**DRAFT LDC Rubric Dimensions for NGSS Science Integration**

**MIDDLE SCHOOL Grades 6-8**

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|  | **Not Yet** | **Approaches Expectations** | **Meets Expectations** | **Advanced** |
| **Integration of NGSS Strands: *How well does the student integrate disciplinary core ideas, cross cutting concepts, and science/ engineering practices?*** | | | | |
| *Use this row to holistically rate the student’s integration of the NGSS strands.* | *Uses science/engineering practice(s) to demonstrate and apply content OR makes connections to the cross cutting concepts with major errors or omissions.* | *Uses science/engineering practice(s) to demonstrate and apply content while making connections to the cross cutting concepts with minor errors.* | *Uses science/engineering practice(s) to demonstrate and apply accurate content and makes connections to the cross cutting concepts* | *Uses science/engineering practice(s) to demonstrate and apply accurate content and explains the connections (relationships) to the cross-cutting concepts.* |
| **NGSS Strand** | **Not Yet** | **Approaches Expectations** | **Meets Expectations** | **Advanced** |
| ***Disciplinary Core Ideas***  *[SELECT SPECIFIC CONTENT STANDARD(S) HERE.]* | Identifies or otherwise applies irrelevant content OR relevant content with major errors or omissions. | Identifies or otherwise applies relevant content with minor errors or omissions. | Explains or otherwise applies relevant and accurate content. | Explains and applies relevant and accurate content. |
| ***Cross Cutting Concepts***  *[SELECT SPECIFIC CROSS-CUTTING CONCEPT(S).]*  Patterns; Cause & Effect; Scale, Proportion, and Quantity; Systems & System Models; Energy & Matter; Structure & Function; Stability & Change | Identifies or makes connection to irrelevant cross cutting concept(s) OR to relevant cross cutting concept(s) with major errors or omissions. | Identifies or makes connection(s) to relevant cross cutting concept(s) with minor errors or omissions. | Explains OR makes accurate connections to relevant cross cutting concept(s). | Explains and makes accurate connections to relevant cross cutting concept(s). |

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| **NGSS Strand** | **Not Yet** | **Approaches Expectation** | **Meets Expectation** | **Advanced** |
| **Science and Engineering Practices *[SELECT SPECIFIC PRACTICE(S) RELEVANT TO THE TEACHING TASK.]*** | | | | |
| *ASK Questions* | Asks general questions that do not require evidence to answer. | Asks testable questions that require sufficient and relevant evidence to answer. | Asks testable questions that require sufficient and relevant evidence to answer and evaluates the testability of the questions. | Asks testable questions that require sufficient and relevant evidence to answer, evaluates the testability of the questions, and identifies the dependent and independent variables as well as control (if appropriate). |
| *DEfine Problems* | Defines a problem or design statement that is impractical or does not match the intent of the problem or constraints. | Defines a problem or design statement that generally matches the intent of the problem or constraints. | Defines a problem or design statement that completely matches the intent of the problem and constraints. | Defines a problem or design statement that completely matches the intent of the problem and constraints, and explains how the design solves the problem and addresses constraints. |
| *DEvelop MODEL* | Constructs models (e.g., 3-d objects, drawings, or diagrams) relevant to the investigation with major conceptual or factual errors or omissions. | Constructs models (e.g., 3-d objects, drawings, or diagrams) to represent the process or system to be investigated, with minor errors or omissions. | Constructs accurate and labelled models (e.g., 3-d objects, drawings, or diagrams) to represent the process or system to be investigated. | Constructs accurate, labelled, and detailed models (e.g., 3-d objects, drawings, or diagrams) to represent the process or system to be investigated and provides an explanation of the representation. |
| *use Models* | Uses the model without evaluating the accuracy or limitations of the model as a representation of the system or process. Discussion of model includes major errors or omissions. | Uses the model and evaluates the accuracy OR limitations of the model as a representation of the system or process. Discussion of model includes minor errors. | Uses the model and evaluates the accuracy AND limitations of the model as a representation of the system or process. | Uses the model and evaluates the accuracy AND limitations of the model as a representation of the system or process and explains how the model might be improved. |
| ***PLAN THE INVESTIGATION*** | Designs an investigation that will not produce relevant data and/or evidence to answer the question(s). | Designs an investigation that will produce relevant data but with minimal detail about the variables and/or evidence to be used to answer the question(s). | Designs an investigation identifying variables (dependent, independent, and controls) that will adequately produce relevant data and/or evidence to answer the question(s). | Designs an investigation identifying and explaining the variables (dependent, independent, and controls) that will produce relevant data and/or evidence to answer the question(s). |

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| ***PLAN THE DESIGN*** | Proposes a design plan and explains the criteria, constraints, OR intent of the problem with major errors or omissions. | Proposes a design plan and explains the criteria, constraints, OR intent of the problem with minor errors or omissions. | Proposes a design plan and explains how the plan addresses the criteria, constraints, and intent of the problem. | Proposes a design plan with detailed explanation that thoroughly explains how the plan addresses the criteria, constraints, and intent of the problem. |
| *CONDUCT INVESTIGATION OR TEST DESIGN* | Uses inappropriate scientific methods OR collects irrelevant data to be used as evidence to answer the question(s). | Uses appropriate scientific methods and collects limited relevant data to be used as evidence to answer the question(s). | Uses appropriate scientific methods and collects multiple trials (if appropriate) of relevant data to be used as evidence to answer the question(s). | Uses appropriate scientific methods and collects multiple trials (if appropriate) of relevant data to be used as evidence to answer the question(s), and evaluates the accuracy of the data collection methods used. |
| ***REPRESENT***  ***DATA*** | Constructs spreadsheets, data tables, charts, or graphs that are not accurately labelled or do not display all the data. | Constructs accurately labelled spreadsheets, data tables, charts, or graphs to accurately summarize and display data, but does not allow for examining the relationships between variables. | Constructs accurately labelled spreadsheets, data tables, charts, or graphs to accurately summarize and display data to examine the relationships between variables. | Constructs accurately labelled spreadsheets, data tables, charts, and/or graphs and uses more than one of these methods to accurately summarize and display data to examine the relationships between variables. |
| ***Analyze***  ***data*** | Analyzes data using inappropriate methods or with major errors or omissions. | Analyzes data using appropriate methods with minor errors or omissions. | Accurately analyzes data using appropriate methods to identify patterns. | Accurately analyzes data using appropriate and systematic methods to identify patterns. |

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| ***interpret***  ***data*** | Identifies the limitations of the data analysis (e.g., measurement error, sample selection) with major errors or omissions. | Identifies the limitations of the data analysis (e.g., measurement error, sample selection) with minor errors or omissions. | Identifies the limitations of the data analysis (e.g., measurement error, sample selection) and identifies some implications for the findings. | Evaluates the limitations of the data analysis (e.g., measurement error, sample selection) and explains some implications for the findings. |
| ***USE MATHEMATICS AND COMPUTATIONAL THINKING*** | Attempts to apply mathematical concepts or methods (e.g., ratio, rate, percent, basic operations, and simple algebra) relevant to scientific questions or engineering problems, but applies them with major errors or omissions. | Applies appropriate mathematical concepts or methods (e.g., ratio, rate, percent, basic operations, and simple algebra) relevant to scientific questions or engineering problems, but applies them with minor errors or omissions. | Accurately applies appropriate mathematical concepts and methods (e.g., ratio, rate, percent, basic operations, and simple algebra) to answer scientific questions or engineering problems. | Accurately applies appropriate mathematical concepts and methods (e.g., ratio, rate, percent, basic operations, and simple algebra) to answer scientific questions or engineering problems AND explains whether the answer “makes sense”. |
| ***Design Solutions*** | Uses no data to evaluate how well the design addresses the problem/constraints. The redesign of the original model or prototype is inappropriate or incomplete. | Uses relevant but limited amounts of data to evaluate how well the design addresses the problem/constraints and outlines an appropriate redesign of the original model or prototype. | Uses relevant and adequate amounts of data to evaluate how well the design addresses the problem/constraints and using the data explains an appropriate redesign of the original model or prototype. | Uses detailed and complete data to evaluate how well the design addresses the problem/constraints and provides a detailed rationale with supporting data for the appropriate redesign of the original model or prototype. |

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| ***Obtain, evaluate, and communicate information*** | When conducting independent research, relies on one or two relevant sources, without evaluating their credibility, accuracy, or possible bias. | When conducting independent research, selects a limited number of relevant sources and evaluates the credibility, accuracy, and/or possible bias of one of the sources used. | When conducting independent research, selects multiple relevant scientific sources and evaluates the credibility, accuracy, and/or possible bias of the sources used. | When conducting independent research, selects a variety of relevant, high quality scientific sources and evaluates the credibility, accuracy, and possible bias of the sources as well as evidence drawn from sources in constructing an argument or explanation. |

Note: Two practices, 1) Construct Explanations and 2) Engage in Arguments from Evidence, have been purposely excluded from the menu because they are already addressed by the LDC rubrics for Argumentation and Informational/Explanatory writing.