legend.</p>	<p>statistical analysis of the data.</p> <p>My data has not been recorded or displayed or it has been done so incorrectly.</p>
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<p>Analysis and Conclusion</p>	<p>My conclusion includes a restatement of the hypothesis, supports or refutes it and explains the role of the experiment in making the decision.</p> <p>My analysis includes identification of patterns, concepts, meanings or structures in the data and is used as evidence to support my statements.</p> <p>My analysis includes identification of sources of error and explains the effect on results.</p> <p>My conclusion includes comparisons, interpretations, inferences or deductions from the research information and prior knowledge.</p> <p>I recognize and discuss the scientific or societal implications of my research, propose solutions, and recommend new avenues of experimentation.</p>	<p>My conclusion includes a restatement of the hypothesis and supports or refutes it.</p> <p>My analysis uses data in support of statements.</p> <p>My analysis includes identification of sources of error.</p> <p>My conclusion includes comparisons and interpretations and makes some inferences or deductions.</p> <p>I discuss how the research is useful and propose solutions or recommend new avenues of experimentation.</p>	<p>My conclusion provides some relationship to the hypothesis.</p> <p>My analysis refers to data in the body of the report as support.</p> <p>My analysis suggests the possibility of error but identifies no sources.</p> <p>My conclusion compares or interprets some of the information, but does not make inferences or deductions.</p> <p>I state that the research is useful, but provide no reasoning and I suggest some solutions or further investigations, but they may not completely relate to the conclusion.</p>	<p>My conclusion shows no relationship to the hypothesis.</p> <p>My analysis does not use data to support my arguments</p> <p>My analysis does not address the possibility of error.</p> <p>My conclusion does not interpret information or make inferences or deductions.</p> <p>I do not discuss the usefulness of the research and do not recognize solutions which follow from the knowledge gained.</p>
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