Scientific Inquiry Formative Assessment Rubric for Middle School Students

COMPONENT	Novice (Level 1)	Intermediate (Level 3)	Skillful (Level 5)
I . Raising Questions and Proposing Tentative Explanations CINQ.1,CINQ.2 and CINQ.5	• Your observations are limited and may include opinions and/or inferences. • The question you identified is vague or cannot be answered by a scientific investigation.	• Your observations are objective and systematic, but limited in number and depth. • You have identified a testable question without a proposed scientific explanation.	• Your observations are objective, systematic, varied, and enhanced by tools or diagrams. • You have identified a testable, open-ended question and proposed a scientific explanation.
Examples from your work:			
II. Designing Controlled and Replicable Tests to Answer Scientific Questions CINQ.3, CINQ.4 and CINQ.5	• Your procedure is not clear about what you changed and what you kept the same or what you measured to answer the question. • Your experiment cannot be repeated because it is confusing or lacking detail.	• Your procedure describes a general plan to change the independent variable, measure the dependent variable and keep some factors constant. • Your experiment cannot be repeated because variables are not measurable or quantities are not stated.	• Your procedure describes quantitatively how you plan to change the independent variable, measure the dependent variable and keep everything else constant. • Your experiment is replicable and it can generate data to answer the question.
Examples from your work:			

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III. Recording and working with data CINQ.6 and CINQ.7	• You collected and recorded too little data to find patterns or be confident in the results. • Data are displayed in incomplete or disorganized tables, and graphs are inappropriate for the data or are not constructed properly.	• You collected and recorded appropriate data to address the question, but not enough to identify patterns or to be confident in the results. • Data are displayed systematically in tables, but some labels or measurement units may be missing. Graphs are labeled correctly, but there are minor scaling or plotting errors.	• You collected and recorded enough appropriate data to answer the question, be confident in the results, and you analyzed the data to find patterns. • Data are displayed systemically and completely in tables that include labels and measurement units. Appropriate graphs clarify the conclusion and are labeled, scaled and plotted correctly.
Examples from your work:			
IV. Communicating and critiquing evidence-based conclusions CINQ.8, CINQ.9 and CINQ.10	• You restated data or retold the procedure, but did not form a conclusion. • You did not suggest any changes that could improve the investigation.	• Your conclusion summarizes data from your experiment, but you did not explain how the data relates to a proposed scientific explanation. • You suggested changes to the investigation, but it is not clear how they would improve the investigation.	• Your conclusion states and interprets data from your experiment as evidence to support or refute the scientific explanation you proposed. • You suggested changes to the investigation that would increase confidence in the conclusion.
Examples from your work:			