Fayette County Public Schools
Science Enduring Skills
Draft

Kindergarten - High School

IMPORTANT INFORMATION ABOUT THE RUBRICS AND USING THEM:

When you first look at the Science Enduring Skill rubrics, you will note that each of the rubrics is comprised of three distinctly different sections (developed based on teacher and TPGES Coach input and requests).

The first sections are Proficiency Tables for each of the criteria(s) of that specific Science Enduring Skill. This is a listing of THE PROFICIENCY LEVELS ONLY FOR EACH GRADE LEVEL. The purpose of this section is to allow the reader to relatively quickly determine approximately at what level a student is currently working. This is not a table of intervals. This also allows a teacher to see the increase in depth and complexity for specific criteria as students' progress from Kindergarten through High School.

The 2nd or middle section of each Science Enduring Skill rubric is the actual grade level by grade level rubric for each criterion which makes up the Science Enduring Skill. This allows the teacher to see the intervals prior to proficiency and what the next interval is once proficiency is reached. You will note there is a definite pattern of spiraling of the descriptors as students progress K-12 in science. The rubric design took into account that students who achieve proficiency at the end of a specific grade level will be entering the next grade level at that point. So you will note for example that a level of "3" (which is considered Proficient) in the 2nd grade is the same descriptor as a "1" in 3rd grade as that is where a 3rd grade student would be expected to start if they were proficient previously. You will see the same pattern between the "4" in 2nd grade and "2" in 3rd grade as those are the next steps in complexity.

Please do not assume that just because a student is in a specific grade that you have to use that grade level rubric only. THESE ARE RUBRICS FOR THE "ENDURING SKILL." You will have students working above their grade level as well as below their grade level – you start where the student is performing at that point in time. You meet the student where they are and grow from there. You will note the only place that a student's inability to do a skill at all will only show up as a "1" in kindergarten – beyond that we expect to see growth.

The third and final section of each Science Enduring Skill rubric is a Linear Alignment of each specific criteria of the enduring skill which essentially takes out the spiraling overlap – this will allow a teacher to more easily see the interval adjustment as it relates to the Student Growth Goals.

Table of Contents:

Science Enduring Skill #1 – Use scientific thinking to question the natural and designed world.

Framework for K-12 Science Education, Practice 1: Asking Questions & Defining Problems, pages 54-56.
NGSS Appendix F, pages 4, 17-18

Criteria: Ask questions that lead to investigation

Grade Level	Proficiency by Grade Level For Ask questions that lead to investigation
Kindergarten	Asks one question based on observations about the world.
1st Grade	Asks questions based on observations to find more information about the natural or designed world(s). Identifies which simple questions can be answered by an investigation.
2nd Grade	Based on observations, asks descriptive questions which lead to investigation.
3rd Grade	Based on observations and prior knowledge, asks descriptive questions which lead to investigation.
4th Grade	Identifies and asks scientific (testable) and non-scientific (non-testable) questions. Identifies questions where one variable is changed.
5th Grade	Identifies and asks scientific (testable) and non-scientific (non-testable) questions. Asks questions about what would happen if a variable is changed and predict reasonable outcomes.
6th Grade	Ask questions based on observations, models, and scientific principles, to frame a hypothesis for investigation. Ask questions to clarify evidence. Refine non-testable questions to generate testable questions.
7th Grade	Ask questions based on observations, models and scientific principles to determine relationships and further understand phenomena.
8th Grade	Ask questions that can be investigated, based on sufficient and appropriate empirical evidence. Clarify and/or refine a model, explanation or problem.

1st High School Science Course	Use models to ask and refine questions that can be investigated, based on sufficient and appropriate empirical evidence. Challenge an argument or the interpretation of data.
2nd High School Science Course	Use models or simulations to formulate and refine questions that can be investigated, based on sufficient and appropriate empirical evidence. Formulate questions to determine relationships between variables. Suggest additional relevant testable questions. Challenge an argument or the interpretation of data.
3rd High School Science Course	Use models or simulations to formulate and/or evaluate probing questions that challenges the position of an argument, interpretation of a data set, or the suitability of an experimental design.

Subject: Science **Teacher:** _____ **Grade Level:** Kindergarten

Enduring Skill: Enduring Skill #1: Use scientific thinking to question the natural and designed world.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Ask questions that lead to investigation	Does not ask questions or asks questions that are not relevant.		Begins to ask simple questions (with prompting).		Asks one question based on observations about the world.		Asks multiple questions based on observations about the world.

Subject: Science **Teacher:** _____ **Grade Level:** 1st Grade

Enduring Skill: Enduring Skill #1: Use scientific thinking to question the natural and designed world.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Ask questions that lead to investigation	Asks one question based on observations about the world.		Asks multiple questions based on observations about the world.		Asks questions based on observations to find more information about the natural or designed world(s). Identifies which simple questions can be answered by an investigation.		Asks descriptive questions (with prompting) based on observations that lead to investigation.

Subject: Science **Teacher:** _____ **Grade Level:** 2nd Grade

Enduring Skill: Enduring Skill #1: Use scientific thinking to question the natural and designed world.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Ask questions that lead to investigation	Identifies simple questions that can be answered by an investigation.		Asks descriptive questions (with prompting) based on observations that lead to investigation.		Based on observations, asks descriptive questions which lead to investigation.		Asks descriptive questions that can be investigated and predicts reasonable outcomes.

Subject: Science **Teacher:** _____ **Grade Level:** 3rd Grade

Enduring Skill: Enduring Skill #1: Use scientific thinking to question the natural and designed world.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Ask questions that lead to investigation	Asks descriptive questions based on observations as well as those that lead to investigation.		Asks descriptive questions that can be investigated and predict reasonable outcomes.		Based on observations and prior knowledge, asks descriptive questions which lead to investigation.		With support, begins to consider scientific (testable) and non-scientific (non-testable) questions.

Subject: Science **Teacher:** _____ **Grade Level:** 4th Grade

Enduring Skill: Enduring Skill #1: Use scientific thinking to question the natural and designed world.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Ask questions that lead to investigation	Asks descriptive questions based on observations and prior knowledge, which lead to investigation.		With support, begins to consider scientific (testable) and non-scientific (non-testable) questions.		Identifies and asks scientific (testable) and non-scientific (non-testable) questions. Identifies questions where one variable is changed.		Identifies scientific and non-scientific questions; identifies at least one variable within an investigation

Subject: Science **Teacher:** _____ **Grade Level:** 5th Grade

Enduring Skill: Enduring Skill #1: Use scientific thinking to question the natural and designed world.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Ask questions that lead to investigation	Identifies scientific (testable) and non-scientific (non-testable) questions.		Identifies scientific and non-scientific questions; identifies at least one variable within an investigation.		Identifies and asks scientific (testable) and non-scientific (non-testable) questions. Asks questions about what would happen if a variable is changed and predict reasonable outcomes.		Asks scientific questions and begins to identify the relationship between the independent and dependent variable.

Subject: Science **Teacher:** _____ **Grade Level:** 6th Grade

Enduring Skill: Enduring Skill #1: Use scientific thinking to question the natural and designed world.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Ask questions that lead to investigation	Distinguishes between scientific and nonscientific questions; asks questions that change one variable and predicts reasonable outcomes.		Ask questions based on observations, models and scientific principles to determine relationships between independent and dependent variables.		Ask questions based on observations, models, and scientific principles, to frame a hypothesis for investigation. Ask questions to clarify evidence. Refine non-testable questions to generate testable questions.		Ask questions based on observations, models scientific principles, and data to frame a hypothesis for investigation. Ask questions that clarify and challenge arguments and interpretation of data.

Subject: Science **Teacher:** _____ **Grade Level:** 7th Grade

Enduring Skill: Enduring Skill #1: Use scientific thinking to question the natural and designed world.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Ask questions that lead to investigation	Ask questions based on observations, models, scientific principles, and data to frame a hypothesis for investigation. Ask questions to clarify evidence. Refine non-testable questions to generate testable questions.		Ask questions based on observations, models scientific principles, and data to frame a hypothesis for investigation. Ask questions that clarify and challenge arguments and interpretation of data.		Ask questions based on observations, models and scientific principles to determine relationships and further understand phenomena.		Ask questions that clarify and challenge arguments and interpretation of data. Ask questions based on data to frame a hypothesis for investigation. Ask questions to clarify evidence or determine relationships between variables.

Subject: Science **Teacher:** _____ **Grade Level:** 8th Grade

Enduring Skill: Enduring Skill #1: Use scientific thinking to question the natural and designed world.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Ask questions that lead to investigation	Ask questions based on observations, models and scientific principles to determine relationships and further understand phenomena.		Ask questions that clarify and challenge arguments and interpretation of data. Ask questions based on data to frame a hypothesis for investigation. Ask questions to clarify evidence or determine relationships between variables.		Ask questions that can be investigated, based on sufficient and appropriate empirical evidence. Clarify and/or refine a model, explanation or problem.		Ask questions that can be investigated, based on sufficient and appropriate empirical evidence. Clarify and/or refine a model, explanation or problem. Challenge an argument or the interpretation of data.

Subject: Science **Teacher:** _____ **Grade Level:** 1st HS Course

Enduring Skill: Enduring Skill #1: Use scientific thinking to question the natural and designed world.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Ask questions that lead to investigation	Ask questions that can be investigated, based on sufficient and appropriate empirical evidence. Clarify and/or refine a model, explanation or problem.		Ask questions that can be investigated, based on sufficient and appropriate empirical evidence. Clarify and/or refine a model, explanation or problem. Challenge an argument or the interpretation of data.		Use models to ask and refine questions that can be investigated, based on sufficient and appropriate empirical evidence. Challenge an argument or the interpretation of data.		Use models to ask and refine questions that can be investigated, based on sufficient and appropriate empirical evidence. Challenge an argument or the interpretation of data Suggest additional relevant testable questions.

Subject: Science **Teacher:** _____ **Grade Level:** 2nd HS Course

Enduring Skill: Enduring Skill #1: Use scientific thinking to question the natural and designed world.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Ask questions that lead to investigations	Use models to ask and refine questions that can be investigated, based on sufficient and appropriate empirical evidence. Challenge an argument or the interpretation of data.		Use models to ask and refine questions that can be investigated, based on sufficient and appropriate empirical evidence. Challenge an argument or the interpretation of data Suggest additional relevant testable questions.		Use models or simulations to formulate and refine questions that can be investigated, based on sufficient and appropriate empirical evidence. Formulate questions to determine relationships between variables. Suggest additional relevant testable questions. Challenge an argument or the interpretation of data.		Use models or simulations to formulate and refine questions that can be investigated, based on sufficient and appropriate empirical evidence. Formulate questions to determine relationships between variables. Suggest additional relevant testable questions. Challenge an argument or the interpretation of data. Suggest additional relevant testable questions. Challenge an argument or the interpretation of data.

Subject: Science **Teacher:** _____ **Grade Level:** 3rd HS Course

Enduring Skill: Enduring Skill #1: Use scientific thinking to question the natural and designed world.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Ask questions that lead to investigations	Use models or simulations to formulate and refine questions that can be investigated, based on sufficient and appropriate empirical evidence. Formulate questions to determine relationships between variables. Suggest additional relevant testable questions. Challenge an argument or the interpretation of data.		Use models or simulations to formulate and refine questions that can be investigated, based on sufficient and appropriate empirical evidence. Formulate questions to determine relationships between variables. Suggest additional relevant testable questions. Challenge an argument or the interpretation of data. Suggest additional relevant testable questions. Challenge an argument or the interpretation of data.		Use model or simulations to formulate and/or evaluate probing questions that challenges the position of an argument, interpretation of a data set, or the suitability of an experimental design.		Use models or simulations to formulate, refine and/or evaluate probing questions that challenges the position of an argument, interpretation of a data set, or the suitability of an experimental design. Suggest additional relevant testable question.

Linear Alignment of Criteria

Enduring Skill: Enduring Skill #1: Use scientific thinking to question the natural and designed world. **Criteria: Ask Questions that lead to investigation K – 12**

Criteria	K - 1		K - 2		K - 3 and 1st Grade - 1		K - 4 and 1st Grade - 2		1st Grade – 3 and 2nd Grade - 1
Ask questions that lead to investigation	Does not ask questions or asks questions that are not relevant.		Begins to ask simple questions (with prompting).		Asks one question based on observations about the world.		Asks multiple questions based on observations about the world		Asks questions based on observations to find more information about the natural or designed world(s). Identifies which simple questions can be answered by an investigation.
	1st Grade - 4 and 2nd Grade - 2		**2nd Grade - 3 and 3rd Grade - 1**		**2nd Grade - 4 and 3rd Grade - 2**		**3rd Grade - 3 and 4th Grade - 1**		**3rd Grade - 4 and 4th Grade - 2**
Ask questions that lead to investigation	Asks descriptive questions (with prompting) based on observations that lead to investigation.		Based on observations, asks descriptive questions which lead to investigation.		Asks descriptive questions that can be investigated and predicts reasonable outcomes.		Based on observations and prior knowledge, asks descriptive questions which lead to investigation.		With support, begins to consider scientific (testable) and non-scientific (non-testable) questions.
	4th Grade – 3 and 5th Grade - 1		**4th Grade - 4 and 5th Grade - 2**		**5th Grade - 3 and 6th Grade - 1**		**5th Grade - 4 and 6th Grade - 2**		**6th Grade - 3 / 7th Grade - 1**
Ask questions that lead to investigation	Identifies and asks scientific (testable) and non-scientific (non-testable) questions. Identifies questions where one variable is changed.		Identifies scientific and non-scientific questions; identifies at least one variable within an investigation.		Identifies and asks scientific (testable) and non-scientific (non-testable) questions. Asks questions about what would happen if a variable is changed and predict reasonable outcomes.		Asks scientific questions and begins to identify the relationship between the independent and dependent variable.		Ask questions based on observations, models, scientific principles, and data to frame a hypothesis for investigation. Ask questions to clarify evidence. Refine non-testable questions to generate testable questions.

	6th Grade - 4 and 7th Grade - 2		7th Grade - 3 and 8th Grade - 1		7th Grade - 4 and 8th Grade - 2		8th Grade – 3 and 1st HS – 1		8th Grade – 4 and 1st HS - 2
Ask questions that lead to investigation	Ask questions based on observations, models scientific principles, and data to frame a hypothesis for investigation. Ask questions that clarify and challenge arguments and interpretation of data.		Ask questions based on observations, models and scientific principles to determine relationships and further understand phenomena.		Ask questions that clarify and challenge arguments and interpretation of data. Ask questions based on data to frame a hypothesis for investigation. Ask questions to clarify evidence or determine relationships between variables.		Ask questions that can be investigated, based on sufficient and appropriate empirical evidence. Clarify and/or refine a model, explanation or problem.		Ask questions that can be investigated, based on sufficient and appropriate empirical evidence. Clarify and/or refine a model, explanation or problem. Challenge an argument or the interpretation of data
	1st HS – 3 and 2nd HS - 1		**1st HS – 4 and 2nd HS – 2**		**2nd HS – 3 and 3rd HS – 1**		**2nd HS – 4 and 3rd HS – 2**		**3rd HS - 3**
Ask questions that lead to investigation	Use models to ask and refine questions that can be investigated, based on sufficient and appropriate empirical evidence. Challenge an argument or the interpretation of data.		Use models to ask and refine questions that can be investigated, based on sufficient and appropriate empirical evidence. Challenge an argument or the interpretation of data Suggest additional relevant testable questions.		Use models or simulations to formulate and refine questions that can be investigated, based on sufficient and appropriate empirical evidence. Formulate questions to determine relationships between variables. Suggest additional relevant testable questions. Challenge an argument or the interpretation of data.		Use models or simulations to formulate and refine questions that can be investigated, based on sufficient and appropriate empirical evidence. Formulate questions to determine relationships between variables. Suggest additional relevant testable questions. Challenge an argument or the interpretation of data. Suggest additional relevant testable questions. Challenge an argument or the interpretation of data.		Use models or simulations to formulate and/or evaluate probing questions that challenges the position of an argument, interpretation of a data set, or the suitability of an experimental design.

	3rd HS - 4							
Ask questions that lead to investigation	Use models or simulations to formulate, refine and/or evaluate probing questions that challenges the position of an argument, interpretation of a data set, or the suitability of an experimental design. Suggest additional relevant testable question.							

Science Enduring Skill #2 – Use scientific thinking to define problems within the natural and designed world.

Framework for K-12 Science Education, Practice 1: Asking Questions & Defining Problems, pages 54-56.
NGSS Appendix F, pages 4, 17-18

Criteria: Identify and/or Define Problem(s)

Grade Level	Proficiency by Grade Level For Identify and/or Define Problem(s)
Kindergarten	With support, defines a problem that is solved by a familiar object or tool.
1st Grade	Independently defines a problem that is solved by a familiar object or tool.
2nd Grade	Independently defines a problem that can be solved by a *new or improved* object or tool.
3rd Grade	With support, uses prior knowledge to describe related problem(s) that can be solved by a *new or improved* object or tool. Independently identifies a relevant criterion for successful solution of problem(s). With support, identifies possible constraints within the natural and designed world.
4th Grade	With support, uses prior knowledge to describe related problem(s) that can be solved through the development of an object, tool, process, or system *[support may be peer-based or teacher-driven].* With support, identifies several relevant criteria for successful solution of problem(s) *[support may be peer-based or teacher-driven].* With support, gives reasonable consideration to constraints of materials, time, and cost *[support may be peer-based or teacher-driven].*
5th Grade	Independently uses prior knowledge to describe problem(s) that can be solved through the development of an object, tool, process, or system. Independently identifies several relevant criteria for successful solution of problem(s). Independently gives reasonable and relevant consideration to all relevant constraints of materials, time, and cost.
6th Grade	With support, defines a suitably complex design problem within the natural or designed world, including multiple criteria for a successful solution. Clearly identifies design constraints, including 6th grade-level scientific content knowledge that may limit possible solutions.

7th Grade	Independently defines a suitably complex design problem within the natural or designed world, including multiple criteria for successful solution. Clearly identifies design constraints, including 7th grade-level scientific content knowledge that may limit possible solutions.
8th Grade	Independently defines a suitably complex design problem within the natural or designed world, including multiple criteria for successful solution. Clearly identifies design constraints, including 8th grade-level scientific content knowledge that may limit possible solutions.
1st High School Science Course	Define a design problem within the natural and designed world. Evidence present is based on intentional observation. Some background evidence is present. Measurable criteria based on prior observations, research, and/or evidence is present with a relation to how the designed and natural world interacts. System and design constraints are stated and their effect on the natural and designed world is communicated.
2nd High School Science Course	Define and describe a design problem within a natural and designed world. Evidence is present from observation and/or background research. Evidence supports the defined problem. Multiple measurable criteria based on prior observations, research, or evidence are present. Relation to the social, technical, or environmental world is attempted. System and design constraints are evaluated and their effects on the natural and designed world are communicated.
3rd High School Science Course	Define and describe a design problem within a social, technical, or environmental system. Evidence is present from prior knowledge, observation, and/or background research. Evidence has a limited enhancement to the defined problem. Multiple measurable criteria based on prior observations, research, and/or evidence are present and related to the social, technical, or environmental system. Ethical constraints are addressed and clearly communicated with evidence of understanding. System and design constraints are evaluated and their effect on the social, technical, or environmental system is communicated.

Subject: Science **Teacher:** _____ **Grade Level:** Kindergarten

Enduring Skill: Enduring Skill #2: Use scientific thinking to define problems within the natural and designed world.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Identify and/or Define Problem(s)	Unable to define a simple problem.		With support, defines a simple problem but does not make the connection of the problem being solved by a familiar object or tool.		With support, defines a problem that is solved by a familiar object or tool.		Independently defines or problem but does not recognize the solution being solved by a familiar object or tool.

Subject: Science **Teacher:** _____ **Grade Level:** 1st Grade

Enduring Skill: Enduring Skill #2: Use scientific thinking to define problems within the natural and designed world.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Identify and/or Define Problem(s)	With support, defines a problem that is solved by a familiar object or tool.		Independently defines or problem but does not recognize the solution being solved by a familiar object or tool.		Independently defines a problem that is solved by a familiar object or tool.		Independently defines a problem and with support can develop a solution by a *new or improved* object or tool.

Subject: Science **Teacher:** _____ **Grade Level:** 2nd Grade

Enduring Skill: Enduring Skill #2: Use scientific thinking to define problems within the natural and designed world.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Identify and/or Define Problem(s)	Independently defines a problem that is solved by a familiar object or tool.		Independently defines a problem and with support can develop a solution by a *new or improved* object or tool.		Independently defines a problem that can be solved by a *new or improved* object or tool.		With support, uses prior knowledge to describe related problem(s) that can be solved by a *new or improved* object or tool. With support identifies a relevant criterion for successful solution of related problem(s).

Subject: Science **Teacher:** _____ **Grade Level:** 3rd Grade

Enduring Skill: Enduring Skill #2: Use scientific thinking to define problems within the natural and designed world.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Identify and/or Define Problem(s)	Independently defines a problem that can be solved by a *new or improved* object or tool.		With support, uses prior knowledge to describe related problem(s) that can be solved by a *new or improved* object or tool. With support identifies a relevant criterion for successful solution of related problem(s).		With support, uses prior knowledge to describe related problem(s) that can be solved by a *new or improved* object or tool. Independently identifies a relevant criterion for successful solution of related problem(s). With support, identifies possible constraints within the natural and designed world.		With support, uses prior knowledge to describe related problem(s) that can be solved through the development of an object, tool, or process *[support may be peer-based or teacher-driven].* With support, identifies relevant criteria for successful solution of problem(s) *[support may be peer-based or teacher-driven].* With support, gives simplistic consideration to constraints of materials, time, and cost *[support may be peer-based or teacher-driven].*

Subject: Science **Teacher:** _____ **Grade Level:** 4th Grade

Enduring Skill: Enduring Skill #2: Use scientific thinking to define problems within the natural and designed world.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Identify and/or Define Problem(s)	With support, uses prior knowledge to describe related problem(s) that can be solved by a *new or improved* object or tool. Independently identifies a relevant criterion for successful solution of problem(s). With support, identifies possible constraints within the natural and designed world.		With support, uses prior knowledge to describe related problem(s) that can be solved through the development of an object, tool, or process *[support may be peer-based or teacher-driven].* With support, identifies relevant criteria for successful solution of problem(s) *[support may be peer-based or teacher-driven].* With support, gives simplistic consideration to constraints of materials, time, and cost *[support may be peer-based or teacher-driven].*		With support, uses prior knowledge to describe related problem(s) that can be solved through the development of an object, tool, process, or system *[support may be peer-based or teacher-driven].* With support, identifies several relevant criteria for successful solution of problem(s) *[support may be peer-based or teacher-driven].* With support, gives reasonable consideration to constraints of materials, time, and cost *[support may be peer-based or teacher-driven].*		Independently uses prior knowledge to describe problem(s) that can be solved through the development of an object, tool, or process. Independently identifies less than three relevant criteria for successful solution of problem(s). Independently gives consideration to relevant constraints of materials, time, and cost.

Subject: Science **Teacher:** _____ **Grade Level:** 5th Grade

Enduring Skill: Enduring Skill #2: Use scientific thinking to define problems within the natural and designed world.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Identify and/or Define Problem(s)	With support, uses prior knowledge to describe problem(s) that can be solved through the development of an object, tool, process, or system *[support may be peer-based or teacher-driven].* With support, identifies several relevant criteria for successful solution of problem(s) *[support may be peer-based or teacher-driven].* With support, gives reasonable consideration to constraints of materials, time, and cost *[support may be peer-based or teacher-driven].*		Independently uses prior knowledge to describe problem(s) that can be solved through the development of an object, tool, or process. Independently identifies less than three relevant criteria for successful solution of problem(s). Independently gives consideration to relevant constraints of materials, time, and cost.		Independently uses prior knowledge to describe problem(s) that can be solved through the development of an object, tool, process, or system. Independently identifies several relevant criteria for successful solution of problem(s). Independently gives reasonable and relevant consideration to all relevant constraints of materials, time, and cost.		With support, defines a suitably complex design problem within the natural or designed world, including multiple criteria for a successful solution. Identifies design constraints which may be limited in scope and indicative of less than 6th grade-level scientific content knowledge that may limit possible solutions.

Subject: Science **Teacher:** _____ **Grade Level:** 6th Grade

Enduring Skill: Enduring Skill #2: Use scientific thinking to define problems within the natural and designed world.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Identify and/or Define Problem(s)	Independently uses prior knowledge to describe problem(s) that can be solved through the development of an object, tool, process, or system. Independently identifies several relevant criteria for successful solution of problem(s). Independently gives reasonable and relevant consideration to all relevant constraints of materials, time, and cost.		With support, defines a suitably complex design problem within the natural or designed world, including multiple criteria for a successful solution. Identifies design constraints which may be limited in scope and indicative of less than 6th grade-level scientific content knowledge that may limit possible solutions.		With support, defines a suitably complex design problem within the natural or designed world, including multiple criteria for a successful solution. Clearly identifies design constraints, including 6th grade-level scientific content knowledge that may limit possible solutions.		Independently defines a suitably complex design problem within the natural or designed world, but requires support providing multiple criteria for successful solution. Clearly identifies design constraints, but are indicative of less than 7th grade-level scientific content knowledge that may limit possible solutions.

Subject: Science **Teacher:** _____ **Grade Level:** 7th Grade

Enduring Skill: Enduring Skill #2: Use scientific thinking to define problems within the natural and designed world.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Identify and/or Define Problem(s)	With support, defines a suitably complex design problem within the natural or designed world, including multiple criteria for a successful solution. Clearly identifies design constraints, including 6th grade-level scientific content knowledge that may limit possible solutions.		Independently defines a suitably complex design problem within the natural or designed world, but requires support providing multiple criteria for successful solution. Clearly identifies design constraints, but are indicative of less than 7th grade-level scientific content knowledge that may limit possible solutions.		Independently defines a suitably complex design problem within the natural or designed world, including multiple criteria for successful solution. Clearly identifies design constraints, including 7th grade-level scientific content knowledge that may limit possible solutions.		Independently defines a suitably complex design problem within the natural or designed world, including multiple criteria for successful solution. Identifies design constraints which are approaching proficient use of 8th grade-level scientific content knowledge that may limit possible solutions.

Subject: Science **Teacher:** _____ **Grade Level:** 8th Grade

Enduring Skill: Enduring Skill #2: Use scientific thinking to define problems within the natural and designed world.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Identify and/or Define Problem(s)	Independently defines a suitably complex design problem within the natural or designed world, including multiple criteria for successful solution. Clearly identifies design constraints, including 7th grade-level scientific content knowledge that may limit possible solutions.		Independently defines a suitably complex design problem within the natural or designed world, including multiple criteria for successful solution. Identifies design constraints which are approaching proficient use of 8th grade-level scientific content knowledge that may limit possible solutions.		Independently defines a suitably complex design problem within the natural or designed world, including multiple criteria for successful solution. Clearly identifies design constraints, including 8th grade-level scientific content knowledge that may limit possible solutions.		Define a design problem within the natural and designed world. Evidence present is based on generalized observation. Minimal to no background evidence is present. Measurable criteria based on prior observations, research, and/or evidence is present. System and design constraints are stated and an attempt is made to communicate their effect on the natural and designed world.

Subject: Science **Teacher:** _____ **Grade Level:** 1st HS Course

Enduring Skill: Enduring Skill #2: Use scientific thinking to define problems within the natural and designed world.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Identify and/or Define Problem(s)	Independently defines a suitably complex design problem within the natural or designed world, including multiple criteria for successful solution. Clearly identifies design constraints, including 8th grade-level scientific content knowledge that may limit possible solutions.		Define a design problem within the natural and designed world. Evidence present is based on generalized observation. Minimal to no background evidence is present. Measurable criteria based on prior observations, research, and/or evidence is present. System and design constraints are stated and an attempt is made to communicate their effect on the natural and designed world.		Define a design problem within the natural and designed world. Evidence present is based on intentional observation. Some background evidence is present. Measurable criteria based on prior observations, research, and/or evidence is present with a relation to how the designed and natural world interacts. System and design constraints are stated and their effect on the natural and designed world is communicated.		Define and describe a design problem within a natural and designed world. Evidence is present from observation and/or background research. Evidence supports the defined problem. Multiple measurable criteria based on prior observations, research, or evidence are present. Relation to the social, technical, or environmental world is attempted. System and design constraints and superficially evaluated and their effects on the natural and designed world are communicated.

Subject: Science **Teacher:** _____ **Grade Level:** 2nd HS Course

Enduring Skill: Enduring Skill #2: Use scientific thinking to define problems within the natural and designed world.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Identify and/or Define Problem(s)	Define a design problem within the natural and designed world. Evidence present is based on intentional observation. Some background evidence is present. Measurable criteria based on prior observations, research, and/or evidence is present with a relation to how the designed and natural world interacts. System and design constraints are stated and their effect on the natural and designed world is communicated.		Define and describe a design problem within a natural and designed world. Evidence is present from observation and/or background research. Evidence supports the defined problem. Multiple measurable criteria based on prior observations, research, or evidence are present. Relation to the social, technical, or environmental world is attempted. System and design constraints and superficially evaluated and their effects on the natural and designed world are communicated.		Define and describe a design problem within a natural and designed world. Evidence is present from observation and/or background research. Evidence supports the defined problem. Multiple measurable criteria based on prior observations, research, or evidence are present. Relation to the social, technical, or environmental world is attempted. System and design constraints are evaluated and their effects on the natural and designed world are communicated.		Define and describe a design problem within a natural and designed world. Evidence is present from observation and/or background research. Evidence supports the defined problem. Multiple measurable criteria based on prior observations, research, or evidence are present. Relation to the social, technical, or environmental world is attempted. Ethical constraints are mentioned, but may not be clearly communicated or understood. System and design constraints are evaluated and their effects on the natural and designed world are communicated.

Subject: Science **Teacher:** _____ **Grade Level:** 3rd HS Course

Enduring Skill: Enduring Skill #2: Use scientific thinking to define problems within the natural and designed world.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Identify and/or Define Problem(s)	Define and describe a design problem within a natural and designed world. Evidence is present from observation and/or background research. Evidence supports the defined problem. Multiple measurable criteria based on prior observations, research, or evidence are present. Relation to the social, technical, or environmental world is attempted. System and design constraints are evaluated and their effects on the natural and designed world are communicated.		Define and describe a design problem within a natural and designed world. Evidence is present from observation and/or background research. Evidence supports the defined problem. Multiple measurable criteria based on prior observations, research, or evidence are present. Relation to the social, technical, or environmental world is attempted. Ethical constraints are mentioned, but may not be clearly communicated or understood. System and design constraints are evaluated and their effects on the natural and designed world are communicated.		Define and describe a design problem within a social, technical, or environmental system. Evidence is present from prior knowledge, observation, and/or background research. Evidence has a limited enhancement to the defined problem. Multiple measurable criteria based on prior observations, research, and/or evidence are present and related to the social, technical, or environmental system. Ethical constraints are addressed and clearly communicated with evidence of understanding. System and design constraints are evaluated and their effect on the social, technical, or environmental system is communicated.		Define and describe a design problem within a social, technical, or environmental system. Evidence is present from prior knowledge, observation, and/or background research. Evidence has a limited enhancement to the defined problem. Multiple measurable criteria based on prior observations, research, and/or evidence are present and related to the social, technical, or environmental system. An analysis of the ethical constraints are addressed and clearly communicated and elaborated upon. System and design constraints are evaluated and their effect on the social, technical, or environmental system is communicated.

Linear Alignment of Criteria

Enduring Skill: Enduring Skill #2: Use scientific thinking to define problems within the natural and designed world.

Criteria: Identify and/or Define Problem(s) K – 12

Criteria	K - 1		K - 2		K - 3 and 1st Grade - 1		K - 4 and 1st Grade - 2		1st Grade – 3 and 2nd Grade - 1
Identify and/or Define Problem(s)	Unable to define a simple problem.		With support, defines a simple but does not make the connection of the problem being solved by a familiar object or tool.		With support, defines a problem that is solved by a familiar object or tool.		Independently defines or problem but does not recognize the solution being solved by a familiar object or tool.		Independently defines a problem that is solved by a familiar object or tool.
	1st Grade - 4 and 2nd Grade - 2		**2nd Grade - 3 and 3rd Grade - 1**		**2nd Grade - 4 and 3rd Grade - 2**		**3rd Grade - 3 and 4th Grade - 1**		**3rd Grade - 4 and 4th Grade - 2**
Identify and/or Define Problem(s)	Independently defines a problem that is solved by a familiar object or tool.		Independently defines a problem and with support can develop a solution by a *new or improved* object or tool.		Independently defines a problem that can be solved by a *new or improved* object or tool.		With support, uses prior knowledge to describe related problem(s) that can be solved by a *new or improved* object or tool. Independently identifies a relevant criterion for successful solution of problem(s). With support, identifies possible constraints within the natural and designed world.		With support, uses prior knowledge to describe related problem(s) that can be solved through the development of an object, tool, or process *[support may be peer-based or teacher-driven].* With support, identifies relevant criteria for successful solution of problem(s) *[support may be peer-based or teacher-driven].* With support, gives simplistic consideration to constraints of materials, time, and cost *[support may be peer-based or teacher-driven].*

	4th Grade – 3 and 5th Grade - 1		4th Grade - 4 and 5th Grade - 2		5th Grade - 3 and 6th Grade - 1		5th Grade - 4 and 6th Grade - 2		6th Grade - 3 / 7th Grade - 1
Identify and/or Define Problem(s)	With support, uses prior knowledge to describe problem(s) that can be solved through the development of an object, tool, process, or system *[support may be peer-based or teacher-driven].* With support, identifies several relevant criteria for successful solution of problem(s) *[support may be peer-based or teacher-driven].* With support, gives reasonable consideration to constraints of materials, time, and cost *[support may be peer-based or teacher-driven].*		Independently uses prior knowledge to describe problem(s) that can be solved through the development of an object, tool, or process. Independently identifies less than three relevant criteria for successful solution of problem(s). Independently gives consideration to relevant constraints of materials, time, and cost.		Independently uses prior knowledge to describe problem(s) that can be solved through the development of an object, tool, process, or system. Independently identifies several relevant criteria for successful solution of problem(s). Independently gives reasonable and relevant consideration to all relevant constraints of materials, time, and cost.		With support, defines a suitably complex design problem within the natural or designed world, including multiple criteria for a successful solution. Identifies design constraints which may be limited in scope and indicative of less than 6th grade-level scientific content knowledge that may limit possible solutions.		With support, defines a suitably complex design problem within the natural or designed world, including multiple criteria for a successful solution. Clearly identifies design constraints, including 6th grade-level scientific content knowledge that may limit possible solutions.

	6th Grade - 4 and 7th Grade - 2		7th Grade - 3 and 8th Grade - 1		7th Grade - 4 and 8th Grade - 2		8th Grade – 3 and 1st HS – 1		8th Grade – 4 and 1st HS - 2
Identify and/or Define Problem(s)	Independently defines a suitably complex design problem within the natural or designed world, but requires support providing multiple criteria for successful solution. Clearly identifies design constraints, but are indicative of less than 7th grade-level scientific content knowledge that may limit possible solutions.		Independently defines a suitably complex design problem within the natural or designed world, including multiple criteria for successful solution. Clearly identifies design constraints, including 7th grade-level scientific content knowledge that may limit possible solutions.		Independently defines a suitably complex design problem within the natural or designed world, including multiple criteria for successful solution. Identifies design constraints which are approaching proficient use of 8th grade-level scientific content knowledge that may limit possible solutions.		Independently defines a suitably complex design problem within the natural or designed world, including multiple criteria for successful solution. Clearly identifies design constraints, including 8th grade-level scientific content knowledge that may limit possible solutions.		Define a design problem within the natural and designed world. Evidence present is based on generalized observation. Minimal to no background evidence is present. Measurable criteria based on prior observations, research, and/or evidence is present. System and design constraints are stated and an attempt is made to communicate their effect on the natural and designed world.

	1st HS – 3 and 2nd HS - 1		1st HS – 4 and 2nd HS – 2		2nd HS – 3 and 3rd HS – 1		2nd HS – 4 and 3rd HS – 2		3rd HS - 3
Identify and/or Define Problem(s)	Define a design problem within the natural and designed world. Evidence present is based on intentional observation. Some background evidence is present. Measurable criteria based on prior observations, research, and/or evidence is present with a relation to how the designed and natural world interacts. System and design constraints are stated and their effect on the natural and designed world is communicated.		Define and describe a design problem within a natural and designed world. Evidence is present from observation and/or background research. Evidence supports the defined problem. Multiple measurable criteria based on prior observations, research, or evidence are present. Relation to the social, technical, or environmental world is attempted. System and design constraints and superficially evaluated and their effects on the natural and designed world are communicated.		Define and describe a design problem within a natural and designed world. Evidence is present from observation and/or background research. Evidence supports the defined problem. Multiple measurable criteria based on prior observations, research, or evidence are present. Relation to the social, technical, or environmental world is attempted. System and design constraints are evaluated and their effects on the natural and designed world are communicated.		Define and describe a design problem within a natural and designed world. Evidence is present from observation and/or background research. Evidence supports the defined problem. Multiple measurable criteria based on prior observations, research, or evidence are present. Relation to the social, technical, or environmental world is attempted. Ethical constraints are mentioned, but may not be clearly communicated or understood. System and design constraints are evaluated and their effects on the natural and designed world are communicated.		Define and describe a design problem within a social, technical, or environmental system. Evidence is present from prior knowledge, observation, and/or background research. Evidence has a limited enhancement to the defined problem. Multiple measurable criteria based on prior observations, research, and/or evidence are present and related to the social, technical, or environmental system. Ethical constraints are addressed and clearly communicated with evidence of understanding. System and design constraints are evaluated and their effect on the social, technical, or environmental system is communicated.

	3rd HS - 4							
Identify and/or Define Problem(s)	Define and describe a design problem within a social, technical, or environmental system. Evidence is present from prior knowledge, observation, and/or background research. Evidence has a limited enhancement to the defined problem. Multiple measurable criteria based on prior observations, research, and/or evidence are present and related to the social, technical, or environmental system. An analysis of the ethical constraints are addressed and clearly communicated and elaborated upon. System and design constraints are evaluated and their effect on the social, technical, or environmental system is communicated.							

Science Enduring Skill #3 – Develop and refine models to explain, predict, and investigate the natural and designed world.

Framework for K-12 Science Education, Practice 2: Developing and Using Models, pages 56-59.
NGSS Appendix F, pages 4, 19-20

Criteria: Identifies/evaluates features and/or limitations of models

Grade Level	Proficiency by Grade Level For Identifies / evaluates features and/or limitations of models
Kindergarten	Independently distinguishes between a model and the actual object, process, and/or events the model represents.
1st Grade	Independently compares a model and the actual object, process, and/or events the model represents.
2nd Grade	Independently compares models to identify common features and differences.
3rd Grade	Independently chooses a preferred model based on comparison of common features and differences.
4th Grade	Independently identifies basic limitations of a particular model.
5th Grade	Independently Identifies limitations of a model for a proposed tool or object (some may not be relevant.)
6th Grade	Identify relevant limitations of a model for a proposed object or tool.
7th Grade	Describes relevant limitations of a model for a proposed object or tool.
8th Grade	Evaluates limitations of a model for a proposed object, tool, or proc**e**ss.
1st High School Science Course	Evaluates limitations and merits of a model of the same proposed tool, process, mechanism, or system to select a model that best fits the evidence or design criteria.
2nd High School Science Course	Identifies and evaluates limitations and merits of two different models of the same proposed tool, process, mechanism or system in order to select or revise a model that fits the evidence or design criteria.
3rd High School Science Course	Identifies and evaluates multiple limitations and merits of two different models of the same proposed tool, process, mechanism or system in order to select or revise a model that *best* fits the evidence or design criteria.

Science Enduring Skill #3 – Develop and refine models to explain, predict, and investigate the natural and designed world.

Framework for K-12 Science Education, Practice 2: Developing and Using Models, pages 56-59.
NGSS Appendix F, pages 4, 19-20

Criteria: Develops and/or revise a model that describes a real world relationship/phenomena/system(s)

Grade Level	Proficiency by Grade Level For Develops and/or revise a model that describes a real world relationship/phenomena/system(s)
Kindergarten	Students in Kindergarten will be building their capacity to develop models by *using models*.
1st Grade	Unable to develop a model to represent amounts, relationships, relative scales, and/or patterns in the natural and designed world.
2nd Grade	Collaboratively develops a simple model to represent amounts, relationships, relative scales, and/or patterns in the natural and designed world.
3rd Grade	Independently develops a simple model, description or relevance to phenomena.
4th Grade	Independently attempts to develop a model to describe phenomena. Inaccuracies may be present. Independently attempts to develop a model using an analogy, example, or abstract representation to describe a scientific principle or design solution.
5th Grade	Independently develops models to describe and/or predicts phenomena. Independently develops a model using an analogy, example, or abstract representation to describe a scientific principle or design solution. Collaboratively develops and/or revises a model that shows a basic relationship among variables for frequent and regular occurring events.
6th Grade	Independently develops or revises a model- based on limited evidence–attempts to match a predetermined variable or component of a system if changed. Independently develops and/or revises a model to attempt to show a relationship between variables.
7th Grade	Develops or revises a model- based on scientific evidence – to match a predetermined variable or component of a system is changed. Develops and/or revise a model to show basic relationships among variables, particularly those easily observed. Develops and/or uses a model to predict/test ideas and generates minimal data about phenomena.

8th Grade	Develops or revise a model- based on scientific evidence – to match what happens if a variable or component of a system is changed. Develops and/or revise a model to show the relationships among variables, including those that are observable and predicts unobservable phenomena. Develops and/or uses a model to generate data and make predictions that relate to phenomena in natural or designed systems, including those at unobservable scales.
1st High School Science Course	Develop and/or use a model based on scientific evidence to generate data to support explanations, predict phenomena, analyze complete systems and/or solve problems.
2nd High School Science Course	Develop and/or use a model based on scientific evidence to generate data to support explanations, predict phenomena, analyze complete and complex systems and/or solve problems. Develop and/or use multiple types of models to provide mechanistic accounts and/or predict phenomena, and move flexibly between model types based on merits and limitations.
3rd High School Science Course	Develop and refine a complex model (e.g. multiple mechanisms) that allows for manipulation and testing of a proposed process or system. Develop and/or use a model to generate data to support explanations, predict phenomena, analyze systems and/or solve problems. Develop and/or use multiple types of models to provide mechanistic accounts and/or predict phenomena, and move flexibly between model types based on merits and limitations. Implement revisions and/or refinements to the model(s) used.

Subject: Science **Teacher:** _____ **Grade Level:** Kindergarten

Enduring Skill: Enduring Skill #3: Develop and refine models to explain, predict, and investigate the natural and designed world.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Identify, evaluate features and/or limitations of a model(s).	Unable to distinguish between a model and the actual object, process, and/or events the model represents.		Collaboratively distinguishes between a model and the actual object, process, and/or events the model represents.		Independently distinguishes between a model and the actual object, process, and/or events the model represents.		Independently distinguishes between a model and the actual object, process, and/or events the model represents. Collaboratively compares a model and the actual object, process, and/or events the model represents.
Develops and/or revise a model that describes a real world relationship/ phenomena/ system(s).	Students in Kindergarten will be building their capacity to develop models by *using models*.						

Subject: Science **Teacher:** _____ **Grade Level:** 1st Grade

Enduring Skill: Enduring Skill #3: Develop and refine models to explain, predict, and investigate the natural and designed world.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Identify, evaluate features and/or limitations of a model(s).	Independently distinguishes between a model and the actual object, process, and/or events the model represents.		Collaboratively compares a model and the actual object, process, and/or events the model represents.		Independently compares a model and the actual object, process, and/or events the model represents.		Collaboratively compares models to identify common features and differences.
Develops and/or revise a model that describes a real world relationship/ phenomena/ system(s).	Students in first grade will be building their capacity to develop models by *using models*.						

Subject: Science **Teacher:** _____ **Grade Level:** 2nd Grade

Enduring Skill: Enduring Skill #3: Develop and refine models to explain, predict, and investigate the natural and designed world.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Identify, evaluate features and/or limitations of a model(s).	Independently compares a model and the actual object, process, and/or events the model represents.		Collaboratively compares models to identify common features and differences.		Independently compares models to identify common features and differences.		Collaboratively chooses a preferred model based on comparison of common features and differences.
Develops and/or revise a model that describes a real world relationship/ phenomena/ system(s).	Unable to develop a model to represent amounts, relationships, relative scales, and/or patterns in the natural and designed world.		With teacher support, collaboratively develops a model to represent amounts, relationships, relative scales, and/or patterns in the natural and designed world.		Collaboratively develops a simple model to represent amounts, relationships, relative scales, and/or patterns in the natural and designed world.		Collaboratively develops as simple model to describe phenomena.

Subject: Science **Teacher:** _____ **Grade Level:** 3rd Grade

Enduring Skill: Enduring Skill #3: Develop and refine models to explain, predict, and investigate the natural and designed world.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Identify, evaluate features and/or limitations of a model(s).	Independently compares models to identify common features and differences.		Collaboratively chooses a preferred model based on comparison of common features and differences.		Independently chooses a preferred model based on comparison of common features and differences.		Collaboratively identifies some limitations of a particular model.
Develops and/or revise a model that describes a real world relationship/ phenomena/ system(s).	Collaboratively develops a simple model to represent amounts, relationships, relative scales, and/or patterns in the natural and designed world.		Collaboratively develops as simple model to describe phenomena.		Independently develops a simple model, description or relevance to phenomena.		Collaboratively attempts to develop a model to describe phenomena. Collaboratively develops a model using an analogy, example, or abstract representation to describe a scientific principle or design solution.

Subject: Science **Teacher:** _____ **Grade Level:** 4th Grade

Enduring Skill: Enduring Skill #3: Develop and refine models to explain, predict, and investigate the natural and designed world.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Identify, evaluate features and/or limitations of a model(s).	Independently chooses a preferred model based on comparison of common features and differences.		Collaboratively identifies some limitations of a particular model.		Independently identifies basic limitations of a particular model.		Collaboratively identifies some limitations of models.
Develops and/or revise a model that describes a real world relationship/ phenomena/ system(s).	Independently develops a simple model, description or relevance to phenomena is weak or absent.		Collaboratively attempts to develop a model to describe phenomena. Collaboratively develops a model using an analogy, example, or abstract representation to describe a scientific principle or design solution.		Independently attempts to develop a model to describe phenomena. Inaccuracies may be present. Independently attempts to develop a model using an analogy, example, or abstract representation to describe a scientific principle or design solution.		Collaboratively develops models to describe and/or predict phenomena. Independently develops a model using an analogy, example, or abstract representation to describe a scientific principle or design solution.

Subject: Science **Teacher:** _____ **Grade Level:** 5th Grade

Enduring Skill: Enduring Skill #3: Develop and refine models to explain, predict, and investigate the natural and designed world.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Identify, evaluate features and/or limitations of a model(s).	Independently identifies basic limitations of a particular model.		Collaboratively identifies some limitations of models.		Independently Identifies limitations of a model for a proposed object, tool or process (some may not be relevant).		Collaboratively identifies **relevant** limitations of a model for a proposed object, tool, or process.
Develops and/or revise a model that describes a real world relationship/ phenomena/ system(s).	Independently attempts to develop a model to describe phenomena. Inaccuracies may be present. Independently attempts to develop a model using an analogy, example, or abstract representation to describe a scientific principle or design solution.		Collaboratively develops models to describe and/or predicts phenomena. Independently develops a model using an analogy, example, or abstract representation to describe a scientific principle or design solution.		Independently develops models to describe and/or predicts phenomena. Independently develops a model using an analogy, example, or abstract representation to describe a scientific principle or design solution. Collaboratively develops and/or revises a model that shows a basic relationship among variables for frequent and regular occurring events.		Collaboratively develops or revises a model- based on evidence –attempts to match a predetermined variable or component of a system if changed. Collaboratively develops and/or revises a model to show a relationship among variables, particularly those that are easily observed. Collaboratively develops and/or uses a model to test ideas and generate data about phenomena. A prediction(s) may be made.

Subject: Science **Teacher:** _____ **Grade Level:** 6th Grade

Enduring Skill: Enduring Skill #3: Develop and refine models to explain, predict, and investigate the natural and designed world.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Identify, evaluate features and/or limitations of a model(s).	Independently Identifies limitations of a model for a proposed object, tool or process (some may not be relevant).		Collaboratively identifies **relevant** limitations of a model for a proposed object, tool, or process.		Identify relevant limitations of a model for a proposed object, tool, or process.		Identifies and minimally describes relevant limitations of a model for a proposed object, tool, or process.
Develops and/or revise a model that describes a real world relationship/ phenomena/ system(s).	Independently develops models to describe and/or predicts phenomena. Independently develops a model using an analogy, example, or abstract representation to describe a scientific principle or design solution. Collaboratively develops and/or revises a model that shows a basic relationship among variables for frequent and regular occurring events.		Collaboratively develops or revises a model- based on evidence –attempts to match a predetermined variable or component of a system if changed. Collaboratively develops and/or revises a model to show a relationship among variables, particularly those that are easily observed. Collaboratively develops and/or uses a model to test ideas and generate data about phenomena. A prediction(s) may be made.		Independently develops or revises a model- based on limited evidence–attempts to match a predetermined variable or component of a system if changed. Independently develops and/or revises a model to attempt to show a relationship between variables. Independently develops and/or uses a model to test ideas and generate data about phenomena. No prediction(s) is made.		Develops or revises a model-based on scientific evidence –attempts to match a predetermined variable or component of a system if changed. Develops and/or revises a model to show a relationship among variables, particularly one that is easily observed. Develops and/or uses a model to test/ generate data, and make a prediction about phenomena.

Subject: Science **Teacher:** _____ **Grade Level:** 7th Grade

Enduring Skill: Enduring Skill #3: Develop and refine models to explain, predict, and investigate the natural and designed world.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Identify, evaluate features and/or limitations of a model(s).	Identify relevant limitations of a model for a proposed object, tool, or process.		Identifies and minimally describes relevant limitations of a model for a proposed object, tool, or process.		Describes relevant limitations of a model for a proposed object, tool, or process.		Describes relevant limitations and begins to evaluate a model for a proposed object, tool or process.
Develops and/or revise a model that describes a real world relationship/ phenomena/ system(s).	Independently develops or revises a model- based on limited evidence –attempts to match a predetermined variable or component of a system if changed. Independently develops and/or revises a model to attempt to show a relationship between variables. Independently develops and/or uses a model to test ideas and generate data about phenomena. No prediction(s) is made.		Develops or revises a model- based on scientific evidence –attempts to match a predetermined variable or component of a system if changed. Develops and/or revises a model to show a relationship among variables, particularly one that is easily observed. Develops and/or uses a model to test/ generate data, and make a prediction about phenomena.		Develops or revises a model- based on scientific evidence – to match a predetermined variable or component of a system is changed. Develops and/or revise a model to show basic relationships among variables, particularly those easily observed. Develops and/or uses a model to predict/test ideas and generates minimal data about phenomena.		Develops or revises a model- based on scientific evidence – attempts to determine what happens if a variable or component of a system is changed. Develops and/or revises a model to show the relationships among variables, including those that are observable and attempts to predict unobservable phenomena. Develops and/or uses a model to predict/test ideas, as well as generate data but does not consider all relevant factors particularly those not well understood or easily observed.

Subject: Science **Teacher:** _____ **Grade Level:** 8th Grade

Enduring Skill: Enduring Skill #3: Develop and refine models to explain, predict, and investigate the natural and designed world.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Identify, evaluate features and/or limitations of a model(s).	Describes relevant limitations of a model for a proposed object, tool, or process.		Describes relevant limitations and begins to evaluate a model for a proposed object, tool or process.		Evaluates limitations of a model for a proposed object, tool, or process.		Evaluates limitations and begins to identify merits of models of a proposed object, tool, or process such as comparing multiple models of the same concept or phenomenon.
Develops and/or revise a model that describes a real world relationship/ phenomena/ system(s).	Develops or revises a model- based on scientific evidence – to match a predetermined variable or component of a system is changed. Develops and/or revise a model to show basic relationships among variables, particularly those easily observed. Develops and/or uses a model to predict/test ideas and generates minimal data about phenomena.		Develops or revises a model- based on scientific evidence – attempts to determine what happens if a variable or component of a system is changed. Develops and/or revises a model to show the relationships among variables, including those that are observable and attempts to predict unobservable phenomena. Develops and/or uses a model to predict/test ideas, as well as generate data but does not consider all relevant factors particularly those not well understood or easily observed.		Develops or revise a model- based on scientific evidence – to match what happens if a variable or component of a system is changed. Develops and/or revise a model to show the relationships among variables, including those that are observable and predicts unobservable phenomena. Develops and/or uses a model to generate data and make predictions that relate to phenomena in natural or designed systems, including those at unobservable scales.		Collaboratively develops or revises a model based on scientific evidence to compare relationships if variables or components of a system are changed. Collaboratively uses multiple models, comparing their merit to describe and/or predict real world relationships/phenomena/systems containing uncertain or unobservable factors/mechanisms. Develops and/or uses a model to generate data and make testable predictions that are logical and relate to phenomena in natural or designed systems, including those at unobservable scales.

Subject: Science **Teacher:** _____ **Grade Level:** 1st HS Course

Enduring Skill: Enduring Skill #3: Develop and refine models to explain, predict, and investigate the natural and designed world.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Identify, evaluate features and/or limitations of a model(s).	Evaluates limitations of a model for a proposed object, tool, or process.		Evaluates limitations and begins to identify merits of models of a proposed object, tool, or process such as comparing multiple models of the same concept or phenomenon.		Evaluates limitations and merits of a model of the same proposed tool, process, mechanism, or system to select a model that best fits the evidence or design criteria.		Evaluates limitations and merits of a model of the same proposed tool, process, mechanism or system in order to select or revise a model that best fits the evidence or design criteria.
Develops and/or revise a model that describes a real world relationship/ phenomena/ system(s).	Develops or revises a model- based on scientific evidence – to match what happens if a variable or component of a system is changed. Develops and/or revises a model to show the relationships among variables, including those that are not observable but predicts observable phenomena. Develops and/or uses a model to generate data and make predictions that relate to phenomena in natural or designed systems, including those at unobservable scales.		Collaboratively develops or revises a model based on scientific evidence to compare relationships if variables or components of a system are changed. Collaboratively uses multiple models, comparing their merit to describe and/or predict real world relationships/phenomena/systems containing uncertain or unobservable factors/mechanisms. Develops and/or uses a model to generate data and make testable predictions that are logical and relate to phenomena in natural or designed systems, including those at unobservable scales.		Develop and/or use a model based on scientific evidence to generate data to support explanations, predict phenomena, analyze complete systems and/or solve problems.		Develop and/or use a model based on scientific evidence to generate data to support explanations, predict phenomena, analyze complete and complex systems and/or solve problems. Develop or suggest an additional model to provide mechanistic accounts and/or predict phenomena.

Subject: Science **Teacher:** _____ **Grade Level:** 2nd HS Course

Enduring Skill: Enduring Skill #3: Develop and refine models to explain, predict, and investigate the natural and designed world.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Identify, evaluate features and/or limitations of a model(s).	Identifies and evaluates limitations of a model of a proposed tool, process, mechanism or system.		Evaluates limitations and merits of a model of the same proposed tool, process, mechanism or system in order to select or revise a model that best fits the evidence or design criteria.		Identifies and evaluates limitations and merits of two different models of the same proposed tool, process, mechanism or system in order to select or revise a model that fits the evidence or design criteria.		Identifies and evaluates limitations and merits of two different models of the same proposed tool, process, mechanism or system in order to select or revise a model that *best* fits the evidence or design criteria.
	Develop and/or use a model based on scientific evidence to generate data to support explanations, predict		Develop and/or use a model based on scientific evidence to generate data to support explanations,		Develop and/or use a model based on scientific evidence to generate data to support explanations,		Develop and/or use a model based on scientific evidence to generate data to support explanations, predict

Develops and/or revise a model that describes a real world relationship/ phenomena/ system(s).	phenomena, analyze complete systems and/or solve problems.		predict phenomena, analyze complete and complex systems and/or solve problems. Develop or suggest an additional model to provide mechanistic accounts and/or predict phenomena.		predict phenomena, analyze complete and complex systems and/or solve problems. Develop and/or use multiple types of models to provide mechanistic accounts and/or predict phenomena, and move flexibly between model types based on merits and limitations.		phenomena, analyze complete and complex systems and/or solve problems. Develop and/or use multiple types of models (e.g. computer simulations, mathematical models, conceptual models) to provide mechanistic accounts and/or predict phenomena, and move flexibly between model types based on merits and limits. Start to develop revisions or refinements to the model(s) used.

Subject: Science **Teacher:** _____ **Grade Level:** 3rd HS Course

Enduring Skill: Enduring Skill #3: Develop and refine models to explain, predict, and investigate the natural and designed world.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Identify, evaluate features and/or limitations of a model(s).	Identifies and evaluates limitations and merits of two different models of the same proposed tool, process, mechanism or system in order to select or revise a model that fits the evidence or design criteria.		Identifies and evaluates limitations and merits of two different models of the same proposed tool, process, mechanism or system in order to select or revise a model that *best* fits the evidence or design criteria.		Identifies and evaluates multiple limitations and merits of two different models of the same proposed tool, process, mechanism or system in order to select or revise a model that *best* fits the evidence or design criteria.		Identifies and evaluates multiple limitations and merits of two or more different models of the same proposed tool, process, mechanism or system in order to select or revise a model that *best* fits the evidence or design criteria.

Develops and/or revise a model that describes a real world relationship/ phenomena/ system(s).	Develop and/or use a model based on scientific evidence to generate data to support explanations, predict phenomena, analyze complete and complex systems and/or solve problems. Develop and/or use multiple types of models to provide mechanistic accounts and/or predict phenomena, and move flexibly between model types based on merits and limitations.		Develop and/or use a model based on scientific evidence to generate data to support explanations, predict phenomena, analyze complete and complex systems and/or solve problems. Develop and/or use multiple types of models (e.g. computer simulations, mathematical models, conceptual models) to provide mechanistic accounts and/or predict phenomena, and move flexibly between model types based on merits and limits. Start to develop revisions or refinements to the model(s) used.		Develop and refine a complex model (e.g. multiple mechanisms) that allows for manipulation and testing of a proposed process or system. Develop and/or use a model to generate data to support explanations, predict phenomena, analyze systems and/or solve problems. Develop and/or use multiple types of models to provide mechanistic accounts and/or predict phenomena, and move flexibly between model types based on merits and limitations. Implement revisions and/or refinements to the model(s) used.		Develop and refine a complex model (e.g. multiple mechanisms) that allows for manipulation and testing of a proposed process or system. Use modeling tools (e.g. Model-It, NetLogo, spreadsheet models), to facilitate the development of the complex model. Develop and/or use a model to generate data to support explanations, predict phenomena, analyze systems and/or solve problems. Develop and/or use multiple types of models to provide mechanistic accounts and/or predict phenomena, and move flexibly between model types based on merits and limitations.

Linear Alignment of Criteria

Enduring Skill: Enduring Skill #3: Develop and refine models to explain, predict, and investigate the natural and designed world.

Criteria: Identify, evaluate features and/or limitations of a model(s). K – 12

Criteria	K - 1		K - 2		K - 3 and 1st Grade - 1		K - 4 and 1st Grade - 2		1st Grade – 3 and 2nd Grade - 1
Identify, evaluate features and/or limitations of a model(s)	Unable to distinguish between a model and the actual object, process, and/or events the model represents.		Collaboratively distinguishes between a model and the actual object, process, and/or events the model represents.		Independently distinguishes between a model and the actual object, process, and/or events the model represents.		Independently distinguishes between a model and the actual object, process, and/or events the model represents. Collaboratively compares a model and the actual object, process, and/or events the model represents.		Independently compares a model and the actual object, process, and/or events the model represents.
	1st Grade - 4 and 2nd Grade - 2		**2nd Grade - 3 and 3rd Grade - 1**		**2nd Grade - 4 and 3rd Grade - 2**		**3rd Grade - 3 and 4th Grade - 1**		**3rd Grade - 4 and 4th Grade - 2**
Identify, evaluate features and/or limitations of a model(s)	Collaboratively compares models to identify common features and differences.		Independently compares models to identify common features and differences.		Collaboratively chooses a preferred model based on comparison of common features and differences.		Independently chooses a preferred model based on comparison of common features and differences.		Collaboratively identifies some limitations of a particular model.
	4th Grade – 3 and 5th Grade - 1		**4th Grade - 4 and 5th Grade - 2**		**5th Grade - 3 and 6th Grade - 1**		**5th Grade - 4 and 6th Grade - 2**		**6th Grade - 3 / 7th Grade - 1**
Identify, evaluate features and/or limitations of a model(s)	Independently identifies basic limitations of a particular model.		Collaboratively identifies some limitations of models.		Independently Identifies limitations of a model for a proposed object, tool or process (some may not be relevant).		Collaboratively identifies **relevant** limitations of a model for a proposed object, tool, or process.		Identify relevant limitations of a model for a proposed object, tool, or process.

	6th Grade - 4 and 7th Grade - 2		7th Grade - 3 and 8th Grade - 1		7th Grade - 4 and 8th Grade - 2		8th Grade – 3 and 1st HS – 1		8th Grade – 4 and 1st HS - 2
Identify, evaluate features and/or limitations of a model(s)	Identifies and minimally describes relevant limitations of a model for a proposed object, tool, or process.		Describes relevant limitations of a model for a proposed object, tool, or process.		Describes relevant limitations and begins to evaluate a model for a proposed object, tool or process.		Evaluates limitations of a model for a proposed object, tool, or process.		Evaluates limitations and begins to identify merits of models of a proposed object, tool, or process such as comparing multiple models of the same concept or phenomenon.
	1st HS – 3 and 2nd HS - 1		**1st HS – 4 and 2nd HS – 2**		**2nd HS – 3 and 3rd HS – 1**		**2nd HS – 4 and 3rd HS – 2**		**3rd HS - 3**
Identify, evaluate features and/or limitations of a model(s)	Identifies and evaluates limitations of a model of a proposed tool, process, mechanism or system.		Evaluates limitations and merits of a model of the same proposed tool, process, mechanism or system in order to select or revise a model that best fits the evidence or design criteria.		Identifies and evaluates limitations and merits of two different models of the same proposed tool, process, mechanism or system in order to select or revise a model that fits the evidence or design criteria.		Identifies and evaluates limitations and merits of two different models of the same proposed tool, process, mechanism or system in order to select or revise a model that *best* fits the evidence or design criteria.		Identifies and evaluates multiple limitations and merits of two different models of the same proposed tool, process, mechanism or system in order to select or revise a model that *best* fits the evidence or design criteria.
	3rd HS - 4								
Identify, evaluate features and/or limitations of a model(s)	Identifies and evaluates multiple limitations and merits of two or more different models of the same proposed tool, process, mechanism or system in order to select or revise a model that *best* fits the evidence or design criteria.								

Linear Alignment of Criteria

Enduring Skill: Enduring Skill #3: Develop and refine models to explain, predict, and investigate the natural and designed world.

Criteria: Identify, evaluate features and/or limitations of a model(s). K – 12

Criteria	K - 1	K - 2	K - 3 and 1st Grade - 1	K - 4 and 1st Grade - 2	1st Grade – 3 and 2nd Grade - 1
Develops and/or revise a model that describes a real world relationship/ phenomena/ system(s).	Students in Kindergarten will be building their capacity to develop models by *using models*.		Students in first grade will be building their capacity to develop models by *using models*.		Unable to develop a model to represent amounts, relationships, relative scales, and/or patterns in the natural and designed world.
	1st Grade - 4 and 2nd Grade - 2	**2nd Grade - 3 and 3rd Grade - 1**	**2nd Grade - 4 and 3rd Grade - 2**	**3rd Grade - 3 and 4th Grade - 1**	**3rd Grade - 4 and 4th Grade - 2**
Develops and/or revise a model that describes a real world relationship/ phenomena/ system(s).	With teacher support, collaboratively develops a model to represent amounts, relationships, relative scales, and/or patterns in the natural and designed world.	Collaboratively develops a simple model to represent amounts, relationships, relative scales, and/or patterns in the natural and designed world.	Collaboratively develops as simple model to describe phenomena.	Independently develops a simple model, description or relevance to phenomena is weak or absent.	Collaboratively attempts to develop a model to describe phenomena. Collaboratively develops a model using an analogy, example, or abstract representation to describe a scientific principle or design solution.

	4th Grade – 3 and 5th Grade - 1		4th Grade - 4 and 5th Grade - 2		5th Grade - 3 and 6th Grade - 1		5th Grade - 4 and 6th Grade - 2		6th Grade - 3 / 7th Grade - 1
Develops and/or revise a model that describes a real world relationship/ phenomena/ system(s).	Independently attempts to develop a model to describe phenomena. Inaccuracies may be present. Independently attempts to develop a model using an analogy, example, or abstract representation to describe a scientific principle or design solution.		Collaboratively develops models to describe and/or predicts phenomena. Independently develops a model using an analogy, example, or abstract representation to describe a scientific principle or design solution.		Independently develops models to describe and/or predicts phenomena. Independently develops a model using an analogy, example, or abstract representation to describe a scientific principle or design solution. Collaboratively develops and/or revises a model that shows a basic relationship among variables for frequent and regular occurring events.		Collaboratively develops or revises a model- based on evidence –attempts to match a predetermined variable or component of a system if changed. Collaboratively develops and/or revises a model to show a relationship among variables, particularly those that are easily observed. Collaboratively develops and/or uses a model to test ideas and generate data about phenomena. A prediction(s) may be made.		Independently develops or revises a model- based on limited evidence –attempts to match a predetermined variable or component of a system if changed. Independently develops and/or revises a model to attempt to show a relationship between variables. Independently develops and/or uses a model to test ideas and generate data about phenomena. No prediction(s) is made.

	6th Grade - 4 and 7th Grade - 2		7th Grade - 3 and 8th Grade - 1		7th Grade - 4 and 8th Grade - 2		8th Grade – 3 and 1st HS – 1		8th Grade – 4 and 1st HS - 2
Develops and/or revise a model that describes a real world relationship/ phenomena/ system(s).	Independently develops or revises a model- based on limited evidence –attempts to match a predetermined variable or component of a system if changed. Independently develops and/or revises a model to attempt to show a relationship between variables. Independently develops and/or uses a model to test ideas and generate data about phenomena. No prediction(s) is made.		Develops or revises a model- based on scientific evidence –attempts to match a predetermined variable or component of a system if changed. Develops and/or revises a model to show a relationship among variables, particularly one that is easily observed. Develops and/or uses a model to test/ generate data, and make a prediction about phenomena.		Develops or revises a model- based on scientific evidence – to match a predetermined variable or component of a system is changed. Develops and/or revise a model to show basic relationships among variables, particularly those easily observed. Develops and/or uses a model to predict/test ideas and generates minimal data about phenomena.		Develop and/or use a model based on scientific evidence to generate data to support explanations, predict phenomena, analyze complete systems and/or solve problems.		Develop and/or use a model based on scientific evidence to generate data to support explanations, predict phenomena, analyze complete and complex systems and/or solve problems. Develop or suggest an additional model to provide mechanistic accounts and/or predict phenomena.

	1st HS – 3 and 2nd HS - 1		1st HS – 4 and 2nd HS – 2		2nd HS – 3 and 3rd HS – 1		2nd HS – 4 and 3rd HS – 2		3rd HS - 3
Develops and/or revise a model that describes a real world relationship/ phenomena/ system(s).	Develop and/or use a model based on scientific evidence to generate data to support explanations, predict phenomena, analyze complete systems and/or solve problems.		Develop and/or use a model based on scientific evidence to generate data to support explanations, predict phenomena, analyze complete and complex systems and/or solve problems. Develop or suggest an additional model to provide mechanistic accounts and/or predict phenomena.		Develop and/or use a model based on scientific evidence to generate data to support explanations, predict phenomena, analyze complete and complex systems and/or solve problems. Develop and/or use multiple types of models to provide mechanistic accounts and/or predict phenomena, and move flexibly between model types based on merits and limitations.		Develop and/or use a model based on scientific evidence to generate data to support explanations, predict phenomena, analyze complete and complex systems and/or solve problems. Develop and/or use multiple types of models (e.g. computer simulations, mathematical models, conceptual models) to provide mechanistic accounts and/or predict phenomena, and move flexibly between model types based on merits and limits. Start to develop revisions or refinements to the model(s) used.		Develop and refine a complex model (e.g. multiple mechanisms) that allows for manipulation and testing of a proposed process or system. Develop and/or use a model to generate data to support explanations, predict phenomena, analyze systems and/or solve problems. Develop and/or use multiple types of models to provide mechanistic accounts and/or predict phenomena, and move flexibly between model types based on merits and limitations. Implement revisions and/or refinements to the model(s) used.

	3rd HS - 4							
Develops and/or revise a model that describes a real world relationship/ phenomena/ system(s).	Develop and refine a complex model (e.g. multiple mechanisms) that allows for manipulation and testing of a proposed process or system. Use modeling tools (e.g. Model-It, NetLogo, spreadsheet models), to facilitate the development of the complex model. Develop and/or use a model to generate data to support explanations, predict phenomena, analyze systems and/or solve problems. Develop and/or use multiple types of models to provide mechanistic accounts and/or predict phenomena, and move flexibly between model types based on merits and limitations.							

Science Enduring Skill #4 – Use models to explain, predict, and investigate the natural and designed world, including identifying the limitations of the models.

Framework for K-12 Science Education, Practice 2: Developing and Using Models, pages 56-59.
NGSS Appendix F, pages 19-20

Criteria: Evaluate the limitations of the model (s)

Grade Level	Proficiency by Grade Level For Evaluate the limitation of the model(s)
Kindergarten	Independently distinguishes between a model and the actual object, process, and/or events the model represents.
1st Grade	Independently distinguishes between a model and the actual object, process, and/or events the model represents. Independently compares a model and the actual object, process, and/or events the model represents.
2nd Grade	Independently distinguishes between a model and the actual object, process, and/or events the model represents. Independently compares models to identify common features and differences.
3rd Grade	Independently chooses a preferred model based on comparison of common features and differences.
4th Grade	Independently identifies some limitations of a particular model.
5th Grade	Collaboratively identifies some limitations of multiple models.
6th Grade	Identifies limitations of a model for a proposed object, tool, or process.
7th Grade	Identifies and specifically describes limitations of a model for a proposed object, tool, or process.
8th Grade	Evaluate limitations of a model for a proposed object, tool, or process.

1st High School Science Course	Evaluates merits and limitations of a model of a proposed tool, process, mechanism or system.
2nd High School Science Course	Evaluate merits and limitations of two different models of the same proposed tool, process, mechanism or system in order to select or revise a model that fits the evidence or design criteria.
3rd High School Science Course	Evaluate multiple merits and limitations of two different models of the same proposed tool, process, mechanism or system in order to select or revise a model that best fits the evidence or design criteria.

Science Enduring Skill #4 – Use models to explain, predict, and investigate the natural and designed world, including identifying the limitations of the models.

Framework for K-12 Science Education, Practice 2: Developing and Using Models, pages 56-59.
NGSS Appendix F, pages 19-20

Criteria: Use models to explain, predict, and/or investigate

Grade Level	Proficiency by Grade Level For Use models to explain, predict, and/or investigate
Kindergarten	With support, collaboratively uses a simple model (e.g. diagram, drawing, physical replica, diorama, dramatization, or storyboard) to represent relationships in the natural world.
1st Grade	Independently uses simple models (e.g. diagram, drawing, physical replica, diorama, dramatization, or storyboard) to represent student observations.
2nd Grade	Independently uses a simple model to represent concrete events or design solutions [amounts, relationships, relative scales (bigger, smaller), and/or patterns in the natural and designed world(s)].
3rd Grade	Collaboratively uses models to describe phenomena. *[In Grades 3-5, students begin to move from modeling concrete and observable events to more abstract modeling.]*
4th Grade	Independently uses models to describe phenomena. Collaboratively uses a model to test cause and effect relationships or interactions concerning the functioning of a natural or designed world.
5th Grade	Independently uses models to describe and/or predict phenomena. Independently uses a model to test cause and effect relationships or interactions concerning the functioning of a natural or designed world.
6th Grade	Independently uses a model of simple systems with uncertain and less predictable factors. Independently develop a model to describe a mechanism. Develop and/or use a model to generate data to test ideas about phenomena in natural systems.
7th Grade	Use and/or develop a model of a simple system with uncertain and less predictable factors. Develop a model to describe an unobservable mechanism. Develop and/or use a model to generate data to test ideas about phenomena in natural or designed systems

8th Grade	Use and/or develop a model of simple systems with uncertain and less predictable factors. Develop a model to describe unobservable mechanisms. Develop and/or use a model to generate data to test ideas about phenomena in natural or designed systems, including those representing inputs and outputs, and those at unobservable scales.
1st High School Science Course	Use two types of models to predict and investigate phenomena, generate quantitative data, and/or provide accounts for mechanisms within the natural and designed world.
2nd High School Science Course	Use multiple models, and their merits and limitations, to flexibly predict and investigate phenomena, generate mathematical data, and/or provide accounts for mechanisms within the natural and designed world.
3rd High School Science Course	Use multiple models, and their merits and limitations, to flexibly predict and investigate phenomena, generate mathematical and computational data that supports explanations, and provide accounts for mechanisms within the natural and designed world.

Subject: Science **Teacher:** _____ **Grade Level:** Kindergarten

Enduring Skill: Enduring Skill #4 – Use models to explain, predict, and investigate the natural and designed world, including identifying the limitations of the models.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Evaluates the limitations of the model(s)	Unable to distinguish between a model and the actual object, process, and/or events the model represents.		Collaboratively distinguishes between a model and the actual object, process, and/or events the model represents.		Independently distinguishes between a model and the actual object, process, and/or events the model represents.		Independently distinguishes between a model and the actual object, process, and/or events the model represents. Collaboratively compares a model and the actual object, process, and/or events the model represents.
Use models to explain, predict, and/or investigate	Unable to use simple models.		With support, collaboratively uses a simple model to represent the natural world.		With support, collaboratively uses a simple model (e.g. diagram, drawing, physical replica, diorama, dramatization, or storyboard) to represent relationships in the natural world.		Collaboratively uses simple models (e.g. diagram, drawing, physical replica, diorama, dramatization, or storyboard) to represent student observations.

Subject: Science **Teacher:** _____ **Grade Level:** 1st Grade

Enduring Skill: Enduring Skill #4 – Use models to explain, predict, and investigate the natural and designed world, including identifying the limitations of the models.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Evaluates the limitations of the model(s)	Independently distinguishes between a model and the actual object, process, and/or events the model represents.		Independently distinguishes between a model and the actual object, process, and/or events the model represents. Collaboratively compares a model and the actual object, process, and/or events the model represents.		Independently distinguishes between a model and the actual object, process, and/or events the model represents. Independently compares a model and the actual object, process, and/or events the model represents.		Independently distinguishes between a model and the actual object, process, and/or events the model represents. Collaboratively compares models to identify common features and differences.
Use models to explain, predict, and/or investigate	With support, collaboratively uses a simple model (e.g. diagram, drawing, physical replica, diorama, dramatization, or storyboard) to represent relationships in the natural world.		Collaboratively uses simple models (e.g. diagram, drawing, physical replica, diorama, dramatization, or storyboard) to represent student observations.		Independently uses simple models (e.g. diagram, drawing, physical replica, diorama, dramatization, or storyboard) to represent student observations.		Collaboratively uses a simple model to represent concrete events or design solutions [amounts, relationships, relative scales (bigger, smaller), and/or patterns in the natural and designed world(s)].

Subject: Science **Teacher:** _____ **Grade Level:** 2nd Grade

Enduring Skill: Enduring Skill #4 – Use models to explain, predict, and investigate the natural and designed world, including identifying the limitations of the models.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Evaluates the limitations of the model(s)	Independently distinguishes between a model and the actual object, process, and/or events the model represents. Independently compares a model and the actual object, process, and/or events the model represents.		Independently distinguishes between a model and the actual object, process, and/or events the model represents. Collaboratively compares models to identify common features and differences.		Independently distinguishes between a model and the actual object, process, and/or events the model represents. Independently compares models to identify common features and differences.		Collaboratively chooses a preferred model based on comparison of common features and differences.
Use models to explain, predict, and/or investigate	Independently uses simple models (e.g. diagram, drawing, physical replica, diorama, dramatization, or storyboard) to represent student observations.		Collaboratively uses a simple model to represent concrete events or design solutions [amounts, relationships, relative scales (bigger, smaller), and/or patterns in the natural and designed world(s)].		Independently uses a simple model to represent concrete events or design solutions [amounts, relationships, relative scales (bigger, smaller), and/or patterns in the natural and designed world(s)].		With support, collaboratively uses models to describe phenomena.

Subject: Science **Teacher:** _____ **Grade Level:** 3rd Grade

Enduring Skill: Enduring Skill #4 – Use models to explain, predict, and investigate the natural and designed world, including identifying the limitations of the models.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Evaluates the limitations of the model(s)	Independently distinguishes between a model and the actual object, process, and/or events the model represents. Independently compares models to identify common features and differences.		Collaboratively chooses a preferred model based on comparison of common features and differences.		Independently chooses a preferred model based on comparison of common features and differences.		Collaboratively identifies some limitations of a particular model.
Use models to explain, predict, and/or investigate	Independently uses a simple model to represent concrete events or design solutions [amounts, relationships, relative scales (bigger, smaller), and/or patterns in the natural and designed world(s)].		With support, collaboratively uses models to describe phenomena.		Collaboratively uses models to describe phenomena. *[In Grades 3-5, students begin to move from modeling concrete and observable events to more abstract modeling.]*		Collaboratively uses models to describe phenomena. Collaboratively uses a model to test cause and effect relationships or interactions concerning the functioning of a natural or designed world.

Subject: Science **Teacher:** _____ **Grade Level:** 4th Grade

Enduring Skill: Enduring Skill #4 – Use models to explain, predict, and investigate the natural and designed world, including identifying the limitations of the models.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Evaluates the limitations of the model(s)	Independently chooses a preferred model based on comparison of common features and differences.		Collaboratively identifies some limitations of a particular model.		Independently identifies some limitations of a particular model.		Collaboratively identifies some limitations of models.
Use models to explain, predict, and/or investigate	Collaboratively uses models to describe phenomena.		Collaboratively uses models to describe phenomena. Collaboratively uses a model to test cause and effect relationships or interactions concerning the functioning of a natural or designed world.		Independently uses models to describe phenomena. Collaboratively uses a model to test cause and effect relationships or interactions concerning the functioning of a natural or designed world.		Collaboratively uses models to describe and/or predict phenomena. Collaboratively uses a model to test cause and effect relationships or interactions concerning the functioning of a natural or designed world.

Subject: Science **Teacher:** _____ **Grade Level:** 5th Grade

Enduring Skill: Enduring Skill #4 – Use models to explain, predict, and investigate the natural and designed world, including identifying the limitations of the models.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Evaluates the limitations of the model(s)	Independently identifies some limitations of a particular model.		With teacher support, identifies some limitations of multiple models.		Collaboratively identifies some limitations of multiple models.		Independently identifies some limitations of multiple models.
Use models to explain, predict, and/or investigate	Independently uses models to describe phenomena. Collaboratively uses a model to test cause and effect relationships or interactions concerning the functioning of a natural or designed world.		Collaboratively uses models to describe and/or predict phenomena. Collaboratively uses a model to test cause and effect relationships or interactions concerning the functioning of a natural or designed world.		Independently uses models to describe and/or predict phenomena. Independently uses a model to test cause and effect relationships or interactions concerning the functioning of a natural or designed world.		Independently uses a model of simple system with uncertain and less predictable factors. Collaboratively develops a model to describe a mechanism. Develops and/or use a model to test ideas about phenomena in natural systems.

Subject: Science **Teacher:** _____ **Grade Level:** 6th Grade

Enduring Skill: Enduring Skill #4 – Use models to explain, predict, and investigate the natural and designed world, including identifying the limitations of the models.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Evaluates the limitations of the model(s).	Collaboratively with peers, identifies some limitations of multiple models		Independently identifies some limitations of multiple models.		Identifies limitations of a model for a proposed object, tool, or process.		Identifies and minimally describes the limitations of a model for a proposed object, tool, or process.
Uses models to explain, predict, and/or investigate.	Independently uses models to describe and/or predict phenomena. Independently uses a model to test cause and effect relationships or interactions concerning the functioning of a natural or designed world.		Independently uses a model of simple system with uncertain and less predictable factors. Collaboratively develops a model to describe a mechanism. Develops and/or use a model to test ideas about phenomena in natural systems.		Independently uses a model of simple systems with uncertain and less predictable factors. Independently develop a model to describe a mechanism. Develop and/or use a model to generate data to test ideas about phenomena in natural systems.		Develop a model of a simple system with uncertain and less predictable factors. Develop a model to minimally describe an unobservable mechanism. Develop and/or use a model to generate data to test ideas about phenomena in natural or a simple design system.

Subject: Science **Teacher:** _____ **Grade Level:** 7th Grade

Enduring Skill: Enduring Skill #4 – Use models to explain, predict, and investigate the natural and designed world, including identifying the limitations of the models.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Evaluates the limitations of the model(s).	Identifies limitations of a model for a proposed object, tool, or process.		Identifies and minimally describes the limitations of a model for a proposed object, tool, or process.		Identifies and specifically describes limitations of a model for a proposed object, tool, or process.		Attempts to evaluate limitations of a model for a proposed object, tool, or process.
Uses models to explain, predict, and/or investigate.	Use a model of simple systems with uncertain and less predictable factors. Develop a model to describe a mechanism. Develop and/or use a model to generate data to test ideas about phenomena in natural systems.		Develop a model of a simple system with uncertain and less predictable factors. Develop a model to minimally describe an unobservable mechanism. Develop and/or use a model to generate data to test ideas about phenomena in natural or a simple design system.		Use and/or develop a model of a simple system with uncertain and less predictable factors. Develop a model to describe an unobservable mechanism. Develop and/or use a model to generate data to test ideas about phenomena in natural or designed systems		Use and/or develop a model of simple systems with an uncertain and less predictable factor. Develop a model to minimally or basically describe unobservable mechanisms. Develop and/or use a model to generate data to test ideas about phenomena in natural or designed systems, including those representing inputs and outputs.

Subject: Science **Teacher:** _____ **Grade Level:** 8th Grade

Enduring Skill: Enduring Skill #4 – Use models to explain, predict, and investigate the natural and designed world, including identifying the limitations of the models.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Evaluates the limitations of the model(s).	Identifies limitations of a model for a proposed object, tool, or process.		Identifies and minimally describes the limitations of a model for a proposed object, tool, or process.		Evaluate limitations of a model for a proposed object, tool, or process.		Evaluate limitations and minimally begins to describe the merits of the model for a proposed object, tool, or process.
Uses models to explain, predict, and/or investigate.	Use and/or develop a model of a simple system with uncertain and less predictable factors. Develop a model to describe an unobservable mechanism. Develop and/or use a model to generate data to test ideas about phenomena in natural or designed systems.		Use and/or develop a model of simple systems with an uncertain and less predictable factor. Develop a model to minimally or basically describe unobservable mechanisms. Develop and/or use a model to generate data to test ideas about phenomena in natural or designed systems, including those representing inputs and outputs.		Use and/or develop a model of simple systems with uncertain and less predictable factors. Develop a model to describe unobservable mechanisms. Develop and/or use a model to generate data to test ideas about phenomena in natural or designed systems, including those representing inputs and outputs, and those at unobservable scales.		Uses multiple models to begin to predict and investigate phenomena and generate data within the natural and designed world.

Subject: Science **Teacher:** _____ **Grade Level:** 1st HS Course

Enduring Skill: Enduring Skill #4 – Use models to explain, predict, and investigate the natural and designed world, including identifying the limitations of the models.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Evaluates the limitations of the model(s)	Evaluate limitations of a model for a proposed object, tool, or process.		Evaluate limitations and minimally begins to describe the merits of the model for a proposed object, tool, or process.		Evaluates merits and merits of a model of a proposed tool, process, mechanism or system.		Evaluate limitations and merits of a model of the same proposed tool, process, mechanism or system in order to select or revise a model that best fits the evidence or design criteria.
Uses models to explain, predict, and investigate	Use and/or develop a model of simple systems with uncertain and less predictable factors. Develop a model to describe unobservable mechanisms. Develop and/or use a model to generate data to test ideas about phenomena in natural or designed systems, including those representing inputs and outputs, and those at unobservable scales.		Uses multiple models to begin to predict and investigate phenomena and generate data within the natural and designed world.		Use two types of models to predict and investigate phenomena, generate quantitative data, and/or provide accounts for mechanisms within the natural and designed world.		Use two types of models to flexibly predict and investigate phenomena, generate mathematical data, and/or provide accounts for mechanisms within the natural and designed world.

Subject: Science **Teacher:** _____ **Grade Level:** 2nd HS Course

Enduring Skill: Enduring Skill #4 – Use models to explain, predict, and investigate the natural and designed world, including identifying the limitations of the models.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Evaluates the limitations of the model(s)	Evaluates limitations and merits of a model of a proposed tool, process, mechanism or system.		Evaluate limitations and merits of a model of the same proposed tool, process, mechanism or system in order to select or revise a model that best fits the evidence or design criteria.		Evaluate merits and limitations of two different models of the same proposed tool, process, mechanism or system in order to select or revise a model that fits the evidence or design criteria.		Evaluate merits and limitations of two different models of the same proposed tool, process, mechanism or system in order to select or revise a model that *best* fits the evidence or design criteria.
Uses models to explain, predict, and investigate	Use two types of models to predict and investigate phenomena, generate quantitative data, and/or provide accounts for mechanisms within the natural and designed world.		Use two types of models to flexibly predict and investigate phenomena, generate mathematical data, and/or provide accounts for mechanisms within the natural and designed world.		Use multiple models, and their merits and limitations, to flexibly predict and investigate phenomena, generate mathematical data, and/or provide accounts for mechanisms within the natural and designed world.		Use multiple models, and their merits and limitations, to more flexibly predict and investigate phenomena, generate mathematical and computational data that supports explanations, and/or provide accounts for mechanisms within the natural and designed world.

Subject: Science **Teacher:** _____ **Grade Level:** 3rd HS Course

Enduring Skill: Enduring Skill #4 – Use models to explain, predict, and investigate the natural and designed world, including identifying the limitations of the models.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Evaluates the limitations of the model(s)	Evaluate merits and limitations of two different models of the same proposed tool, process, mechanism or system in order to select or revise a model that fits the evidence or design criteria.		Evaluate merits and limitations of two different models of the same proposed tool, process, mechanism or system in order to select or revise a model that *best* fits the evidence or design criteria.		Evaluate multiple merits and limitations of two different models of the same proposed tool, process, mechanism or system in order to select or revise a model that best fits the evidence or design criteria.		Evaluate multiple merits and limitations of two or more different models of the same proposed tool, process, mechanism or system in order to select or revise a model that best fits the evidence or design criteria.
Uses models to explain, predict, and investigate	Use multiple models, and their merits and limitations, to flexibly predict and investigate phenomena, generate mathematical data, and/or provide accounts for mechanisms within the natural and designed world.		Use multiple models, and their merits and limitations, to more flexibly predict and investigate phenomena, generate mathematical and computational data that supports explanations, and/or provide accounts for mechanisms within the natural and designed world.		Use multiple models, and their merits and limitations, to flexibly predict and investigate phenomena, generate mathematical and computational data that supports explanations, and provide accounts for mechanisms within the natural and designed world.		Use multiple models, and their merits and limitations, to flexibly predict and investigate phenomena, independently generate mathematical and computational data that supports explanations and provide accounts for mechanisms within the natural and designed world.

Linear Alignment of Criteria

Enduring Skill: Enduring Skill #4 – Use models to explain, predict, and investigate the natural and designed world, including identifying the limitations of the models.

Criteria: Evaluates the limitations of the model(s) K – 12

Criteria	K - 1		K – 2		K - 3 and 1st Grade - 1		K - 4 and 1st Grade - 2		1st Grade – 3 and 2nd Grade - 1
Evaluates the limitations of the model (s)	Unable to distinguish between a model and the actual object, process, and/or events the model represents.		Collaboratively distinguishes between a model and the actual object, process, and/or events the model represents.		Independently distinguishes between a model and the actual object, process, and/or events the model represents.		Independently distinguishes between a model and the actual object, process, and/or events the model represents. Collaboratively compares a model and the actual object, process, and/or events the model represents.		Independently distinguishes between a model and the actual object, process, and/or events the model represents. Independently compares a model and the actual object, process, and/or events the model represents.
	1st Grade - 4 and 2nd Grade - 2		**2nd Grade - 3 and 3rd Grade - 1**		**2nd Grade - 4 and 3rd Grade - 2**		**3rd Grade - 3 and 4th Grade - 1**		**3rd Grade - 4 and 4th Grade - 2**
Evaluates the limitations of the model(s)	Independently distinguishes between a model and the actual object, process, and/or events the model represents. Collaboratively compares models to identify common features and differences.		Independently distinguishes between a model and the actual object, process, and/or events the model represents. Independently compares models to identify common features and differences.		Collaboratively chooses a preferred model based on comparison of common features and differences.		Independently chooses a preferred model based on comparison of common features and differences.		Collaboratively identifies some limitations of a particular model.

	4th Grade – 3 and 5th Grade - 1		4th Grade - 4 and 5th Grade - 2		5th Grade - 3 and 6th Grade - 1		5th Grade - 4 and 6th Grade - 2		6th Grade - 3 / 7th Grade - 1
Evaluate the limitations of the model (s)	Independently identifies some limitations of a particular model.		With teacher support, identifies some limitations of multiple models.		Collaboratively identifies some limitations of multiple models.		Independently identifies some limitations of multiple models.		Identifies limitations of a model for a proposed object, tool, or process.
	6th Grade - 4 and 7th Grade - 2		**7th Grade - 3 and 8th Grade - 1**		**7th Grade - 4 and 8th Grade - 2**		**8th Grade – 3 and 1st HS – 1**		**8th Grade – 4 and 1st HS - 2**
Evaluates the limitations of the model(s)	Identifies and minimally describes the limitations of a model for a proposed object, tool, or process.		Identifies and specifically describes limitations of a model for a proposed object, tool, or process.		Attempts to evaluate limitations of a model for a proposed object, tool, or process.		Evaluate limitations of a model for a proposed object, tool, or process.		Evaluate limitations and minimally begins to describe the merits of the model for a proposed object, tool, or process.
	1st HS – 3 and 2nd HS - 1		**1st HS – 4 and 2nd HS – 2**		**2nd HS – 3 and 3rd HS – 1**		**2nd HS – 4 and 3rd HS – 2**		**3rd HS - 3**
Evaluates the limitations of the model(s)	Evaluates limitations and merits of a model of a proposed tool, process, mechanism or system.		Evaluate limitations and merits of a model of the same proposed tool, process, mechanism or system in order to select or revise a model that best fits the evidence or design criteria.		Evaluate merits and limitations of two different models of the same proposed tool, process, mechanism or system in order to select or revise a model that fits the evidence or design criteria.		Evaluate merits and limitations of two different models of the same proposed tool, process, mechanism or system in order to select or revise a model that *best* fits the evidence or design criteria.		Evaluate multiple merits and limitations of two different models of the same proposed tool, process, mechanism or system in order to select or revise a model that best fits the evidence or design criteria.
	3rd HS - 4								
Evaluates the limitations of the model(s)	Evaluate multiple merits and limitations of two or more different models of the same proposed tool, process, mechanism or system in order to select or revise a model that best fits the evidence or design criteria.								

Linear Alignment of Criteria

Enduring Skill: Enduring Skill #4 – Use models to explain, predict, and investigate the natural and designed world, including identifying the limitations of the models.

Criteria: Use models to explain, predict, and/or investigate K – 12

Criteria	K - 1		K – 2		K - 3 and 1st Grade - 1		K - 4 and 1st Grade - 2		1st Grade – 3 and 2nd Grade - 1
Use models to explain, predict, and/or investigate	Unable to use simple models.		With support, collaboratively uses a simple model to represent the natural world.		With support, collaboratively uses a simple model (e.g. diagram, drawing, physical replica, diorama, dramatization, or storyboard) to represent relationships in the natural world.		Collaboratively uses simple models (e.g. diagram, drawing, physical replica, diorama, dramatization, or storyboard) to represent student observations.		Independently uses simple models (e.g. diagram, drawing, physical replica, diorama, dramatization, or storyboard) to represent student observations.
	1st Grade - 4 and 2nd Grade - 2		**2nd Grade - 3 and 3rd Grade - 1**		**2nd Grade - 4 and 3rd Grade - 2**		**3rd Grade - 3 and 4th Grade - 1**		**3rd Grade - 4 and 4th Grade - 2**
Use models to explain, predict, and/or investigate	Collaboratively uses a simple model to represent concrete events or design solutions [amounts, relationships, relative scales (bigger, smaller), and/or patterns in the natural and designed world(s)].		Independently uses a simple model to represent concrete events or design solutions [amounts, relationships, relative scales (bigger, smaller), and/or patterns in the natural and designed world(s)].		With support, collaboratively uses models to describe phenomena.		Collaboratively uses models to describe phenomena.		Collaboratively uses models to describe phenomena. Collaboratively uses a model to test cause and effect relationships or interactions concerning the functioning of a natural or designed world.

	4th Grade – 3 and 5th Grade - 1		4th Grade - 4 and 5th Grade - 2		5th Grade - 3 and 6th Grade - 1		5th Grade - 4 and 6th Grade - 2		6th Grade - 3 / 7th Grade - 1
Use models to explain, predict, and/or investigate	Independently uses models to describe phenomena. Collaboratively uses a model to test cause and effect relationships or interactions concerning the functioning of a natural or designed world.		Collaboratively uses models to describe and/or predict phenomena. Collaboratively uses a model to test cause and effect relationships or interactions concerning the functioning of a natural or designed world.		Independently uses models to describe and/or predict phenomena. Independently uses a model to test cause and effect relationships or interactions concerning the functioning of a natural or designed world.		Independently uses a model of simple system with uncertain and less predictable factors. Collaboratively develops a model to describe a mechanism. Develops and/or use a model to test ideas about phenomena in natural systems.		Use a model of simple systems with uncertain and less predictable factors. Develop a model to describe a mechanism. Develop and/or use a model to generate data to test ideas about phenomena in natural systems.
	6th Grade - 4 and 7th Grade - 2		**7th Grade - 3 and 8th Grade - 1**		**7th Grade - 4 and 8th Grade - 2**		**8th Grade – 3 and 1st HS – 1**		**8th Grade – 4 and 1st HS - 2**
Use models to explain, predict, and/or investigate	Develop a model of a simple system with uncertain and less predictable factors. Develop a model to minimally describe an unobservable mechanism. Develop and/or use a model to generate data to test ideas about phenomena in natural or a simple design system.		Use and/or develop a model of a simple system with uncertain and less predictable factors. Develop a model to describe an unobservable mechanism. Develop and/or use a model to generate data to test ideas about phenomena in natural or designed systems		Use and/or develop a model of simple systems with an uncertain and less predictable factor. Develop a model to minimally or basically describe unobservable mechanisms. Develop and/or use a model to generate data to test ideas about phenomena in natural or designed systems, including those representing inputs and outputs.		Use and/or develop a model of simple systems with uncertain and less predictable factors. Develop a model to describe unobservable mechanisms. Develop and/or use a model to generate data to test ideas about phenomena in natural or designed systems, including those representing inputs and outputs, and those at unobservable scales.		Uses multiple models to begin to predict and investigate phenomena and generate data within the natural and designed world.

	1st HS – 3 and 2nd HS - 1		1st HS – 4 and 2nd HS – 2		2nd HS – 3 and 3rd HS – 1		2nd HS – 4 and 3rd HS – 2		3rd HS - 3
Use models to explain, predict, and/or investigate	Use two types of models to predict and investigate phenomena, generate quantitative data, and/or provide accounts for mechanisms within the natural and designed world.		Use two types of models to flexibly predict and investigate phenomena, generate mathematical data, and/or provide accounts for mechanisms within the natural and designed world.		Use multiple models, and their merits and limitations, to flexibly predict and investigate phenomena, generate mathematical data, and/or provide accounts for mechanisms within the natural and designed world.		Use multiple models, and their merits and limitations, to more flexibly predict and investigate phenomena, generate mathematical and computational data that supports explanations, and/or provide accounts for mechanisms within the natural and designed world.		Use multiple models, and their merits and limitations, to fluidly predict and investigate phenomena, generate mathematical and computational data that supports explanations, and provide accounts for mechanisms within the natural and designed world.
	3rd HS - 4								
Use models to explain, predict, and/or investigate	Use multiple models, and their merits and limitations, to fluidly predict and investigate phenomena, independently generate mathematical and computational data that supports explanations and provide accounts for mechanisms within the natural and designed world.								

Science Enduring Skill #5 – Plan and Carry Out Investigations

Framework for K-12 Science Education, Practice 3: Planning and Carrying Out Investigations, pages 59-61.
NGSS Appendix F, page7, 21

Criteria: Planning an Investigation

Grade Level	Proficiency by Grade Level For Planning an Investigation
Kindergarten	With teacher guidance, plan an investigation in collaboration with peers. With support, make predictions based on prior experiences.
1st Grade	Plan an investigation collaboratively to produce data to serve as evidence to answer a question. Make predictions based on prior experiences and identify different ways of observing and/or measuring to answer a question.
2nd Grade	Plan an investigation collaboratively to produce data to serve as evidence to answer a question. Make predictions based on prior experiences. Evaluate different ways of observing and/or measuring to determine which way can answer a question.
3rd Grade	Collaboratively plan investigations. With guidance, control variables to produce data as a basis for evidence. With guidance consider the number of trials. Identify appropriate tools for collecting data. Make predictions about what would happen if a variable changes.
4th Grade	Collaboratively plan investigations with multiple trials and controlled variables to produce data that serves as evidence. Evaluate appropriate tools and begin to identify appropriate methods for collecting data. Make predictions about what would happen if a variable changes.
5th Grade	Collaboratively plan investigations with multiple trials and controlled variables to produce data that serves as evidence. Evaluate appropriate methods and tools for collecting data. Make predictions about what would happen if a variable changes.
6th Grade	Collaboratively plan an investigation and in the design when given the variables a student can: identify as independent and dependent variables or controls. Identify what tools are needed to gather data, how measurements will be recorded.
7th Grade	Collaboratively or independently plan an investigation and in the design: independently identify independent and dependent variables and controls, what tools are needed to gather data, how measurements will be recorded, and how many data are needed to support a claim.
8th Grade	Independently plan an investigation and in the design: accurately identify independent and dependent variables and controls, what tools are needed to gather data, how measurements will be recorded, and how many data are needed to support a claim. Evaluate the accuracy of various methods for collecting data.

1st High School Science Course	Plan an investigation or test a design individually or collaboratively to produce data to either build or revise a model, support explanations for phenomena, or testing solutions to problems. Select appropriate tools to collect and record data.
2nd High School Science Course	Plan an investigation or test a design individually or collaboratively to produce data to either build or revise a model, support explanations for phenomena, or testing solutions to problems. Consider possible variables or effects of your investigation. Select appropriate tools to collect, record, and analyze data.
3rd High School Science Course	Plan an investigation or test a design individually or collaboratively to produce data to either build or revise a model, support explanations for phenomena, or testing solutions to problems. Consider possible variables or effects of your investigation. Select appropriate tools to collect, record, analyze, and evaluate data. Evaluate the investigation's design to ensure variables are controlled.

Science Enduring Skill #5 – Plan and Carry Out Investigations

Framework for K-12 Science Education, Practice 3: Planning and Carrying Out Investigations, pages 59-61.
NGSS Appendix F, page7, 21

Criteria: Carrying out an Investigation to Collect Data

Grade Level	Proficiency by Grade Level For Carrying Out an Investigation to Collect Data
Kindergarten	With guidance, conduct investigations collaboratively to make observations to answer a question.
1st Grade	With guidance, conduct investigations collaboratively to make observations and measurements: to collect data that can be used to make comparisons, to produce data to answer a question, AND of an object/tool/solution to determine if it solves the problem/meets the goal.
2nd Grade	Conduct investigations collaboratively making observations and measurements to collect data that can be used to make comparisons, to produce data to answer a question, AND of an object/tool/solution to determine if it solves the problem/meets the goal.
3rd Grade	Conduct an investigation collaboratively to produce data as a basis for evidence. With guidance, test two different models of the same object/tool/process to determine which better meets criteria for success.
4th Grade	With teacher support, conduct investigations collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials are considered. With teacher support, conduct an investigation collaboratively to make observations and/or measurements to produce data as evidence for an explanation of a phenomenon or test design solution. Collaboratively test two different models of the same object/tool/process to determine which better meets criteria for success.
5th Grade	Conduct investigations collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials are considered. Make observations and/or measurements to produce data to serve as a basis for evidence for an explanation of a phenomenon or test design solution. Test two different models of the same object/tool/process to determine which better meets criteria for success.
6th Grade	Conduct an investigation collaboratively. Make observations and measurements to produce data as evidence for an explanation of a phenomenon or test design solution. Test two or more models of the same object/tool/process to determine which better meets criteria for success. Collaboratively attempts to redesign the investigation but minor lapses in logic and design exist.

7th Grade	Conduct an investigation collaboratively (with peers). Make observations and measurements to produce data as evidence for an explanation of a phenomenon or test design solution. Test two or more models of the same object/tool/process to determine which better meets criteria for success. Collaboratively redesigns investigations based on data and collection methods.
8th Grade	Conduct an investigation collaboratively (with peers). Make observations and measurements to produce data as evidence for an explanation of a phenomenon or test design solution. Test two or more models of the same object/tool/process to determine which better meets criteria for success. Independently redesign investigations based on evaluation of data and collection methods.
1st High School Science Course	Conduct an investigation individually and collaboratively to produce data. Consider the types, how much and the accuracy of data needed to obtain reliable measurements. Manipulate variables and collect data about a complex model of a proposed process or system.
2nd High School Science Course	Conduct an investigation individually and collaboratively to produce data. Consider the types, how much and the accuracy of data needed to obtain reliable measurements, and consider limitations on the precision of the data (e.g. number of trials, cost, risk, time, etc.) Manipulate variables and collect data about a complex model of a proposed process or system to identify failure points.
3rd High School Science Course	Conduct an investigation individually and collaboratively to produce data. Consider the types, how much and the accuracy of data needed to obtain reliable measurements, and consider limitations on the precision of the data (e.g. number of trials, cost, risk, time, etc.), and refine the design accordingly. Manipulate variables and collect data about a complex model of a proposed process or system to identify failure points, or improve performance relative to criteria for success or other variables.

Subject: Science **Teacher:** _____ **Grade Level:** Kindergarten

Enduring Skill: Enduring Skill #5: Plan and carry out investigations.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Planning an Investigation	Unable to plan an investigation or make a prediction even with teacher support.		Can make a prediction with teacher support. Cannot plan an investigation even with support.		With teacher guidance, plan an investigation in collaboration with peers. With support, make predictions based on prior experiences.		Plan an investigation in collaboration with peers. Make predictions based on prior experiences.
Carrying out an Investigation to collect data	Unable to conduct an investigation or collect data even with teacher support.		Beginning to make observations but not yet conduct an investigation with support.		With guidance, conduct investigations collaboratively to make observations to answer a question.		Conduct an investigation collaboratively (teacher and peers). Make observations and measurements to collect data that can be used to answer a question.

Subject: Science **Teacher:** _____ **Grade Level:** 1st Grade

Enduring Skill: Enduring Skill #5: Plan and carry out investigations.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Planning an Investigation	With teacher guidance, plan an investigation in collaboration with peers. With support, make predictions based on prior experiences.		Plan an investigation in collaboration with teacher and peers. Make predictions based on prior experiences.		Plan an investigation collaboratively to produce data to serve as evidence to answer a question. Make predictions based on prior experiences identify different ways of observing and/or measuring to answer a question.		Plan an investigation collaboratively (teacher and peers) to produce data to serve as evidence to answer a question. Make predictions based on prior experiences. Begin identifying different ways of observing and/or measuring to determine which way can answer a question.
Carrying out an Investigation to collect data	With guidance, conduct investigations collaboratively to make observations to answer a question.		Conduct an investigation collaboratively (teacher and peers). Make observations and measurements to collect data that can be used to answer a question.		With guidance, conduct investigations collaboratively to make observations and measurements: to collect data that can be used to make comparisons, to produce data to answer a question, AND of an object/tool/solution to determine if it solves the problem/meets the goal.		Conduct an investigation collaboratively (teacher and peers). Make observations and measurements of an object/tool/solution to determine if it solves the problem/meets the goal. Beginning to make comparisons.

Subject: Science **Teacher:** _____ **Grade Level:** 2nd Grade

Enduring Skill: Enduring Skill #5: Plan and carry out investigations.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Planning an Investigation	Plan an investigation collaboratively to produce data to serve as evidence to answer a question. Make predictions based on prior experiences identify different ways of observing and/or measuring to answer a question.		Plan an investigation collaboratively (teacher and peers) to produce data to serve as evidence to answer a question. Make predictions based on prior experiences. Begin identifying different ways of observing and/or measuring to determine which way can answer a question.		Plan an investigation collaboratively to produce data to serve as evidence to answer a question. Make predictions based on prior experiences. Evaluate different ways of observing and/or measuring to determine which way can answer a question.		Collaboratively plan investigations (with peers). With guidance, begin to control variables to produce data that serves as a basis for evidence. Begin to identify appropriate tool for collecting data. With guidance, begin to make predictions about what would happen if a variable changes.
Carrying out an Investigation to collect data	With guidance, conduct investigations collaboratively to make observations and measurements: to collect data that can be used to make comparisons, to produce data to answer a question, AND of an object/tool/solution to determine if it solves the problem/meets the goal.		Conduct an investigation collaboratively (teacher and peers). Make observations and measurements of an object/tool/solution to determine if it solves the problem/meets the goal. Beginning to make comparisons.		Conduct investigations collaboratively making observations and measurements: to collect data that can be used to make comparisons, to produce data to answer a question, AND of an object/tool/solution to determine if it solves the problem/meets the goal.		Conduct an investigation collaboratively (with teacher and peers). Make observations and measurements of multiple objects/tools/solutions to determine if each one solves the problem/meets the goal.

Subject: Science **Teacher:** _____ **Grade Level:** 3rd Grade

Enduring Skill: Enduring Skill #5: Plan and carry out investigations.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Planning an Investigation	Plan an investigation collaboratively to produce data to serve as evidence to answer a question. Make predictions based on prior experiences. Evaluate different ways of observing and/or measuring to determine which way can answer a question.		Collaboratively plan investigations (with peers). With guidance, begin to control variables to produce data that serves as a basis for evidence. Begin to identify appropriate tool for collecting data. With guidance, begin to make predictions about what would happen if a variable changes.		Collaboratively plan investigations. With guidance, control variables to produce data as a basis for evidence. With guidance consider the number of trials. Identify appropriate tools for collecting data. Make predictions about what would happen if a variable changes.		Collaboratively plan investigations (with peers) with multiple trials. With support, control variables to produce data that serves as a basis for evidence. Evaluate appropriate tools for collecting data. Make predictions about what would happen if a variable changes.
Carrying out an Investigation to collect data	Conduct investigations collaboratively making observations and measurements: to collect data that can be used to make comparisons, to produce data to answer a question, AND of an object/tool/solution to determine if it solves the problem/meets the goal.		Conduct an investigation collaboratively (with teacher and peers). Make observations and measurements of multiple objects/tools/solutions to determine if each one solves the problem/meets the goal.		Conduct an investigation collaboratively to produce data as a basis for evidence. With guidance, test two different models of the same object/tool/process to determine which better meets criteria for success.		Conduct an investigation collaboratively (with peers). With teacher guidance, make observations and measurements to produce data as evidence for an explanation of a phenomenon or test design solution. With teacher support, test two different models of the same object/tool/process to determine which better meets criteria for success.

Subject: Science **Teacher:** _____ **Grade Level:** 4th Grade

Enduring Skill: Enduring Skill #5: Plan and carry out investigations.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Planning an Investigation	Collaboratively plan investigations. With guidance, control variables to produce data as a basis for evidence. With guidance consider the number of trials. Identify appropriate tools for collecting data. Make predictions about what would happen if a variable changes.		Collaboratively plan investigations (with peers) with multiple trials. With support, control variables to produce data that serves as a basis for evidence. Evaluate appropriate tools for collecting data. Make predictions about what would happen if a variable changes.		Collaboratively plan investigations with multiple trials and controlled variables to produce data that serves as evidence. Evaluate appropriate tools and begin to identify appropriate methods for collecting data. Make predictions about what would happen if a variable changes.		Collaboratively plan investigations (with peers) with multiple trials and controlled variables to produce data that serves as evidence. Evaluate appropriate tools and identify appropriate methods for collecting data. Make predictions about what would happen if a variable changes.

Carrying out an Investigation to collect data	Conduct an investigation collaboratively to produce data as a basis for evidence. With guidance, test two different models of the same object/tool/process to determine which better meets criteria for success.		Conduct an investigation collaboratively (with peers). With teacher guidance, make observations and measurements to produce data as evidence for an explanation of a phenomenon or test design solution. With teacher support, test two different models of the same object/tool/process to determine which better meets criteria for success.		With teacher support, conduct investigations collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials are considered. With teacher support, conduct an investigation collaboratively to make observations and/or measurements to produce data as evidence for an explanation of a phenomenon or test design solution. Collaboratively test two different models of the same object/tool/process to determine which better meets criteria for success.		Conduct an investigation collaboratively (with peers). Beginning to make observations and measurements to produce data as evidence for an explanation of a phenomenon or test design solution. Test two different models of the same object/tool/process to determine which better meets criteria for success.

Subject: Science **Teacher:** _____ **Grade Level:** 5th Grade

Enduring Skill: Enduring Skill #5: Plan and carry out investigations.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Planning an Investigation	Collaboratively plan investigations with multiple trials and controlled variables to produce data that serves as evidence. Evaluate appropriate tools and begin to identify appropriate methods for collecting data. Make predictions about what would happen if a variable changes.		Collaboratively plan investigations (with peers) with multiple trials and controlled variables to produce data that serves as evidence. Evaluate appropriate tools and identify appropriate methods for collecting data. Make predictions about what would happen if a variable changes.		Collaboratively plan investigations with multiple trials and controlled variables to produce data that serves as evidence. Evaluate appropriate methods and tools for collecting data. Make predictions about what would happen if a variable changes.		Collaboratively plan investigations (with peers) with multiple trials and controlled variables to produce data that serves as evidence. Identify independent and dependent variables.

Carrying out an Investigation to collect data	With teacher support, conduct investigations collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials are considered. With teacher support, conduct an investigation collaboratively to make observations and/or measurements to produce data as evidence for an explanation of a phenomenon or test design solution. Collaboratively test two different models of the same object/tool/process to determine which better meets criteria for success.		Conduct an investigation collaboratively (with peers). Beginning to make observations and measurements to produce data as evidence for an explanation of a phenomenon or test design solution. Test two different models of the same object/tool/process to determine which better meets criteria for success.		Conduct investigations collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials are considered. Make observations and/or measurements to produce data to serve as a basis for evidence for an explanation of a phenomenon or test design solution. Test two different models of the same object/tool/process to determine which better meets criteria for success.		Conduct an investigation collaboratively (with peers). Make observations and measurements to produce data as evidence for an explanation of a phenomenon or test design solution. Test two or more models of the same object/tool/process to determine which better meets criteria for success.

Subject: Science **Teacher:** _____ **Grade Level:** 6th Grade

Enduring Skill: Enduring Skill #5: Plan and carry out investigations.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Planning an Investigation	Collaboratively plan investigations with multiple trials and controlled variables to produce data that serves as evidence. Evaluate appropriate methods and tools for collecting data. Make predictions about what would happen if a variable changes.		Collaboratively plan investigations with multiple trials and controlled variables to produce data that serves as a basis for evidence Identify independent and dependent variables		Collaboratively plan an investigation and in the design when given the variables a student can: identify as independent and dependent variables or controls. Identify what tools are needed to gather data, how measurements will be recorded.		Collaboratively plan an investigation and in the design: accurately identify independent and dependent variables and controls, what tools are needed to do the gathering, how measurements will be recorded, and how many data are needed to support a claim.
Carrying out an Investigation to collect data	Conduct investigations collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials are considered. Make observations and/or measurements to produce data to serve as a basis for evidence for an explanation of a phenomenon or test design solution. Test two different models of the same object/tool/process to determine which better meets criteria for success.		Conduct an investigation collaboratively (with peers). Make observations and measurements to produce data as evidence for an explanation of a phenomenon or test design solution. Test two or more models of the same object/tool/process to determine which better meets criteria for success.		Conduct an investigation collaboratively Make observations and measurements to produce data as evidence for an explanation of a phenomenon or test design solution. Test two or more models of the same object/tool/process to determine which better meets criteria for success. Collaboratively attempts to redesign the investigation but minor lapses in logic and design exist.		Conduct an investigation collaboratively (with peers). Make observations and measurements to produce data as evidence for an explanation of a phenomenon or test design solution. Test two or more models of the same object/tool/process to determine which better meets criteria for success. Collaboratively redesigns investigations within established parameters

Subject: Science **Teacher:** _____ **Grade Level:** 7th Grade

Enduring Skill: Enduring Skill #5: Plan and carry out investigations.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Planning an Investigation	Collaboratively plan an investigation and in the design when given the variables a student can: identify as independent and dependent variables or ~~and~~ controls. Identify what tools are needed to gather data, how measurements will be recorded.		Collaboratively plan an investigation and in the design: accurately identify independent and dependent variables and controls, what tools are needed to do the gathering, how measurements will be recorded, and how many data are needed to support a claim.		Collaboratively or independently plan an investigation and in the design: independently identify independent and dependent variables and controls, what tools are needed to gather data, how measurements will be recorded, and how many data are needed to support a claim.		Independently plan an investigation and in the design: accurately identify independent and dependent variables and controls, what tools are needed to do the gathering, how measurements will be recorded, and how many data are needed to support a claim.
Carrying out an Investigation to collect data	Conduct an investigation collaboratively. Make observations and measurements to produce data as evidence for an explanation of a phenomenon or test design solution. Test two or more models of the same object/tool/process to determine which better meets criteria for success. Collaboratively attempts to redesign the investigation but minor lapses in logic and design exist.		Conduct an investigation collaboratively (with peers). Make observations and measurements to produce data as evidence for an explanation of a phenomenon or test design solution. Test two or more models of the same object/tool/process to determine which better meets criteria for success. Collaboratively redesigns investigations within established parameters.		Conduct an investigation collaboratively (with peers). Make observations and measurements to produce data as evidence for an explanation of a phenomenon or test design solution. Test two or more models of the same object/tool/process to determine which better meets criteria for success. Collaboratively redesigns investigations based on data and collection methods.		Conduct an investigation collaboratively (with peers). Make observations and measurements to produce data as evidence for an explanation of a phenomenon or test design solution. Test two or more models of the same object/tool/process to determine which better meets criteria for success. Collaboratively and individually redesign investigations based on data and collection methods.

Subject: Science **Teacher:** _____ **Grade Level:** 8th Grade

Enduring Skill: Enduring Skill #5: Plan and carry out investigations.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Planning an Investigation	Collaboratively or independently plan an investigation and in the design: independently identify independent and dependent variables and controls, what tools are needed to gather data, how measurements will be recorded, and how many data are needed to support a claim.		Independently plan an investigation and in the design: accurately identify independent and dependent variables and controls, what tools are needed to do the gathering, how measurements will be recorded, and how many data are needed to support a claim.		. Independently plan an investigation and in the design: accurately identify independent and dependent variables and controls, what tools are needed to gather data, how measurements will be recorded, and how many data are needed to support a claim. Evaluate the accuracy of various methods for collecting data.		Independently plan an investigation or test a design solution which accurately identifies independent and dependent variables and controls, what tools are needed to do the gathering, how measurements will be recorded, and how many data are needed to support a claim Form a directional hypothesis based on previous data to predict relationships between independent and dependent variables.

Carrying out an Investigation to collect data	Conduct an investigation collaboratively (with peers). Make observations and measurements to produce data as evidence for an explanation of a phenomenon or test design solution. Test two or more models of the same object/tool/process to determine which better meets criteria for success. Collaboratively redesigns investigations based on data and collection methods.		Conduct an investigation collaboratively (with peers). Make observations and measurements to produce data as evidence for an explanation of a phenomenon or test design solution. Test two or more models of the same object/tool/process to determine which better meets criteria for success. Collaboratively and individually redesign investigations based on data and collection methods.		Conduct an investigation collaboratively (with peers). Make observations and measurements to produce data as evidence for an explanation of a phenomenon or test design solution. Test two or more models of the same object/tool/process to determine which better meets criteria for success. Independently redesign investigations based on evaluation of data and collection methods.		Conduct an investigation collaboratively (with peers). Make observations and measurements to produce data as evidence for an explanation of a phenomenon or test design solution. Test two or more models of the same object/tool/process to determine which better meets criteria for success. Independently redesign investigations based on evaluation of data and collection methods. Form a directional hypothesis based on previous data to predict relationships between independent and dependent variables.

Subject: Science **Teacher:** _____ **Grade Level:** 1st HS Course

Enduring Skill: Enduring Skill #5: Plan and carry out investigations.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Planning an Investigation	Independently plan an investigation and in the design: accurately identify independent and dependent variables and controls, what tools are needed to gather data, how measurements will be recorded, and how many data are needed to support a claim. Evaluate the accuracy of various methods for collecting data.		Independently plan an investigation or test a design solution which accurately identifies independent and dependent variables and controls, what tools are needed to do the gathering, how measurements will be recorded, and how many data are needed to support a claim Form a directional hypothesis based on previous data to predict relationships between independent and dependent variables.		Plan an investigation or test a design individually or collaboratively to produce data to either build or revise a model, support explanations for phenomena, or testing solutions to problems. Select appropriate tools to collect and record data.		Plan and revise an investigation or test a design individually or collaboratively to produce data to either build or revise a model, support explanations for phenomena or testing solutions to problems. Select appropriate tools to collect and record data.

Carrying out an Investigation to collect data	Independently redesign investigations based on evaluation of data collection methods.		Decide on types, how much, and accuracy of data needed to produce reliable measurements.		Conduct an investigation individually and collaboratively to produce data. Consider the types, how much and the accuracy of data needed to obtain reliable measurements. Manipulate variables and collect data about a complex model of a proposed process or system.		Conduct an investigation individually and collaboratively to produce data. Consider the types, how much and the accuracy of data needed to obtain reliable measurements. Manipulate variables and collect data about a complex model of a proposed process or system. Suggest revisions to the investigation that may improve the reliability of data collected.

Subject: Science **Teacher:** _____ **Grade Level:** 2nd HS Course

Enduring Skill: Enduring Skill #5: Plan and carry out investigations.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Planning an Investigation	Plan an investigation or test a design individually or collaboratively to produce data to either build or revise a model, support explanations for phenomena, or testing solutions to problems. Select appropriate tools to collect and record data.		Plan and revise an investigation or test a design individually or collaboratively to produce data to either build or revise a model, support explanations for phenomena, or testing solutions to problems. Select appropriate tools to collect and record data.		Plan an investigation or test a design individually or collaboratively to produce data to either build or revise a model, support explanations for phenomena, or testing solutions to problems. Consider possible variables or effects of your investigation. Select appropriate tools to collect, record, and analyze data.		Plan and revise an investigation or test a design individually or collaboratively to produce data to either build or revise a model, support explanations for phenomena, or testing solutions to problems. Consider possible variables or effects of your investigation. Select appropriate tools to collect, record, and analyze data.

Carrying out an Investigation to collect data	Conduct an investigation individually and collaboratively to produce data. Consider the types, how much and the accuracy of data needed to obtain reliable measurements. Manipulate variables and collect data about a complex model of a proposed process or system.		Conduct an investigation individually and collaboratively to produce data. Consider the types, how much and the accuracy of data needed to obtain reliable measurements. Manipulate variables and collect data about a complex model of a proposed process or system. Suggest revisions to the investigation that may improve the reliability of data collected.		Conduct an investigation individually and collaboratively to produce data. Consider the types, how much and the accuracy of data needed to obtain reliable measurements, and consider limitations on the precision of the data (e.g. number of trials, cost, risk, time, etc.) Manipulate variables and collect data about a complex model of a proposed process or system to identify failure points.		Conduct an investigation individually and collaboratively to produce data. Consider the types, how much and the accuracy of data needed to obtain reliable measurements, and consider limitations on the precision of the data (e.g. number of trials, cost, risk, time, etc.) Manipulate variables and collect data about a complex model of a proposed process or system to identify failure points. Suggest revisions to the investigation that may improve the reliability of data collected.

Subject: Science **Teacher:** _____ **Grade Level:** 3rd HS Course

Enduring Skill: Enduring Skill #5: Plan and carry out investigations.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Planning an Investigation	Plan an investigation or test a design individually or collaboratively to produce data to either build or revise a model, support explanations for phenomena, or testing solutions to problems. Consider possible variables or effects of your investigation. Select appropriate tools to collect, record, and analyze data.		Plan and revise an investigation or test a design individually or collaboratively to produce data to either build or revise a model, support explanations for phenomena, or testing solutions to problems. Consider possible variables or effects of your investigation. Select appropriate tools to collect, record, and analyze data.		Plan an investigation or test a design individually or collaboratively to produce data to either build or revise a model, support explanations for phenomena, or testing solutions to problems. Consider possible variables or effects of your investigation. Select appropriate tools to collect, record, analyze, and evaluate data. Evaluate the investigation's design to ensure variables are controlled.		Plan an investigation or test a design individually or collaboratively to produce data to either build or revise a model, support explanations for phenomena, or testing solutions to problems. Consider possible variables or effects of your investigation. Select appropriate tools to collect, record, analyze, and evaluate data. Evaluate the investigation's design to ensure variables are controlled. Propose a process to improve the performance relative to criteria for success or other variables.

Carrying out an Investigation to collect data	Conduct an investigation individually and collaboratively to produce data. Consider the types, how much and the accuracy of data needed to obtain reliable measurements, and consider limitations on the precision of the data (e.g. number of trials, cost, risk, time, etc.) Manipulate variables and collect data about a complex model of a proposed process or system to identify failure points.		Conduct an investigation individually and collaboratively to produce data. Consider the types, how much and the accuracy of data needed to obtain reliable measurements, and consider limitations on the precision of the data (e.g. number of trials, cost, risk, time, etc.) Manipulate variables and collect data about a complex model of a proposed process or system to identify failure points. Suggest revisions to the investigation that may improve the reliability of data collected.		Conduct an investigation individually and collaboratively to produce data. Consider the types, how much and the accuracy of data needed to obtain reliable measurements, and consider limitations on the precision of the data (e.g. number of trials, cost, risk, time, etc.), and refine the design accordingly. Manipulate variables and collect data about a complex model of a proposed process or system to identify failure points, or improve performance relative to criteria for success or other variables.		Conduct an investigation individually and collaboratively to produce data. Consider the types, how much and the accuracy of data needed to obtain reliable measurements, and consider limitations on the precision of the data (e.g. number of trials, cost, risk, time, etc.), and refine the design accordingly. Manipulate variables and collect data about a complex model of a proposed process or system to identify failure points, or improve performance relative to criteria for success or other variables. Consider environmental, social, and personal impacts of the results of the investigation.

Linear Alignment of Criteria

Enduring Skill: Enduring Skill #5: Plan and carry out investigations. **Criteria: Planning an Investigation K – 12**

Criteria	K - 1		K - 2		K - 3 and 1st Grade - 1		K - 4 and 1st Grade - 2		1st Grade – 3 and 2nd Grade - 1
Planning an Investigation	Unable to plan an investigation or make a prediction even with teacher support.		Can make a prediction with teacher support. Cannot plan an investigation even with support.		With teacher guidance, plan an investigation in collaboration with peers. With support, make predictions based on prior experiences.		Plan an investigation in collaboration with peers. Make predictions based on prior experiences.		Plan an investigation collaboratively to produce data to serve as evidence to answer a question. Make predictions based on prior experiences identify different ways of observing and/or measuring to answer a question.
	1st Grade - 4 and 2nd Grade - 2		**2nd Grade - 3 and 3rd Grade - 1**		**2nd Grade - 4 and 3rd Grade - 2**		**3rd Grade - 3 and 4th Grade - 1**		**3rd Grade - 4 and 4th Grade - 2**
Planning an Investigation	Plan an investigation collaboratively (teacher and peers) to produce data to serve as evidence to answer a question. Make predictions based on prior experiences. Begin identifying different ways of observing and/or measuring to determine which way can answer a question.		Plan an investigation collaboratively to produce data to serve as evidence to answer a question. Make predictions based on prior experiences. Evaluate different ways of observing and/or measuring to determine which way can answer a question.		Collaboratively plan investigations (with peers). With guidance, begin to control variables to produce data that serves as a basis for evidence. Begin to identify appropriate tool for collecting data. With guidance, begin to make predictions about what would happen if a variable changes.		Collaboratively plan investigations. With guidance, control variables to produce data as a basis for evidence. With guidance consider the number of trials. Identify appropriate tools for collecting data. Make predictions about what would happen if a variable changes.		Collaboratively plan investigations (with peers) with multiple trials. With support, control variables to produce data that serves as a basis for evidence. Evaluate appropriate tools for collecting data. Make predictions about what would happen if a variable changes.

	4th Grade – 3 and 5th Grade - 1		4th Grade - 4 and 5th Grade - 2		5th Grade - 3 and 6th Grade - 1		5th Grade - 4 and 6th Grade - 2		6th Grade - 3 / 7th Grade - 1
Planning an Investigation	Collaboratively plan investigations with multiple trials and controlled variables to produce data that serves as evidence. Evaluate appropriate tools and begin to identify appropriate methods for collecting data. Make predictions about what would happen if a variable changes.		Collaboratively plan investigations (with peers) with multiple trials and controlled variables to produce data that serves as evidence. Evaluate appropriate tools and identify appropriate methods for collecting data. Make predictions about what would happen if a variable changes.		Collaboratively plan investigations with multiple trials and controlled variables to produce data that serves as evidence. Evaluate appropriate methods and tools for collecting data. Make predictions about what would happen if a variable changes.		Collaboratively plan investigations (with peers) with multiple trials and controlled variables to produce data that serves as evidence. Identify independent and dependent variables.		Collaboratively plan an investigation and in the design when given the variables a student can: identify as independent and dependent variables or ~~and~~ controls. Identify what tools are needed to gather data, how measurements will be recorded.
	6th Grade - 4 and 7th Grade - 2		**7th Grade - 3 and 8th Grade - 1**		**7th Grade - 4 and 8th Grade - 2**		**8th Grade – 3 and 1st HS – 1**		**8th Grade – 4 and 1st HS - 2**
Planning an Investigation	Collaboratively plan an investigation and in the design: accurately identify independent and dependent variables and controls, what tools are needed to do the gathering, how measurements will be recorded, and how many data are needed to support a claim.		Collaboratively or independently plan an investigation and in the design: independently identify independent and dependent variables and controls, what tools are needed to gather data, how measurements will be recorded, and how many data are needed to support a claim.		Independently plan an investigation and in the design: accurately identify independent and dependent variables and controls, what tools are needed to do the gathering, how measurements will be recorded, and how many data are needed to support a claim.		Independently plan an investigation and in the design: accurately identify independent and dependent variables and controls, what tools are needed to gather data, how measurements will be recorded, and how many data are needed to support a claim. Evaluate the accuracy of various methods for collecting data.		Independently plan an investigation or test a design solution which accurately identifies independent and dependent variables and controls, what tools are needed to do the gathering, how measurements will be recorded, and how many data are needed to support a claim Form a directional hypothesis based on previous data to predict relationships between independent and dependent variables.
	1st HS – 3 and 2nd HS - 1		**1st HS – 4 and 2nd HS – 2**		**2nd HS – 3 and 3rd HS – 1**		**2nd HS – 4 and 3rd HS – 2**		**3rd HS - 3**

Planning an Investigation	Plan an investigation or test a design individually or collaboratively to produce data to either build or revise a model, support explanations for phenomena, or testing solutions to problems. Select appropriate tools to collect and record data.		Plan and revise an investigation or test a design individually or collaboratively to produce data to either build or revise a model, support explanations for phenomena, or testing solutions to problems. Select appropriate tools to collect and record data.		Plan an investigation or test a design individually or collaboratively to produce data to either build or revise a model, support explanations for phenomena, or testing solutions to problems. Consider possible variables or effects of your investigation. Select appropriate tools to collect, record, and analyze data.		Plan and revise an investigation or test a design individually or collaboratively to produce data to either build or revise a model, support explanations for phenomena, or testing solutions to problems. Consider possible variables or effects of your investigation. Select appropriate tools to collect, record, and analyze data.		Plan an investigation or test a design individually or collaboratively to produce data to either build or revise a model, support explanations for phenomena, or testing solutions to problems. Consider possible variables or effects of your investigation. Select appropriate tools to collect, record, analyze, and evaluate data. Evaluate the investigation's design to ensure variables are controlled.
	3rd HS - 4							
Planning an Investigation	Plan an investigation or test a design individually or collaboratively to produce data to either build or revise a model, support explanations for phenomena, or testing solutions to problems. Consider possible variables or effects of your investigation. Select appropriate tools to collect, record, analyze, and evaluate data. Evaluate the investigation's design to ensure variables are controlled. Propose a process to improve the performance relative to criteria for success or other variables.							

Linear Alignment of Criteria

Enduring Skill: Enduring Skill #5: Plan and carry out investigations. **Criteria: Carrying out an Investigation to collect data K - 12**

Criteria	K - 1		K - 2		K - 3 and 1st Grade - 1		K - 4 and 1st Grade - 2		1st Grade – 3 and 2nd Grade - 1
Carrying out an Investigation to collect data	Unable to conduct an investigation or collect data even with teacher support.		Beginning to make observations but not yet conduct an investigation with support.		With guidance, conduct investigations collaboratively to make observations to answer a question.		Conduct an investigation collaboratively (teacher and peers). Make observations and measurements to collect data that can be used to answer a question.		With guidance, conduct investigations collaboratively to make observations and measurements: to collect data that can be used to make comparisons, to produce data to answer a question, AND of an object/tool/solution to determine if it solves the problem/meets the goal.

	1st Grade - 4 and 2nd Grade - 2		2nd Grade - 3 and 3rd Grade - 1		2nd Grade - 4 and 3rd Grade - 2		3rd Grade - 3 and 4th Grade - 1		3rd Grade - 4 and 4th Grade - 2
Carrying out an Investigation to collect data	Conduct an investigation collaboratively (teacher and peers). Make observations and measurements of an object/tool/solution to determine if it solves the problem/meets the goal. Beginning to make comparisons.		Conduct investigations collaboratively making observations and measurements: to collect data that can be used to make comparisons, to produce data to answer a question, AND of an object/tool/solution to determine if it solves the problem/meets the goal.		Conduct an investigation collaboratively (with teacher and peers). Make observations and measurements of multiple objects/tools/solutions to determine if each one solves the problem/meets the goal.		Conduct an investigation collaboratively to produce data as a basis for evidence. With guidance, test two different models of the same object/tool/process to determine which better meets criteria for success.		Conduct an investigation collaboratively (with peers). With teacher guidance, make observations and measurements to produce data as evidence for an explanation of a phenomenon or test design solution. With teacher support, test two different models of the same object/tool/process to determine which better meets criteria for success.

	4th Grade – 3 and 5th Grade - 1		4th Grade - 4 and 5th Grade - 2		5th Grade - 3 and 6th Grade - 1		5th Grade - 4 and 6th Grade - 2		6th Grade - 3 / 7th Grade - 1
Carrying out an Investigation to collect data	With teacher support, conduct investigations collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials are considered. With teacher support, conduct an investigation collaboratively to make observations and/or measurements to produce data as evidence for an explanation of a phenomenon or test design solution. Collaboratively test two different models of the same object/tool/process to determine which better meets criteria for success.		Conduct an investigation collaboratively (with peers). Beginning to make observations and measurements to produce data as evidence for an explanation of a phenomenon or test design solution. Test two different models of the same object/tool/process to determine which better meets criteria for success.		Conduct investigations collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials are considered. Make observations and/or measurements to produce data to serve as a basis for evidence for an explanation of a phenomenon or test design solution. Test two different models of the same object/tool/process to determine which better meets criteria for success.		Conduct an investigation collaboratively (with peers). Make observations and measurements to produce data as evidence for an explanation of a phenomenon or test design solution. Test two or more models of the same object/tool/process to determine which better meets criteria for success.		Conduct an investigation collaboratively. Make observations and measurements to produce data as evidence for an explanation of a phenomenon or test design solution. Test two or more models of the same object/tool/process to determine which better meets criteria for success. Collaboratively attempts to redesign the investigation but minor lapses in logic and design exist.

	6th Grade - 4 and 7th Grade - 2		7th Grade - 3 and 8th Grade - 1		7th Grade - 4 and 8th Grade - 2		8th Grade – 3 and 1st HS – 1		8th Grade – 4 and 1st HS - 2
Carrying out an Investigation to collect data	Conduct an investigation collaboratively (with peers). Make observations and measurements to produce data as evidence for an explanation of a phenomenon or test design solution. Test two or more models of the same object/tool/process to determine which better meets criteria for success. Collaboratively redesigns investigations within established parameters.		Conduct an investigation collaboratively (with peers). Make observations and measurements to produce data as evidence for an explanation of a phenomenon or test design solution. Test two or more models of the same object/tool/process to determine which better meets criteria for success. Collaboratively redesigns investigations based on data and collection methods.		Conduct an investigation collaboratively (with peers). Make observations and measurements to produce data as evidence for an explanation of a phenomenon or test design solution. Test two or more models of the same object/tool/process to determine which better meets criteria for success. Collaboratively and individually redesign investigations based on data and collection methods.		Independently redesign investigations based on evaluation of data collection methods.		Decide on types, how much, and accuracy of data needed to produce reliable measurements.

	1st HS – 3 and 2nd HS - 1		1st HS – 4 and 2nd HS – 2		2nd HS – 3 and 3rd HS – 1		2nd HS – 4 and 3rd HS – 2		3rd HS - 3
Carrying out an Investigation to collect data	Conduct an investigation individually and collaboratively to produce data. Consider the types, how much and the accuracy of data needed to obtain reliable measurements. Manipulate variables and collect data about a complex model of a proposed process or system.		Conduct an investigation individually and collaboratively to produce data. Consider the types, how much and the accuracy of data needed to obtain reliable measurements. Manipulate variables and collect data about a complex model of a proposed process or system. Suggest revisions to the investigation that may improve the reliability of data collected.		Conduct an investigation individually and collaboratively to produce data. Consider the types, how much and the accuracy of data needed to obtain reliable measurements, and consider limitations on the precision of the data (e.g. number of trials, cost, risk, time, etc.) Manipulate variables and collect data about a complex model of a proposed process or system to identify failure points.		Conduct an investigation individually and collaboratively to produce data. Consider the types, how much and the accuracy of data needed to obtain reliable measurements, and consider limitations on the precision of the data (e.g. number of trials, cost, risk, time, etc.) Manipulate variables and collect data about a complex model of a proposed process or system to identify failure points. Suggest revisions to the investigation that may improve the reliability of data collected.		Conduct an investigation individually and collaboratively to produce data. Consider the types, how much and the accuracy of data needed to obtain reliable measurements, and consider limitations on the precision of the data (e.g. number of trials, cost, risk, time, etc.), and refine the design accordingly. Manipulate variables and collect data about a complex model of a proposed process or system to identify failure points, or improve performance relative to criteria for success or other variables.
	3rd HS - 4								
Carrying out an Investigation to collect data	Conduct an investigation individually and collaboratively to produce data. Consider the types, how much and the accuracy of data needed to obtain reliable measurements, and consider limitations on the precision of the data (e.g. number of trials, cost, risk, time, etc.), and refine the design accordingly. Manipulate variables and collect data about a complex model of a proposed process or system to identify failure points, or improve performance relative to criteria for success or other variables. Consider environmental, social, and personal impacts of the results of the investigation.								

Science Enduring Skill #6 – Organize and use data to support claims or conclusions.

Framework for K-12 Science Education, Practice 4: Analyzing and Interpreting Data, pages 61-63
NGSS Appendix F, pages 9, 23-24

Criteria: Organize and use data to support claims and conclusions

Grade Level	Proficiency by Grade Level For Organize and use data to support claims and conclusions
Kindergarten	Using pictures and/or organizers and teacher support, begin to record observations, thoughts, and ideas
1st Grade	Record and share information (words, pictures, drawings) to identify patterns and/or relationships in the natural and designed world(s) in order to answer scientific questions and solve problems
2nd Grade	Record and share information (observational writings, thoughts, ideas, pictures, drawings) to describe patterns and/or relationships in the natural and designed world(s) in order to answer scientific questions and solve problems
3rd Grade	Given a blank organizer, begin to organize recorded data collected by different groups (represented in tables, bar graphs, and/or pictographs) to ● describe patterns ● describe relationships ● answer scientific questions ● Use of digital tools when feasible.
4th Grade	Independently organize recorded data collected by different groups (represented in tables, bar graphs, and/or pictographs) to ● describe patterns ● describe relationships ● answer scientific questions ● Use of digital tools when feasible.
5th Grade	Compare and contrast data collected by different groups (represented in bar graphs, pictographs and/or pie charts) to reveal patterns that indicate relationships. ● Use of digital tools when feasible.
	Accurately label columns and rows, and input data in a teacher provided data table template.

6th Grade	Use data to consistently identify linear and nonlinear relationships. Use of digital tools when feasible.
7th Grade	Input multiple data sets and label rows and columns into a teacher provided template. Use data to consistently identify linear and nonlinear relationships, consistently identify temporal and spatial relationships, and inconsistently identify causal and correlational relationships. Use of digital tools when feasible.
8th Grade	Generate a data table with appropriate number of rows and columns to accurately display large data sets. Select the appropriate type of graph to best display data to support claims and conclusions. Axes are properly labeled and scaled with appropriate titles. Use data to consistently identify linear and nonlinear relationships, consistently identify temporal and spatial relationships, and consistently identify causal and correlational relationships. Use of digital tools when feasible.
1st High School Science Course	Use additional techniques such as: spreadsheets, databases, tables, charts, graphs, statistics, mathematics, and information and computer technology to summarize, and display data and to explore relationships between variables.
2nd High School Science Course	Use data to look for patterns or to test whether data are consistent with your hypothesis Compare and contrast various types of data sets to examine consistency of measurement and observations
3rd High School Science Course	Apply a variety of statistical and probability concepts to scientific questions, using digital tools when applicable Use a greater diversity of samples of scientific data and to use computers to support claims and conclusions

Subject: Science **Teacher:** _____ **Grade Level:** Kindergarten

Enduring Skill: Enduring Skill #6 – Organize and use data to support claims or conclusions.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Organize and use data to support claims or conclusions	Participates in investigations but unable to share observations, thoughts, or ideas		Shares observations, thoughts, and ideas		Using pictures and/or organizers and teacher support, begin to record observations, thoughts, and ideas		With teacher support, record and share information (words, pictures, drawings). Begin to identify patterns in the natural and designed world(s) in order to answer scientific questions or solve problems.

Subject: Science **Teacher:** _____ **Grade Level:** 1st Grade

Enduring Skill: Enduring Skill #6 – Organize and use data to support claims or conclusions.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Organize and use data to support claims or conclusions	Using pictures and/or organizers and teacher support, begin to record observations, thoughts, and ideas.		With teacher support, record and share information (words, pictures, drawings). Begin to identify patterns in the natural and designed world(s) in order to answer scientific questions or solve problems.		Record and share information (words, pictures, drawings) to identify patterns and/or relationships in the natural and designed world(s) in order to answer scientific questions and solve problems.		Record and share information (observational writings, pictures, drawings). With teacher support, begin to describe patterns and/or relationships in the natural and designed world(s) in order to answer scientific questions and solve problems.

Subject: Science **Teacher:** _____ **Grade Level:** 2nd Grade

Enduring Skill: Enduring Skill #6 – Organize and use data to support claims or conclusions.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Organize and use data to support claims or conclusions	Record and share information (words, pictures, drawings) to identify patterns and/or relationships in the natural and designed world(s) in order to answer scientific questions and solve problems.		Record and share information (observational writings, pictures, drawings). With teacher support, begin to describe patterns and/or relationships in the natural and designed world(s) in order to answer scientific questions and solve problems.		Record and share information (observational writings, thoughts, ideas, pictures, drawings) to describe patterns and/or relationships in the natural and designed world(s) in order to answer scientific questions and solve problems.		With teacher support, given a labeled organizer, begin collecting numerical data within a table to ● describe patterns ● describe relationships ● answer scientific questions

Subject: Science **Teacher:** _____ **Grade Level:** 3rd Grade

Enduring Skill: Enduring Skill #6 – Organize and use data to support claims or conclusions.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Organize and use data to support claims or conclusions	Record and share information (observational writings, thoughts, ideas, pictures, drawings) to describe patterns and/or relationships in the natural and designed world(s) in order to answer scientific questions and solve problems.		With teacher support, given a labeled organizer, begin collecting numerical data within a table to ● describe patterns ● describe relationships ● answer scientific questions		Given a blank organizer, begin to organize recorded data collected by different groups (represented in tables, bar graphs, and/or pictographs) to ● describe patterns ● describe relationships ● answer scientific questions ● Use of digital tools when feasible		With teacher support, begin to organize recorded data collected by different groups (represented in tables, bar graphs, and/or pictographs) to ● describe patterns ● describe relationships ● answer scientific questions ● Use of digital tools when feasible

Subject: Science **Teacher:** _____ **Grade Level:** 4th Grade

Enduring Skill: Enduring Skill #6 – Organize and use data to support claims or conclusions.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Organize and use data to support claims or conclusions	Given a blank organizer, begin to organize recorded data collected by different groups (represented in tables, bar graphs, and/or pictographs) to ● describe patterns ● describe relationships ● answer scientific questions ● Use of digital tools when feasible.		With teacher support, begin to organize recorded data collected by different groups (represented in tables, bar graphs, and/or pictographs) to ● describe patterns ● describe relationships ● answer scientific questions ● Use of digital tools when feasible.		Independently organize recorded data collected by different groups (represented in tables, bar graphs, and/or pictographs) to ● describe patterns ● describe relationships ● answer scientific questions ● Use of digital tools when feasible.		With teacher support, compare and contrast data collected by different groups (represented in bar graphs, pictographs and/or pie charts) to ● describe patterns ● describe relationships ● answer scientific questions ● Use of digital tools when feasible.

Subject: Science **Teacher:** _____ **Grade Level:** 5th Grade

Enduring Skill: Enduring Skill #6 – Organize and use data to support claims or conclusions.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Organize and use data to support claims or conclusions	Independently organize recorded data collected by different groups (represented in tables, bar graphs, and/or pictographs) to ● describe patterns ● describe relationships ● answer scientific questions ● Use of digital tools when feasible.		With teacher support, compare and contrast data collected by different groups (represented in bar graphs, pictographs and/or pie charts) to ● describe patterns ● describe relationships ● answer scientific questions ● Use of digital tools when feasible.		Compare and contrast data collected by different groups (represented in bar graphs, pictographs and/or pie charts) to reveal patterns that indicate relationships. ● Use of digital tools when feasible.		Compare and contrast data collected by different groups (represented in a variety of graphical displays, including the use of digital tools) to reveal patterns that indicate multiple relationships. ● Use of digital tools when feasible.

Subject: Science **Teacher:** _____ **Grade Level:** 6th Grade

Enduring Skill: Enduring Skill #6 – Organize and use data to support claims or conclusions.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Organize and use data to support claims or conclusions	Compare and contrast data collected by different groups (represented in bar graphs, pictographs and/or pie charts) to reveal patterns that indicate relationships. Use of digital tools when feasible.		Compare and contrast data collected by different groups (represented in a variety of graphical displays, including the use of digital tools) to reveal patterns that indicate multiple relationships. Use of digital tools when feasible.		Accurately label columns and rows, and input data in a teacher provided data table template. Use data to consistently identify linear and nonlinear relationships. Use of digital tools when feasible.		Generate a data table with accurately labeled columns and rows and appropriately input data from a small data set. Use data to consistently identify linear and nonlinear relationships, and inconsistently identify temporal and spatial relationships. Use of digital tools when feasible.

Subject: Science **Teacher:** _____ **Grade Level:** 7th Grade

Enduring Skill: Enduring Skill #6 – Organize and use data to support claims or conclusions.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Organize and use data to support claims or conclusions	Accurately label columns and rows, and input data in a teacher provided data table template. Use data to consistently identify linear and nonlinear relationships. Use of digital tools when feasible.		Generate a data table with accurately labeled columns and rows and appropriately input data from a small data set. Use data to consistently identify linear and nonlinear relationships, and inconsistently identify temporal and spatial relationships. Use of digital tools when feasible.		Input multiple data sets and label rows and columns into a teacher provided template. Use data to consistently identify linear and nonlinear relationships, consistently identify temporal and spatial relationships, and inconsistently identify causal and correlational relationships. Use of digital tools when feasible.		Generate a data table with accurately labeled columns and rows and appropriately input data from multiple data sets. Use data to consistently identify linear and nonlinear relationships, consistently identify temporal and spatial relationships, and consistently identify causal and correlational relationships. Use of digital tools when feasible.

Subject: Science **Teacher:** _____ **Grade Level:** 8th Grade

Enduring Skill: Enduring Skill #6 – Organize and use data to support claims or conclusions.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Organize and use data to support claims or conclusions	Input multiple data sets and label rows and columns into a teacher provided template. Use data to consistently identify linear and nonlinear relationships, consistently identify temporal and spatial relationships, and inconsistently identify causal and correlational relationships. Use of digital tools when feasible.		Generate a data table with accurately labeled columns and rows and appropriately input data from multiple data sets. Use data to consistently identify linear and nonlinear relationships, consistently identify temporal and spatial relationships, and consistently identify causal and correlational relationships. Use of digital tools when feasible.		Generate a data table with appropriate number of rows and columns to accurately display large data sets. Select the appropriate type of graph to best display data to support claims and conclusions. Axes are properly labeled and scaled with appropriate titles. Use data to consistently identify linear and nonlinear relationships, consistently identify temporal and spatial relationships, and consistently identify causal and correlational relationships. Use of digital tools when feasible.		Generate a data table with appropriate number of rows and columns to accurately display large and/or multiple data sets Use data to consistently identify linear and nonlinear relationships, consistently identify temporal and spatial relationships, and consistently identify causal and correlational relationships.

Subject: Science **Teacher:** _____ **Grade Level:** 1st HS Course

Enduring Skill: Enduring Skill #6 – Organize and use data to support claims or conclusions.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Organize and use data to support claims or conclusions	Generate a data table with appropriate number of rows and columns to accurately display large data sets. Select the appropriate type of graph to best display data to support claims and conclusions. Axes are properly labeled and scaled with appropriate titles. Use data to consistently identify linear and nonlinear relationships, consistently identify temporal and spatial relationships, and consistently identify causal and correlational relationships.		Generate a data table with appropriate number of rows and columns to accurately display large and/or multiple data sets Use data to consistently identify linear and nonlinear relationships, consistently identify temporal and spatial relationships, and consistently identify causal and correlational relationships.		Use additional techniques such as: spreadsheets, databases, tables, charts, graphs, statistics, mathematics, and information and computer technology to summarize, and display data and to explore relationships between variables.		Use additional techniques such as: spreadsheets, databases, tables, charts, graphs, statistics, mathematics, and information and computer technology to summarize, and display data and to recognize relationships between variables that is worthy of further investigation in order to further support your claim.

Subject: Science **Teacher:** _____ **Grade Level:** 2nd HS Course

Enduring Skill: Enduring Skill #6 – Organize and use data to support claims or conclusions.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Organize and use data to support claims or conclusions	Use additional techniques such as: spreadsheets, databases, tables, charts, graphs, statistics, mathematics, and information and computer technology to summarize, and display data and to explore relationships between variables.		Use additional techniques such as: spreadsheets, databases, tables, charts, graphs, statistics, mathematics, and information and computer technology to summarize, and display data and to recognize relationships between variables that is worthy of further investigation in order to further support your claim.		Use data to look for patterns or to test whether data are consistent with your hypothesis. Compare and contrast various types of data sets to examine consistency of measurement and observations.		Use data to look for patterns or to test whether data are consistent with your hypothesis. Compare and contrast various types of data sets to examine consistency of measurement and observations using digital tools when applicable.

Subject: Science **Teacher:** _____ **Grade Level:** 3rd HS Course

Enduring Skill: Enduring Skill #6 – Organize and use data to support claims or conclusions.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Organize and use data to support claims or conclusions	Use data to look for patterns or to test whether data are consistent with your hypothesis. Compare and contrast various types of data sets to examine consistency of measurement and observations.		Use data to look for patterns or to test whether data are consistent with your hypothesis. Compare and contrast various types of data sets to examine consistency of measurement and observations using digital tools when applicable.		Apply a variety of statistical and probability concepts to scientific questions, using digital tools when applicable. Use a greater diversity of samples of scientific data and to use computers to support claims and conclusions.		Collect data from physical models and apply a variety of grade level mathematical and statistical concepts to scientific questions, using computers or digital tools when applicable in order to support claims and conclusions.

Linear Alignment of Criteria

Enduring Skill: Enduring Skill #6 – Organize and use data to support claims or conclusions.

Criteria: Enduring Skill: Organize and use data to support claims or conclusions K - 12.

Criteria	K - 1		K - 2		K - 3 and 1st Grade - 1		K - 4 and 1st Grade - 2		1st Grade – 3 and 2nd Grade - 1
Organize and use data to support claims or conclusions	Participates in investigations but unable to share observations, thoughts, or ideas.		Shares observations, thoughts, and ideas.		Using pictures and/or organizers and teacher support, begin to record observations, thoughts, and ideas.		With teacher support, record and share information (words, pictures, drawings). Begin to identify patterns in the natural and designed world(s) in order to answer scientific questions or solve problems.		Record and share information (words, pictures, drawings) to identify patterns and/or relationships in the natural and designed world(s) in order to answer scientific questions and solve problems.
	1st Grade - 4 and 2nd Grade - 2		**2nd Grade - 3 and 3rd Grade - 1**		**2nd Grade - 4 and 3rd Grade - 2**		**3rd Grade - 3 and 4th Grade - 1**		**3rd Grade - 4 and 4th Grade - 2**
Organize and use data to support claims or conclusions	Record and share information (observational writings, pictures, drawings). With teacher support, begin to describe patterns and/or relationships in the natural and designed world(s) in order to answer scientific questions and solve problems.		Record and share information (observational writings, thoughts, ideas, pictures, drawings) to describe patterns and/or relationships in the natural and designed world(s) in order to answer scientific questions and solve problems.		With teacher support, given a labeled organizer, begin collecting numerical data within a table to ● describe patterns ● describe relationships ● answer scientific questions		Given a blank organizer, begin to organize recorded data collected by different groups (represented in tables, bar graphs, and/or pictographs) to ● describe patterns ● describe relationships ● answer scientific questions ● Use of digital tools when feasible.		With teacher support, begin to organize recorded data collected by different groups (represented in tables, bar graphs, and/or pictographs) to ● describe patterns ● describe relationships ● answer scientific questions ● Use of digital tools when feasible

	4th Grade – 3 and 5th Grade - 1		4th Grade - 4 and 5th Grade - 2		5th Grade - 3 and 6th Grade - 1		5th Grade - 4 and 6th Grade - 2		6th Grade - 3 / 7th Grade - 1
Organize and use data to support claims or conclusions	Independently organize recorded data collected by different groups (represented in tables, bar graphs, and/or pictographs) to ● describe patterns ● describe relationships ● answer scientific questions ● Use of digital tools when feasible.		With teacher support, compare and contrast data collected by different groups (represented in bar graphs, pictographs and/or pie charts) to ● describe patterns ● describe relationships ● answer scientific questions ● Use of digital tools when feasible.		Compare and contrast data collected by different groups (represented in bar graphs, pictographs and/or pie charts) to reveal patterns that indicate relationships. ● Use of digital tools when feasible.		Compare and contrast data collected by different groups (represented in a variety of graphical displays, including the use of digital tools) to reveal patterns that indicate multiple relationships. ● Use of digital tools when feasible.		Accurately label columns and rows, and input data in a teacher provided data table template. Use data to consistently identify linear and nonlinear relationships. Use of digital tools when feasible.

	6th Grade - 4 and 7th Grade - 2		7th Grade - 3 and 8th Grade - 1		7th Grade - 4 and 8th Grade - 2		8th Grade – 3 and 1st HS – 1		8th Grade – 4 and 1st HS - 2
Organize and use data to support claims or conclusions	Generate a data table with accurately labeled columns and rows and appropriately input data from a small data set. Use data to consistently identify linear and nonlinear relationships, and inconsistently identify temporal and spatial relationships. Use of digital tools when feasible.		Input multiple data sets and label rows and columns into a teacher provided template. Use data to consistently identify linear and nonlinear relationships, consistently identify temporal and spatial relationships, and inconsistently identify causal and correlational relationships. Use of digital tools when feasible.		Generate a data table with accurately labeled columns and rows and appropriately input data from multiple data sets. Use data to consistently identify linear and nonlinear relationships, consistently identify temporal and spatial relationships, and consistently identify causal and correlational relationships. Use of digital tools when feasible.		Generate a data table with appropriate number of rows and columns to accurately display large data sets. Select the appropriate type of graph to best display data to support claims and conclusions. Axes are properly labeled and scaled with appropriate titles. Use data to consistently identify linear and nonlinear relationships, consistently identify temporal and spatial relationships, and consistently identify causal and correlational relationships. Use of digital tools when feasible.		Generate a data table with appropriate number of rows and columns to accurately display large and/or multiple data sets. Use data to consistently identify linear and nonlinear relationships, consistently identify temporal and spatial relationships, and consistently identify causal and correlational relationships.

	1st HS – 3 and 2nd HS - 1		**1st HS – 4 and 2nd HS – 2**		**2nd HS – 3 and 3rd HS – 1**		**2nd HS – 4 and 3rd HS – 2**		**3rd HS - 3**
Organize and use data to support claims or conclusions	Use additional techniques such as: spreadsheets, database, tables, charts, graphs, statistics, mathematics, and information and computer technology to summarize, and display data and to explore relationships between variables.		Use additional techniques such as: spreadsheets, database, tables, charts, graphs, statistics, mathematics, and information and computer technology to summarize, and display data and to recognize relationships between variables that is worthy of further investigation in order to further support your claim.		Use data to look for patterns or to test whether data are consistent with your hypothesis. Compare and contrast various types of data sets to examine consistency of measurement and observations.		Use data to look for patterns or to test whether data are consistent with your hypothesis. Compare and contrast various types of data sets to examine consistency of measurement and observations using digital tools when applicable.		Apply a variety of statistical and probability concepts to scientific questions, using digital tools when applicable. Use a greater diversity of samples of scientific data and to use computers to support claims and conclusions.
	3rd HS - 4								
Organize and use data to support claims or conclusions	Collect data from physical models and apply a variety of grade level mathematical and statistical concepts to scientific questions, using computers or digital tools when applicable in order to support claims and conclusions.								

Science Enduring Skill #7 – Analyze data to make sense of phenomena or determine an optimal design solution.

Framework for K-12 Science Education, Practice 4: Analyzing and Interpreting Data, pages 61-63.
NGSS Appendix F, pages 9, 23-24

Criteria: Analyze data to determine success criteria for design solutions

Grade Level	Proficiency by Grade Level For Analyze data to determine success criteria for design solutions
Kindergarten	Make predictions of observable events. With teacher support begin to analyze data from tests of an object or tool to determine if it works as intended. With teacher support begin to use data to identify patterns or relationships.
1st Grade	Compare predictions to observable events. With teacher support, analyze data from tests of an object or tool to determine if it works as intended. Use data to identify patterns and/or relationships.
2nd Grade	Compare predictions to observable events. Analyze data from tests of an object or tool to determine if it works as intended. Use data to describe patterns and/or relationships.
3rd Grade	Analyze and interpret data to: ● make sense of phenomena, using logical reasoning, mathematics, and/or computation. ● With teacher's support begin to evaluate and refine a problem statement or the design of a proposed object, tool, or process ● Use digital tools when feasible.
4th Grade	Analyze and interpret data to: ● make sense of phenomena, using logical reasoning, mathematics, and/or computation to begin to identify patterns. ● Evaluate a problem statement or the design of a proposed object, tool, or process and begin to refine it. ● Use digital tools when feasible.
5th Grade	Analyze, interpret and compare (across groups) data to: ● make sense of phenomena, using logical reasoning, mathematics, and/or computation to reveal patterns that indicate relationships. ● Evaluate and refine a problem statement or the design of a proposed object, tool, or process.

	● Use digital tools when feasible.
6th Grade	Interpret data to provide evidence for phenomena. Analyze and interpret data to determine similarities and differences in findings. Uses mean to analyze and characterize data, using digital tools when feasible.
7th Grade	Analyze and interpret data to determine similarities and differences in findings. Apply concepts of statistics (mean, median, and mode) to analyze and characterize data, using digital tools when feasible. Determining limitations of data analysis.
8th Grade	Analyze and interpret data to provide evidence for phenomena. Apply concepts of statistics (mean, median, mode and variability) and probability to analyze and characterize data, using digital tools when feasible. Consider limitations of data analysis and/or seek to improve precision and accuracy of data with better technological tools and methods. Analyze data to define an optimal operational range for a proposed object, tool, process or system that best meets for criteria for success.
1st High School Science Course	Analyze data using tools, technologies, and/or models in order to make valid and reliable scientific claims or determine an optimal design solution.
2nd High School Science Course	Collect data from physical models, and analyze the performance of a design under a range of conditions. Recognize patterns in data that suggest relationships worth investigating further. Distinguish between causal and correlational relationships. Recognize when data are in conflict with expectations and **consider** revisions to the original model.
3rd High School Science Course	Evaluate the strength of a conclusion that can be inferred from any data set, using **appropriate grade-level** mathematical techniques. Evaluate the impact of new data on a working explanation and/or model of a proposed process or system. Analyze data to identify design features and or characteristics of the components of a proposed process or system to optimize it relative to criteria for success.

Subject: Science **Teacher:** _____ **Grade Level:** Kindergarten

Enduring Skill: Enduring Skill #7: Analyze data to make sense of phenomena or determine an optimal design solution.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Analyze data to determine success criteria for design solutions	No evidence that the student can make predictions, analyzes data, or identifies patterns.		With teacher support begin to make predictions of observable events and/or notice patterns within the data.		Make predictions of observable events. With teacher support begin to analyze data from tests of an object or tool to determine if it works as intended. With teacher support begin to use data to identify patterns or relationships.		With teacher support begin to compare predictions of observable events. With teacher support, analyze data from tests of an object or tool to determine if it works as intended. Use data to identify patterns or relationships.

Subject: Science **Teacher:** _____ **Grade Level:** 1st Grade

Enduring Skill: Enduring Skill #7: Analyze data to make sense of phenomena or determine an optimal design solution.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Analyze data to determine success criteria for design solutions	Make predictions of observable events. With teacher support begin to analyze data from tests of an object or tool to determine if it works as intended. With teacher support begin to use data to identify patterns or relationships.		With teacher support begin to compare predictions of observable events. With teacher support, analyze data from tests of an object or tool to determine if it works as intended. Use data to identify patterns or relationships.		Compare predictions to observable events. With teacher support, analyze data from tests of an object or tool to determine if it works as intended. Use data to identify patterns and/or relationships.		Compare predictions to observable events. With teacher support, analyze data from tests of an object or tool to determine if it works as intended. With teacher support begin to use data to describe patterns and/or relationships.

Subject: Science **Teacher:** _____ **Grade Level:** 2nd Grade

Enduring Skill: Enduring Skill #7: Analyze data to make sense of phenomena or determine an optimal design solution.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Analyze data to determine success criteria for design solutions	Compare predictions to observable events. With teacher support, analyze data from tests of an object or tool to determine if it works as intended. Use data to identify patterns and/or relationships.		Compare predictions to observable events. With teacher support, analyze data from tests of an object or tool to determine if it works as intended. With teacher support begin to use data to describe patterns and/or relationships.		Compare predictions to observable events. Analyze data from tests of an object or tool to determine if it works as intended. Use data to describe patterns and/or relationships.		With teacher support begin to analyze and interpret data to: ● make sense of phenomena, using logical reasoning, mathematics, and/or computation. ● Determine if an object/tool worked as intended. ● Describe patterns and relationships.

Subject: Science **Teacher:** _____ **Grade Level:** 3rd Grade

Enduring Skill: Enduring Skill #7: Analyze data to make sense of phenomena or determine an optimal design solution.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Analyze data to determine success criteria for design solutions	Compare predictions to observable events. Analyze data from tests of an object or tool to determine if it works as intended. Use data to describe patterns and/or relationships.		With teacher support begin to analyze and interpret data to: ● Make sense of phenomena, using logical reasoning, mathematics, and/or computation. ● Determine if an object/tool worked as intended. ● Describe patterns and relationships.		Analyze and interpret data to: ● Make sense of phenomena, using logical reasoning, mathematics, and/or computation. ● With teacher's support begin to evaluate and refine a problem statement or the design of a proposed object, tool, or process. ● Use digital tools when feasible.		Analyze and interpret data to: ● Make sense of phenomena, using logical reasoning, mathematics, and/or computation. ● Evaluate a problem statement or the design of a proposed object, tool, or process and with teacher support begin to refine it. ● Use digital tools when feasible.

Subject: Science **Teacher:** _____ **Grade Level:** 4th Grade

Enduring Skill: Enduring Skill #7: Analyze data to make sense of phenomena or determine an optimal design solution.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Analyze data to determine success criteria for design solutions	Analyze and interpret data to: ● Make sense of phenomena, using logical reasoning, mathematics, and/or computation. ● With teacher's support begin to evaluate and refine a problem statement or the design of a proposed object, tool, or process. ● Use digital tools when feasible.		Analyze and interpret data to: ● Make sense of phenomena, using logical reasoning, mathematics, and/or computation. ● Evaluate a problem statement or the design of a proposed object, tool, or process and with teacher support begin to refine it. ● Use digital tools when feasible.		Analyze and interpret data to: ● Make sense of phenomena, using logical reasoning, mathematics, and/or computation to begin to identify patterns. ● Evaluate a problem statement or the design of a proposed object, tool, or process and begin to refine it. ● Use digital tools when feasible.		Analyze, interpret and compare (across groups) data to: ● Make sense of phenomena, using logical reasoning, mathematics, and/or computation and with teacher support begin to reveal patterns that indicate relationships. ● Evaluate and refine a problem statement or the design of a proposed object, tool, or process. ● Use digital tools when feasible.

Subject: Science **Teacher:** _____ **Grade Level:** 5th Grade

Enduring Skill: Enduring Skill #7: Analyze data to make sense of phenomena or determine an optimal design solution.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Analyze data to determine success criteria for design solutions	Analyze and interpret data to: ● Make sense of phenomena, using logical reasoning, mathematics, and/or computation to begin to identify patterns. ● Evaluate a problem statement or the design of a proposed object, tool, or process and begin to refine it. ● Use digital tools when feasible.		Analyze, interpret and compare (across groups) data to: ● Make sense of phenomena, using logical reasoning, mathematics, and/or computation and with teacher support begin to reveal patterns that indicate relationships. ● Evaluate and refine a problem statement or the design of a proposed object, tool, or process ● Use digital tools when feasible.		Analyze, interpret and compare (across groups) data to: ● Make sense of phenomena, using logical reasoning, mathematics, and/or computation to reveal patterns that indicate relationships. ● Evaluate and refine a problem statement or the design of a proposed object, tool, or process ● Use digital tools when feasible.		Analyze, interpret and compare (across groups) data to: ● Make sense of phenomena, using logical reasoning, mathematics, and/or computation to reveal patterns that indicate relationships. ● Evaluate and refine a problem statement or the design of a proposed object, tool, or process ● Begin to use data to provide evidence for a phenomenon. ● Use digital tools when feasible.

Subject: Science **Teacher:** _____ **Grade Level:** 6th Grade

Enduring Skill: Enduring Skill #7: Analyze data to make sense of phenomena or determine an optimal design solution.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Analyze data to determine success criteria for design solutions	Analyze, interpret and compare (across groups) data to: ● make sense of phenomena, using logical reasoning, mathematics, and/or computation to reveal patterns that indicate relationships. ● Evaluate and refine a problem statement or the design of a proposed object, tool, or process.		Analyze, interpret and compare (across groups) data to: ● make sense of phenomena, using logical reasoning, mathematics, and/or computation to reveal patterns that indicate relationships. ● Evaluate and refine a problem statement or the design of a proposed object, tool, or process. ● Begin to use data to provide evidence for a phenomenon.		Interpret data to provide evidence for phenomena. Analyze and interpret data to determine similarities and differences in findings. Uses mean to analyze and characterize data, using digital tools when feasible.		Analyze and interpret data to determine similarities and differences in findings. Apply two concepts of statistics (mean, median or mode) and probability to analyze and characterize data, using digital tools when feasible. Determining a limitation of data analysis.

Subject: Science **Teacher:** _____ **Grade Level:** 7th Grade

Enduring Skill: Enduring Skill #7: Analyze data to make sense of phenomena or determine an optimal design solution.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Analyze data to determine success criteria for design solutions	Interpret data to provide evidence for phenomena. Analyze and interpret data to determine similarities and differences in findings. Uses mean to analyze and characterize data, using digital tools when feasible.		Analyze and interpret data to determine similarities and differences in findings. Apply two concepts of statistics (mean, median or mode) and probability to analyze and characterize data, using digital tools when feasible. Determining a limitation of data analysis.		Analyze and interpret data to determine similarities and differences in findings. Apply concepts of statistics (mean, median, and mode) to analyze and characterize data, using digital tools when feasible. Determining limitations of data analysis.		Analyze and interpret data to determine similarities and differences in findings. Apply concepts of statistics (mean, median, and mode) to analyze and characterize data, using digital tools when feasible. Determine limitations of data analysis. Seek to improve precision and/or accuracy of data with better tools or methods.

Subject: Science **Teacher:** _____ **Grade Level:** 8th Grade

Enduring Skill: Enduring Skill #7: Analyze data to make sense of phenomena or determine an optimal design solution.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Analyze data to determine success criteria for design solutions	Analyze and interpret data to determine similarities and differences in findings. Apply concepts of statistics (mean, median, and mode) to analyze and characterize data, using digital tools when feasible. Determining limitations of data analysis.		Analyze and interpret data to determine similarities and differences in findings. Apply concepts of statistics (mean, median, and mode) to analyze and characterize data, using digital tools when feasible. Determine limitations of data analysis. Seek to improve precision and/or accuracy of data with better tools or methods.		Analyze and interpret data to provide evidence for phenomena. Apply concepts of statistics (mean, median, mode and variability) and probability to analyze and characterize data, using digital tools when feasible. Consider limitations of data analysis and/or seek to improve precision and accuracy of data with better technological tools and methods. Analyze data to define an optimal operational range for a proposed object, tool, process or system that best meets for criteria for success.		Analyze and interpret data to provide evidence for phenomena. Improve precision and accuracy using data analysis (measurement error, sample selection). Apply an advanced concept of statistics (determining function fits to data, slope, intercept, correlation coefficient) and probability to analyze and characterize data, using digital tools when feasible.

Subject: Science **Teacher:** _____ **Grade Level:** 1st HS Course

Enduring Skill: Enduring Skill #7: Analyze data to make sense of phenomena or determine an optimal design solution.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Analyze data to determine success criteria for design solutions	Analyze and interpret data to provide evidence for phenomena. Apply concepts of statistics (mean, median, mode and variability) and probability to analyze and characterize data, using digital tools when feasible. Consider limitations of data analysis and/or seek to improve precision and accuracy of data with better technological tools and methods. Analyze data to define an optimal operational range for a proposed object, tool, process or system that best meets for criteria for success.		Analyze and interpret data to provide evidence for phenomena. Improve precision and accuracy using data analysis (measurement error, sample selection). Apply an advanced concept of statistics (determining function fits to data, slope, intercept, correlation coefficient) and probability to analyze and characterize data, using digital tools when feasible.		Analyze data using tools, technologies, and/or models in order to make valid and reliable scientific claims or determine an optimal design solution.		Analyze data using tools, technologies, and/or models in order to make valid and reliable scientific claims or determine an optimal design solution. Consider limitations of data analysis (e.g. measurement error, sample selection) when analyzing and interpreting data.

Subject: Science **Teacher:** _____ **Grade Level:** 2nd HS Course

Enduring Skill: Enduring Skill #7: Analyze data to make sense of phenomena or determine an optimal design solution.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Analyze data to determine success criteria for design solutions	Analyze data using tools, technologies, and/or models in order to make valid and reliable scientific claims or determine an optimal design solution.		Analyze data using tools, technologies, and/or models in order to make valid and reliable scientific claims or determine an optimal design solution. Consider limitations of data analysis (e.g. measurement error, sample selection) when analyzing and interpreting data.		Collect data from physical models, and analyze the performance of a design under a range of conditions. Recognize patterns in data that suggest relationships worth investigating further. Distinguish between causal and correlational relationships. Recognize when data are in conflict with expectations and **consider** revisions to the original model.		Collect data from physical models, and analyze the performance of a design under a range of conditions. Recognize patterns in data that suggest relationships worth investigating further, **and suggest a plan for further investigation of those patterns.** Distinguish between causal and correlational relationships. Recognize when data are in conflict with expectations and **implement** revisions to the original model.

Subject: Science **Teacher:** _____ **Grade Level:** 3rd HS Course

Enduring Skill: Enduring Skill #7: Analyze data to make sense of phenomena or determine an optimal design solution.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Analyze data to determine success criteria for design solutions	Collect data from physical models, and analyze the performance of a design under a range of conditions. Recognize patterns in data that suggest relationships worth investigating further. Distinguish between causal and correlational relationships. Recognize when data are in conflict with expectations and **consider** revisions to the original model.		Collect data from physical models, and analyze the performance of a design under a range of conditions. Recognize patterns in data that suggest relationships worth investigating further, **and suggest a plan for further investigation of those patterns.** Distinguish between causal and correlational relationships. Recognize when data are in conflict with expectations and **implement** revisions to the original model.		Evaluate the strength of a conclusion that can be inferred from any data set, using **appropriate grade-level** mathematical techniques. Evaluate the impact of new data on a working explanation and/or model of a proposed process or system. Analyze data to identify design features and or characteristics of the components of a proposed process or system to optimize it relative to criteria for success.		Evaluate the strength of a conclusion that can be inferred from any data set, **using above grade-level** mathematical techniques. Evaluate the impact of new data on a working explanation and/or model of a proposed process or system. Analyze data to identify design features and or characteristics of the components of a proposed process or system to optimize it relative to criteria for success.

Linear Alignment of Criteria

Enduring Skill: Enduring Skill #7: Analyze data to make sense of phenomena or determine an optimal design solution.

Criteria: Analyze data to determine success criteria for design solutions K – 12

Criteria	K - 1		K - 2		K - 3 and 1st Grade - 1		K - 4 and 1st Grade - 2		1st Grade – 3 and 2nd Grade - 1
Analyze data to determine success criteria for design solutions	No evidence that the student can make predictions, analyzes data, or identifies patterns.		With teacher support begin to make predictions of observable events and/or notice patterns within the data.		Make predictions of observable events. With teacher support begin to analyze data from tests of an object or tool to determine if it works as intended. With teacher support begin to use data to identify patterns or relationships.		With teacher support begin to compare predictions of observable events. With teacher support, analyze data from tests of an object or tool to determine if it works as intended. Use data to identify patterns or relationships.		Compare predictions to observable events. With teacher support, analyze data from tests of an object or tool to determine if it works as intended. Use data to identify patterns and/or relationships.

	1st Grade - 4 and 2nd Grade - 2		2nd Grade - 3 and 3rd Grade - 1		2nd Grade - 4 and 3rd Grade - 2		3rd Grade - 3 and 4th Grade - 1		3rd Grade - 4 and 4th Grade - 2
Analyze data to determine success criteria for design solutions	Compare predictions to observable events. With teacher support, analyze data from tests of an object or tool to determine if it works as intended. With teacher support begin to use data to describe patterns and/or relationships.		Compare predictions to observable events. Analyze data from tests of an object or tool to determine if it works as intended. Use data to describe patterns and/or relationships.		With teacher support begin to analyze and interpret data to: ● Make sense of phenomena, using logical reasoning, mathematics, and/or computation. ● Determine if an object/tool worked as intended. ● Describe patterns and relationships.		Analyze and interpret data to: ● Make sense of phenomena, using logical reasoning, mathematics, and/or computation. ● With teacher's support begin to evaluate and refine a problem statement or the design of a proposed object, tool, or process. ● Use digital tools when feasible.		Analyze and interpret data to: ● Make sense of phenomena, using logical reasoning, mathematics, and/or computation. ● Evaluate a problem statement or the design of a proposed object, tool, or process and with teacher support begin to refine it. ● Use digital tools when feasible.

	4th Grade – 3 and 5th Grade - 1		4th Grade - 4 and 5th Grade - 2		5th Grade - 3 and 6th Grade - 1		5th Grade - 4 and 6th Grade - 2		6th Grade - 3 / 7th Grade - 1
Analyze data to determine success criteria for design solutions	Analyze and interpret data to: ● Make sense of phenomena, using logical reasoning, mathematics, and/or computation to begin to identify patterns. ● Evaluate a problem statement or the design of a proposed object, tool, or process and begin to refine it. ● Use digital tools when feasible.		Analyze, interpret and compare (across groups) data to: ● Make sense of phenomena, using logical reasoning, mathematics, and/or computation and with teacher support begin to reveal patterns that indicate relationships. ● Evaluate and refine a problem statement or the design of a proposed object, tool, or process ● Use digital tools when feasible.		Analyze, interpret and compare (across groups) data to: ● Make sense of phenomena, using logical reasoning, mathematics, and/or computation to reveal patterns that indicate relationships. ● Evaluate and refine a problem statement or the design of a proposed object, tool, or process ● Use digital tools when feasible.		Analyze, interpret and compare (across groups) data to: ● Make sense of phenomena, using logical reasoning, mathematics, and/or computation to reveal patterns that indicate relationships. ● Evaluate and refine a problem statement or the design of a proposed object, tool, or process ● Begin to use data to provide evidence for a phenomenon. ● Use digital tools when feasible.		Interpret data to provide evidence for phenomena. Analyze and interpret data to determine similarities and differences in findings. Uses mean to analyze and characterize data, using digital tools when feasible.

	6th Grade - 4 and 7th Grade - 2		7th Grade - 3 and 8th Grade - 1		7th Grade - 4 and 8th Grade - 2		8th Grade – 3 and 1st HS – 1		8th Grade – 4 and 1st HS - 2
Analyze data to determine success criteria for design solutions	Analyze and interpret data to determine similarities and differences in findings. Apply two concepts of statistics (mean, median or mode) and probability to analyze and characterize data, using digital tools when feasible. Determining a limitation of data analysis.		Analyze and interpret data to determine similarities and differences in findings. Apply concepts of statistics (mean, median, and mode) to analyze and characterize data, using digital tools when feasible. Determining limitations of data analysis.		Analyze and interpret data to determine similarities and differences in findings. Apply concepts of statistics (mean, median, and mode) to analyze and characterize data, using digital tools when feasible. Determine limitations of data analysis. Seek to improve precision and/or accuracy of data with better tools or methods.		Analyze and interpret data to provide evidence for phenomena. Apply concepts of statistics (mean, median, mode and variability) and probability to analyze and characterize data, using digital tools when feasible. Consider limitations of data analysis and/or seek to improve precision and accuracy of data with better technological tools and methods. Analyze data to define an optimal operational range for a proposed object, tool, process or system that best meets for criteria for success.		Analyze and interpret data to provide evidence for phenomena. Improve precision and accuracy using data analysis (measurement error, sample selection). Apply an advanced concept of statistics (determining function fits to data, slope, intercept, correlation coefficient) and probability to analyze and characterize data, using digital tools when feasible.

	1st HS – 3 and 2nd HS - 1		1st HS – 4 and 2nd HS – 2		2nd HS – 3 and 3rd HS – 1		2nd HS – 4 and 3rd HS – 2		3rd HS - 3
Analyze data to determine success criteria for design solutions	Analyze data using tools, technologies, and/or models in order to make valid and reliable scientific claims or determine an optimal design solution.		Analyze data using tools, technologies, and/or models in order to make valid and reliable scientific claims or determine an optimal design solution. Consider limitations of data analysis (e.g. measurement error, sample selection) when analyzing and interpreting data.		Collect data from physical models, and analyze the performance of a design under a range of conditions. Recognize patterns in data that suggest relationships worth investigating further. Distinguish between causal and correlational relationships. Recognize when data are in conflict with expectations and **consider** revisions to the original model.		Collect data from physical models, and analyze the performance of a design under a range of conditions. Recognize patterns in data that suggest relationships worth investigating further, **and suggest a plan for further investigation of those patterns.** Distinguish between causal and correlational relationships. Recognize when data are in conflict with expectations and **implement** revisions to the original model.		Evaluate the strength of a conclusion that can be inferred from any data set, using **appropriate grade-level** mathematical techniques. Evaluate the impact of new data on a working explanation and/or model of a proposed process or system. Analyze data to identify design features and or characteristics of the components of a proposed process or system to optimize it relative to criteria for success.

	3rd HS - 4							
Analyze data to determine success criteria for design solutions	Evaluate the strength of a conclusion that can be inferred from any data set, **using above grade-level** mathematical techniques. Evaluate the impact of new data on a working explanation and/or model of a proposed process or system. Analyze data to identify design features and or characteristics of the components of a proposed process or system to optimize it relative to criteria for success.							

Science Enduring Skill #8 – Construct explanations based on scientific evidence.

Framework for K-12 Science Education, Practice 6: Constructing Explanations and Designing Solutions, pages 67-71.
NGSS Appendix F, pages 11-12, 27-28

Criteria: Use data to explain the cause of phenomena

Grade Level	Proficiency by Grade Level For Use data to explain the cause of phenomena
Kindergarten	With teacher support, make observations (firsthand or from media) to construct evidence-based accounts for natural phenomena.
1st Grade	Collaboratively make observations (firsthand or from media) to construct evidence-based accounts for natural phenomena.
2nd Grade	Independently make observations (firsthand or from media) to construct evidence-based accounts for natural phenomena.
3rd Grade	Identify and use evidence (e.g., measurements, observations, patterns, relationships) to construct or support a basic explanation.
4th Grade	Identify and use evidence (e.g., measurements, observations, patterns, relationships) to construct or support an intermediary explanation.
5th Grade	Identify and use evidence (e.g., measurements, observations, relationships, patterns) to construct or support particular points in a complex explanation that specifies variables.
6th Grade	Construct an explanation of variables including qualitative or quantitative data from valid sources, student's own experiments, or preset data. Construct an explanation and/or prediction for real world phenomenon by using models (student made or previously made).
7th Grade	Construct an explanation of variables using qualitative or quantitative data from valid sources and student's own experiments. Construct an explanation and/or prediction for real world phenomenon by using models (student made or previously made) and using own arguments.
8th Grade	Construct an explanation of variables using qualitative and/or quantitative data from valid sources and student's own experiments. Construct an explanation and/or prediction for real world phenomenon by using models (student made or previously made), using data based arguments, and using scientific ideas (theories and laws).

1st High School Science Course	Construct an explanation that includes quantitative and/or qualitative relationships between independent and dependent variables and that predicts and/or describes phenomena. Explanation is based on students' own experiments, at least one other source, and relation to theories and laws.
2nd High School Science Course	Make a quantitative and qualitative claim regarding the relationship between dependent and independent variables. Construct and revise an explanation based on students' own investigation and valid, reliable evidence from at least two varied sources, including relation to theories and laws.
3rd High School Science Course	Make a quantitative and qualitative claim regarding the relationship between dependent and independent variables. Construct and revise an explanation based on students' own investigation and valid, reliable evidence from more than three varied sources, including relation to theories and laws.

Subject: Science **Teacher:** _____ **Grade Level:** Kindergarten

Enduring Skill: Science Enduring Skill #8 – Construct explanations based on scientific evidence.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Use data to explain the cause of phenomena	Unable to make relevant observations.		Makes relevant observations of natural phenomena.		With teacher support, make observations (firsthand or from media) to construct evidence-based accounts for natural phenomena.		With teacher support, make observations (firsthand or from media) to collaboratively construct evidence-based account for natural phenomena.

Subject: Science **Teacher:** _____ **Grade Level:** 1st Grade

Enduring Skill: Science Enduring Skill #8 – Construct explanations based on scientific evidence.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Use data to explain the cause of phenomena	With teacher support, make observations (firsthand or from media) to construct evidence-based account for natural phenomena.		With teacher support, make observations (firsthand or from media) to collaboratively construct evidence-based account for natural phenomena.		Collaboratively make observations (firsthand or from media) to construct evidence-based accounts for natural phenomena.		Collaboratively make observations (firsthand or from media to independently construct evidence-based account for natural phenomena.

Subject: Science **Teacher:** _____ **Grade Level:** 2nd Grade

Enduring Skill: Science Enduring Skill #8 – Construct explanations based on scientific evidence.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Use data to explain the cause of phenomena	Collaboratively make observations (firsthand or from media) to construct evidence-based account for natural phenomena.		Collaboratively make observations (firsthand or from media) to independently construct evidence-based account for natural phenomena.		Independently make observations (firsthand or from media) to construct evidence-based accounts for natural phenomena.		With teacher support, identify and use evidence (e.g., measurements, observations, patterns, relationships) to construct or support a basic explanation.

Subject: Science **Teacher:** _____ **Grade Level:** 3rd Grade

Enduring Skill: Science Enduring Skill #8 – Construct explanations based on scientific evidence.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Use data to explain the cause of phenomena	Independently make observations (firsthand or from media) to construct evidence-based account for natural phenomena.		With teacher support, identify and use evidence (e.g., measurements, observations, patterns, relationships) to construct or support a basic explanation.		Identify and use evidence (e.g., measurements, observations, patterns, relationships) to construct or support a basic explanation.		With teacher support, identify and use evidence (e.g., measurements, observations, patterns, relationships) to construct or support an intermediary explanation.

Subject: Science **Teacher:** _____ **Grade Level:** 4th Grade

Enduring Skill: Science Enduring Skill #8 – Construct explanations based on scientific evidence.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Use data to explain the cause of phenomena	Identify and use evidence (e.g., measurements, observations, patterns, relationships) to construct or support a basic explanation.		With teacher support, identify and use evidence (e.g., measurements, observations, patterns, relationships) to construct or support an intermediary explanation.		Identify and use evidence (e.g., measurements, observations, patterns, relationships) to construct or support an intermediary explanation.		With teacher support, identify and use evidence (e.g., measurements, observations, relationships, patterns) to construct or support particular points in a complex explanation.

Subject: Science **Teacher:** _____ **Grade Level:** 5th Grade

Enduring Skill: Science Enduring Skill #8 – Construct explanations based on scientific evidence.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Use data to explain the cause of phenomena	Identify and use evidence (e.g., measurements, observations, patterns, relationships) to construct or support an intermediary explanation.		With teacher support, identify and use evidence (e.g., measurements, observations, relationships, patterns) to construct or support particular points in a complex explanation.		Identify and use evidence (e.g., measurements, observations, relationships, patterns) to construct or support particular points in a complex explanation that specifies variables.		With teacher support, construct an explanation of variables including qualitative or quantitative data from valid sources, student's own experiments, or preset data.

Subject: Science **Teacher:** _____ **Grade Level:** 6th Grade

Enduring Skill: Science Enduring Skill #8 – Construct explanations based on scientific evidence.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Use data to explain the cause of phenomena	Identify and use evidence (e.g., measurements, observations, relationships, patterns) to construct or support particular points in a complex explanation that specifies variables.		With teacher support, construct an explanation of variables including qualitative or quantitative data from valid sources, student's own experiments, or preset data.		Construct an explanation of variables including qualitative or quantitative data from valid sources, student's own experiments, or preset data. Construct an explanation and/or prediction for real world phenomenon by using models (student made or previously made).		Construct an explanation of variables including qualitative or quantitative data from valid sources and student's own experiments. Construct an explanation and/or prediction for real world phenomenon by using models (student made or previously made).

Subject: Science **Teacher:** _____ **Grade Level:** 7th Grade

Enduring Skill: Science Enduring Skill #8 – Construct explanations based on scientific evidence.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Use data to explain the cause of phenomena	Construct an explanation of variables including qualitative or quantitative data from valid sources, student's own experiments, or preset data. Construct an explanation and/or prediction for real world phenomenon by using models (student made or previously made).		Construct an explanation of variables including qualitative or quantitative data from valid sources and student's own experiments. Construct an explanation and/or prediction for real world phenomenon by using models (student made or previously made).		Construct an explanation of variables using qualitative or quantitative data from valid sources and student's own experiments. Construct an explanation and/or prediction for real world phenomenon by using models (student made or previously made) and using own arguments.		Construct an explanation of variables using qualitative or quantitative data from valid sources and student's own experiments. Construct an explanation and/or prediction for real world phenomenon by using models (student made or previously made), using own arguments, and using scientific ideas (theories and laws).

Subject: Science **Teacher:** _____ **Grade Level:** 8th Grade

Enduring Skill: Science Enduring Skill #8 – Construct explanations based on scientific evidence.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Use data to explain the cause of phenomena	Construct an explanation of variables using qualitative or quantitative data from valid sources and student's own experiments. Construct an explanation and/or prediction for real world phenomenon by using models (student made or previously made) and using own arguments.		Construct an explanation of variables using qualitative or quantitative data from valid sources and student's own experiments. Construct an explanation and/or prediction for real world phenomenon by using models (student made or previously made), using own arguments, and using scientific ideas (theories and laws).		Construct an explanation of variables using qualitative and/or quantitative data from valid sources and student's own experiments. Construct an explanation and/or prediction for real world phenomenon by using models (student made or previously made), using data based arguments, and using scientific ideas (theories and laws).		Construct an explanation that includes quantitative and/or qualitative relationships between independent and dependent variables. The data needs to predict and/or describe phenomena. Explanation may be based on other sources including students' own experiments, and the explanation needs to be related to established theories and laws.

Subject: Science **Teacher:** _____ **Grade Level:** 1st HS Course

Enduring Skill: Science Enduring Skill #8 – Construct explanations based on scientific evidence.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Use data to explain the cause of phenomena	Construct an explanation of variables using qualitative and/or quantitative data from valid sources and student's own experiments. Construct an explanation and/or prediction for real world phenomenon by using models (student made or previously made), using data based arguments, and using scientific ideas (theories and laws).		Construct an explanation that includes quantitative and/or qualitative relationships between independent and dependent variables. The data needs to predict and/or describe phenomena. Explanation may be based on other sources including students' own experiments, and the explanation needs to be related to established theories and laws.		Construct an explanation that includes quantitative and/or qualitative relationships between independent and dependent variables and that predicts and/or describes phenomena. Explanation is based on students' own experiments, at least one other source, and relation to theories and laws.		Make a quantitative and/or qualitative claim regarding the relationship between dependent and independent variables. Construct an explanation based on students' own investigation and valid, reliable evidence from at least two sources, including relation to theories and laws.

Subject: Science **Teacher:** _____ **Grade Level:** 2nd HS Course

Enduring Skill: Science Enduring Skill #8 – Construct explanations based on scientific evidence.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Use data to explain the cause of phenomena	Construct an explanation that includes quantitative and/or qualitative relationships between independent and dependent variables and that predicts and/or describes phenomena. Explanation is based on students' own experiments, at least one other source, and relation to theories and laws.		Make a quantitative and/or qualitative claim regarding the relationship between dependent and independent variables. Construct an explanation based on students' own investigation and valid, reliable evidence from at least two sources, including relation to theories and laws.		Make a quantitative and qualitative claim regarding the relationship between dependent and independent variables. Construct and revise an explanation based on students' own investigation and valid, reliable evidence from at least two varied sources, including relation to theories and laws.		Make a quantitative and qualitative claim regarding the relationship between dependent and independent variables. Construct and revise an explanation based on students' own investigation and valid, reliable evidence from at least three varied sources, including relation to theories and laws.

Subject: Science **Teacher:** _____ **Grade Level:** 3rd HS Course

Enduring Skill: Science Enduring Skill #8 – Construct explanations based on scientific evidence.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Use data to explain the cause of phenomena	Make a quantitative and qualitative claim regarding the relationship between dependent and independent variables. Construct and revise an explanation based on students' own investigation and valid, reliable evidence from at least two varied sources, including relation to theories and laws.		Make a quantitative and qualitative claim regarding the relationship between dependent and independent variables. Construct and revise an explanation based on students' own investigation and valid, reliable evidence from at least three varied sources, including relation to theories and laws.		Make a quantitative and qualitative claim regarding the relationship between dependent and independent variables. Construct and revise an explanation based on students' own investigation and valid, reliable evidence from more than three varied sources, including relation to theories and laws.		Make a quantitative and qualitative claim regarding the relationship between dependent and independent variables. Construct and revise an explanation based students' own investigation and valid, reliable evidence from a wide and creative variety of sources, including sophisticated relation to theories and laws.

Linear Alignment of Criteria

Enduring Skill: Science Enduring Skill #8 – Construct explanations based on scientific evidence.

Criteria: Use data to explain the cause of phenomena K – 12

Criteria	K - 1		K - 2		K - 3 and 1st Grade - 1		K - 4 and 1st Grade - 2		1st Grade – 3 and 2nd Grade - 1
Use data to explain the cause of phenomena	Unable to make relevant observations.		Makes relevant observations of natural phenomena.		With teacher support, make observations (firsthand or from media) to construct evidence-based accounts for natural phenomena.		With teacher support, make observations (firsthand or from media) to collaboratively construct evidence-based accounts for natural phenomena.		Collaboratively make observations (firsthand or from media) to construct evidence-based accounts for natural phenomena.
	1st Grade - 4 and 2nd Grade - 2		**2nd Grade - 3 and 3rd Grade - 1**		**2nd Grade - 4 and 3rd Grade - 2**		**3rd Grade - 3 and 4th Grade - 1**		**3rd Grade - 4 and 4th Grade - 2**
Use data to explain the cause of phenomena	Collaboratively make observations (firsthand or from media to independently construct evidence-based accounts for natural phenomena.		Independently make observations (firsthand or from media) to construct evidence-based accounts for natural phenomena.		With teacher support, identify and use evidence (e.g., measurements, observations, patterns, relationships) to construct or support a basic explanation.		Identify and use evidence (e.g., measurements, observations, patterns, relationships) to construct or support a basic explanation.		With teacher support, identify and use evidence (e.g., measurements, observations, patterns, relationships) to construct or support an intermediary explanation.

	4th Grade – 3 and 5th Grade - 1		**4th Grade - 4 and 5th Grade - 2**		**5th Grade - 3 and 6th Grade - 1**		**5th Grade - 4 and 6th Grade - 2**		**6th Grade - 3 / 7th Grade - 1**
Use data to explain the cause of phenomena	Identify and use evidence (e.g., measurements, observations, patterns, relationships) to construct or support an intermediary explanation.		With teacher support, identify and use evidence (e.g., measurements, observations, relationships, patterns) to construct or support particular points in a complex explanation.		Identify and use evidence (e.g., measurements, observations, relationships, patterns) to construct or support particular points in a complex explanation that specifies variables.		With teacher support, construct an explanation of variables including qualitative or quantitative data from valid sources, student's own experiments, or preset data.		Construct an explanation of variables including qualitative or quantitative data from valid sources, student's own experiments, or preset data. Construct an explanation and/or prediction for real world phenomenon by using models (student made or previously made).
	6th Grade - 4 and 7th Grade - 2		**7th Grade - 3 and 8th Grade - 1**		**7th Grade - 4 and 8th Grade - 2**		**8th Grade – 3 and 1st HS – 1**		**8th Grade – 4 and 1st HS - 2**
Use data to explain the cause of phenomena	Construct an explanation of variables including qualitative or quantitative data from valid sources and student's own experiments. Construct an explanation and/or prediction for real world phenomenon by using models (student made or previously made).		Construct an explanation of variables using qualitative or quantitative data from valid sources and student's own experiments. Construct an explanation and/or prediction for real world phenomenon by using models (student made or previously made) and using own arguments.		Construct an explanation of variables using qualitative or quantitative data from valid sources and student's own experiments. Construct an explanation and/or prediction for real world phenomenon by using models (student made or previously made), using own arguments, and using scientific ideas (theories and laws).		Construct an explanation of variables using qualitative or quantitative data from valid sources and student's own experiments. Construct an explanation and/or prediction for real world phenomenon by using models (student made or previously made), using data based arguments, and using scientific ideas (theories and laws).		Construct an explanation that includes quantitative and/or qualitative relationships between independent and dependent variables. The data needs to predict and/or describe phenomena. Explanation may be based on other sources including students' own experiments, and the explanation needs to be related to established theories and laws.

	1st HS – 3 and 2nd HS - 1		**1st HS – 4 and 2nd HS – 2**		**2nd HS – 3 and 3rd HS – 1**		**2nd HS – 4 and 3rd HS – 2**		**3rd HS - 3**
Use data to explain the cause of phenomena	Construct an explanation that includes quantitative and/or qualitative relationships between independent and dependent variables and that predicts and/or describes phenomena. Explanation is based on students' own experiments, at least one other source, and relation to theories and laws.		Make a quantitative and/or qualitative claim regarding the relationship between dependent and independent variables. Construct an explanation based on students' own investigation and valid, reliable evidence from at least two sources, including relation to theories and laws.		Make a quantitative and qualitative claim regarding the relationship between dependent and independent variables. Construct and revise an explanation based on students' own investigation and valid, reliable evidence from at least two varied sources, including relation to theories and laws.		Make a quantitative and qualitative claim regarding the relationship between dependent and independent variables. Construct and revise an explanation based on students' own investigation and valid, reliable evidence from at least three varied sources, including relation to theories and laws.		Make a quantitative and qualitative claim regarding the relationship between dependent and independent variables. Construct and revise an explanation based on students' own investigation and valid, reliable evidence from more than three varied sources, including relation to theories and laws.
	3rd HS - 4								
Use data to explain the cause of phenomena	Make a quantitative and qualitative claim regarding the relationship between dependent and independent variables. Construct and revise an explanation based students' own investigation and valid, reliable evidence from a wide and creative variety of sources, including sophisticated relation to theories and laws.								

Science Enduring Skill #9 – Design and refine solutions to problems.

Framework for K-12 Science Education, Practice 6: Constructing Explanations and Designing Solutions, pages 67-71
NGSS Appendix F, pages 11-12, 27-28

Criteria: Student systematically designs a solution to a problem

Grade Level	Proficiency by Grade Level For Student systematically designs a solution to a problem
Kindergarten	With teacher support, collaboratively designs and builds a device that solves a given problem.
1st Grade	Provided teacher-selected tools and materials, designs a solution to a specific problem and/or builds a device that solves a given problem.
2nd Grade	Uses tools and/or materials to design a solution to a specific problem and/or builds a device that solves a specific problem.
3rd Grade	Designs a solution to a specific problem and/or builds a device based on scientific ideas or collection of evidence (e.g., measurements, observations, patterns).
4th Grade	Uses evidence (e.g., measurements, observations, patterns) AND applies scientific ideas to generate a solution to a problem.
5th Grade	Uses evidence (e.g., measurements, observations, patterns) AND applies scientific ideas to generate multiple solutions to a problem.
6th Grade	Applies scientific ideas or principles to undertake a project engaging in the design cycle, to construct and/or implement a solution.
7th Grade	Applies scientific ideas or principles to undertake a project engaging in the design cycle, to construct and/or implement a solution that meets a range of design criteria and constraints.
8th Grade	Applies scientific ideas or principles to undertake a project engaging in the design cycle, to construct and/or implement a solution that meets specific design criteria and constraints.

1st High School Science Course	Applies scientific ideas or principles to systematically undertake a project engaging in the design cycle, to construct and implement a solution that meets specific, theory-based quantitative design criteria and constraints.
2nd High School Science Course	Applies scientific reasoning, theory, and/or models to provide an explanation of phenomena and solve real-world design problems, using the design cycle. Quantitative measures are used to anticipate possible effects as related to specific theory-based and pre-tested quantitative design criteria and constraints.
3rd High School Science Course	Applies scientific reasoning, theory, and/or models to provide an explanation of phenomena and solve complex real-world design problems, using the design cycle. Student-generated quantitative measures are used to anticipate possible effects as related to specific theory-based and pre-tested quantitative design criteria and constraints.

Science Enduring Skill #9 – Design and refine solutions to problems.

Framework for K-12 Science Education, Practice 6: Constructing Explanations and Designing Solutions, pages 67-71
NGSS Appendix F, pages 11-12, 27-28

Criteria: Student evaluates and refines solution(s).

Grade Level	Proficiency by Grade Level For Student evaluates and refines solution(s)
Kindergarten	Determines if a design solution works as intended.
1st Grade	With support, generates and/or compares multiple solutions to a problem.
2nd Grade	Generates and/or compares multiple solutions to a problem.
3rd Grade	Makes a claim about the merit of a solution to a problem based on scientific ideas.
4th Grade	Compares multiple student-generated solutions [Comparisons are based on scientific ideas and criteria for a successful solution].
5th Grade	Compares multiple student-generated solutions based on how well they meet the criteria and constraints of the design solution Applies scientific ideas to solve design problems.
6th Grade	Improves performance of a design by identifying criteria, making tradeoffs, testing, and revising for possible retesting.
7th Grade	Improves performance of a design by identifying and analyzing criteria, making tradeoffs, testing, revising, and retesting.
8th Grade	Optimizes performance of a design by prioritizing criteria, making tradeoffs, testing, revising, and retesting.

1st High School Science Course	Optimizes performance of a design by prioritizing criteria based on pre-testing, making refined tradeoffs, quantitatively testing, revising, and retesting.
2nd High School Science Course	Optimizes performance of a design by prioritizing real-world criteria based on pre-testing, making refined tradeoffs, quantitatively testing, multiple revisions, and multiple retests.
3rd High School Science Course	Optimizes performance of a design by prioritizing multiple, complex, and real-world criteria based on pre-testing, making refined tradeoffs, quantitatively testing, multiple revisions, and multiple retests.

Subject: Science **Teacher:** _____ **Grade Level:** Kindergarten

Enduring Skill: Enduring Skill #9: Design and refine solutions to problems.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Student systematically designs a solution to a problem	Unable to collaboratively design and build a device that solves a given problem.		Collaboratively designs and builds a device that does not or only partly solves a given problem.		With teacher support, collaboratively designs and builds a device that solves a given problem.		With support, provided teacher-selected tools and materials, design a solution to a specific problem and/or builds a device that solves a given problem.
Student evaluates and refines solution(s).	Unable to determine if a design solution works as intended.		With support, determines if a design solution works as intended.		Determines if a design solution works as intended.		With support, attempts to generate and/ or compare multiple solutions to a problem.

Subject: Science **Teacher:** _____ **Grade Level:** 1st Grade

Enduring Skill: Enduring Skill #9: Design and refine solutions to problems.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Student systematically designs a solution to a problem	With teacher support, collaboratively designs and builds a device that solves a given problem.		With support, provided teacher-selected tools and materials, design a solution to a specific problem and/or builds a device that solves a given problem.		Provided teacher-selected tools and materials, designs a solution to a specific problem and/or builds a device that solves a given problem.		With support, uses tools and/or materials to design a solution to a specific problem and/or builds a device that solves a specific problem.
Student evaluates and refines solution(s).	Determines if a design solution works as intended.		With support, attempts to generate and/ or compare multiple solutions to a problem.		With support, generates and/or compares multiple solutions to a problem.		Attempts to independently generate and/or compare multiple solutions to a problem.

Subject: Science **Teacher:** _____ **Grade Level:** 2nd Grade

Enduring Skill: Enduring Skill #9: Design and refine solutions to problems.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Student systematically designs a solution to a problem	Provided teacher-selected tools and materials, designs a solution to a specific problem and/or builds a device that solves a given problem.		With support, uses tools and/or materials to design a solution to a specific problem and/or builds a device that solves a specific problem.		Uses tools and/or materials to design a solution to a specific problem and/or builds a device that solves a specific problem.		With some inconsistency or inaccuracy, attempts to design a solution to a specific problem and/or build a device using scientific ideas or evidence as the basis for design.
Student evaluates and refines solution(s).	With support, generate and/or compares multiple solutions to a problem.		Attempts to independently generate and/or compares multiple solutions to a problem.		Generates and/or compares multiple solutions to a problem.		With support, makes a claim about the merit of a solution to a problem based on scientific ideas.

Subject: Science **Teacher:** _____ **Grade Level:** 3rd Grade

Enduring Skill: Enduring Skill #9: Design and refine solutions to problems.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Student systematically designs a solution to a problem	Uses tools and/or materials to design a solution to a specific problem and/or builds a device that solves a specific problem.		With some inconsistency or inaccuracy, attempts to design a solution to a specific problem and/or build a device using scientific ideas or evidence as the basis for design.		Designs a solution to a specific problem and/or builds a device based on scientific ideas or collection of evidence (e.g., measurements, observations, patterns).		With support, uses evidence (e.g., measurements, observations, patterns) AND applies scientific ideas to generate a solution to a problem.
Student evaluates and refines solution(s).	Generates and/or compares multiple solutions to a problem.		With support, makes a claim about the merit of a solution to a problem based on scientific ideas.		Makes a claim about the merit of a solution to a problem based on scientific ideas.		With support, compares multiple solutions to a problem. [Comparisons are based on scientific ideas and criteria for a successful solution].

Subject: Science **Teacher:** _____ **Grade Level:** 4th Grade

Enduring Skill: Enduring Skill #9: Design and refine solutions to problems.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Student systematically designs a solution to a problem	Designs a solution to a specific problem and/or builds a device based on scientific ideas or collection of evidence (e.g., measurements, observations, patterns).		With support, uses evidence (e.g., measurements, observations, patterns) AND applies scientific ideas to generate a solution to a problem.		Uses evidence (e.g., measurements, observations, patterns) AND applies scientific ideas to generate a solution to a problem.		With support, uses evidence (e.g., measurements, observations, patterns) AND applies scientific ideas to generate multiples solutions to a problem.
Student evaluates and refines solution(s).	Makes a claim about the merit of a solution to a problem based on scientific ideas.		With support, compares multiple solutions to a problem. [Comparisons are based on scientific ideas and criteria for a successful solution].		Compares multiple student-generated solutions [Comparisons are based on scientific ideas and criteria for a successful solution].		With support, compares multiple student-generated solutions based on how well they meet the criteria and constraints of the design solution. With support, applies scientific ideas to evaluate and refine the design.

Subject: Science **Teacher:** _____ **Grade Level:** 5th Grade

Enduring Skill: Enduring Skill #9: Design and refine solutions to problems.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Student systematically designs a solution to a problem	Uses evidence (e.g., measurements, observations, patterns) AND applies scientific ideas to generate a solution to a problem.		With support, uses evidence (e.g., measurements, observations, patterns) AND applies scientific ideas to generate multiples solutions to a problem.		Uses evidence (e.g., measurements, observations, patterns) AND applies scientific ideas to generate multiple solutions to a problem.		Uses evidence (e.g., measurements, observations, patterns) AND applies scientific ideas or principles to generate multiple solutions to a problem.
Student evaluates and refines solution(s).	Compares multiple student-generated solutions [Comparisons are based on scientific ideas and criteria for a successful solution].		With support, compares multiple student-generated solutions based on how well they meet the criteria and constraints of the design solution. With support, applies scientific ideas to evaluate and refine the design.		Compares multiple student-generated solutions based on how well they meet the criteria and constraints of the design solution. Applies scientific ideas to solve design problems.		Compares multiple solutions, using scientific ideas, based on how well they meet the criteria and constraints of the design solution.

Subject: Science **Teacher:** _____ **Grade Level:** 6th Grade

Enduring Skill: Enduring Skill #9: Design and refine solutions to problems.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Student systematically designs a solution to a problem	Uses evidence (e.g., measurements, observations, patterns) AND applies scientific ideas to generate multiple solutions to a problem.		Uses evidence (e.g., measurements, observations, patterns) AND applies scientific ideas or principles to generate multiple solutions to a problem.		Applies scientific ideas or principles to undertake a project engaging in the design cycle, to construct and/or implement a solution.		Applies scientific ideas or principles to undertake a project engaging in the design cycle, to construct and/or implement multiple solutions.
Student evaluates and refines solution(s).	Compares multiple student-generated solutions based on how well they meet the criteria and constraints of the design solution. Applies scientific ideas to solve design problems.		Compares multiple solutions, using scientific ideas, based on how well they meet the criteria and constraints of the design solution.		Improves performance of a design by identifying criteria, making tradeoffs, testing, and revising for possible retesting.		Improves performance of a design by identifying criteria, making tradeoffs, testing, revising, and retesting.

Subject: Science **Teacher:** _____ **Grade Level:** 7th Grade

Enduring Skill: Enduring Skill #9: Design and refine solutions to problems.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Student systematically designs a solution to a problem	Applies scientific ideas or principles to undertake a project engaging in the design cycle, to construct and/or implement a solution.		Applies scientific ideas or principles to undertake a project engaging in the design cycle, to construct and/or implement multiple solutions.		Applies scientific ideas or principles to undertake a project engaging in the design cycle, to construct and/or implement a solution that meets a range of design criteria and constraints.		Applies scientific ideas or principles to undertake a project engaging in the design cycle, to construct and/or implement a solution that attempts to address specific design criteria and constraints.
Student evaluates and refines solution(s).	Improves performance of a design by identifying criteria, making tradeoffs, testing, revising, and retesting.		Improves performance of a design by identifying criteria, making tradeoffs, testing, revising, and retesting.		Improves performance of a design by identifying and analyzing criteria, making tradeoffs, testing, revising, and retesting.		Improves performance of a design by attempting to prioritize, identify, and analyze criteria, making tradeoffs, testing, revising, and retesting.

Subject: Science **Teacher:** _____ **Grade Level:** 8th Grade

Enduring Skill: Enduring Skill #9: Design and refine solutions to problems.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Student systematically designs a solution to a problem	Applies scientific ideas or principles to undertake a project engaging in the design cycle, to construct and/or implement a solution that meets a range of design criteria and constraints.		Applies scientific ideas or principles to undertake a project engaging in the design cycle, to construct and/or implement a solution that attempts to address specific design criteria and constraints.		Applies scientific ideas or principles to undertake a project engaging in the design cycle, to construct and/or implement a solution that meets specific design criteria and constraints.		Applies scientific ideas or principles to undertake a project engaging in the design cycle, to construct and implement a solution that meets specific quantitative design criteria and constraints.
Student evaluates and refines solution(s).	Improves performance of a design by identifying and analyzing criteria, making tradeoffs, testing, revising, and retesting.		Improves performance of a design by attempting to prioritize, identify, and analyze criteria, making tradeoffs, testing, revising, and retesting.		Optimizes performance of a design by prioritizing criteria, making tradeoffs, testing, revising, and retesting.		Optimizes performance of a design by prioritizing criteria, making tradeoffs, quantitatively testing, revising, and retesting.

Subject: Science **Teacher:** _____ **Grade Level:** 1st HS Course

Enduring Skill: Enduring Skill #9: Design and refine solutions to problems.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Student systematically designs a solution to a problem	Applies scientific ideas or principles to undertake a project engaging in the design cycle, to construct and/or implement a solution that meets specific design criteria and constraints.		Applies scientific ideas or principles to undertake a project engaging in the design cycle, to construct and implement a solution that meets specific quantitative design criteria and constraints.		Applies scientific ideas or principles to systematically undertake a project engaging in the design cycle, to construct and implement a solution that meets specific, theory-based quantitative design criteria and constraints.		Applies scientific ideas or principles to systematically undertake a project engaging in the design cycle, to construct and implement a solution to a real world problem that meets specific, theory-based and pre-tested quantitative design criteria and constraints.
Student evaluates and refines solution(s).	Optimizes performance of a design by prioritizing criteria, making tradeoffs, testing, revising, and retesting.		Optimizes performance of a design by prioritizing criteria, making tradeoffs, quantitatively testing, revising, and retesting.		Optimizes performance of a design by prioritizing criteria based on pre-testing, making refined tradeoffs, quantitatively testing, revising, and retesting.		Optimizes performance of a design by prioritizing real-world criteria based on pre-testing, making refined tradeoffs, quantitatively testing, revising, and retesting.

Subject: Science **Teacher:** _____ **Grade Level:** 2nd HS Course

Enduring Skill: Enduring Skill #9: Design and refine solutions to problems.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Student systematically designs a solution to a problem	Applies scientific ideas or principles to systematically undertake a project engaging in the design cycle, to construct and implement a solution that meets specific, theory-based quantitative design criteria and constraints.		Applies scientific ideas or principles to systematically undertake a project engaging in the design cycle, to construct and implement a solution to a real world problem that meets specific, theory-based and pre-tested quantitative design criteria and constraints.		Applies scientific reasoning, theory, and/or models to provide an explanation of phenomena and solve real-world design problems, using the design cycle. Quantitative measures are used to anticipate possible effects as related to specific theory-based and pre-tested quantitative design criteria and constraints.		Applies scientific reasoning, theory, and/or models to provide an explanation of phenomena and solve real-world design problems, using the design cycle. Student-generated quantitative measures are used to anticipate possible effects as related to specific theory-based and pre-tested quantitative design criteria and constraints.
Student evaluates and refines solution(s).	Optimizes performance of a design by prioritizing criteria based on pre-testing, making refined tradeoffs, quantitatively testing, revising, and retesting.		Optimizes performance of a design by prioritizing real-world criteria based on pre-testing, making refined tradeoffs, quantitatively testing, revising, and retesting.		Optimizes performance of a design by prioritizing real-world criteria based on pre-testing, making refined tradeoffs, quantitatively testing, multiple revisions, and multiple retests.		Optimizes performance of a design by prioritizing multiple real-world criteria based on pre-testing, making refined tradeoffs, quantitatively testing, multiple revisions, and multiple retests.

Subject: Science **Teacher:** _____ **Grade Level:** 3rd HS Course

Enduring Skill: Enduring Skill #9: Design and refine solutions to problems.

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Student systematically designs a solution to a problem	Applies scientific reasoning, theory, and/or models to provide an explanation of phenomena and solve real-world design problems, using the design cycle. Quantitative measures are used to anticipate possible effects as related to specific theory-based and pre-tested quantitative design criteria and constraints.		Applies scientific reasoning, theory, and/or models to provide an explanation of phenomena and solve real-world design problems, using the design cycle. Student-generated quantitative measures are used to anticipate possible effects as related to specific theory-based and pre-tested quantitative design criteria and constraints.		Applies scientific reasoning, theory, and/or models to provide an explanation of phenomena and solve complex real-world design problems, using the design cycle. Student-generated quantitative measures are used to anticipate possible effects as related to specific theory-based and pre-tested quantitative design criteria and constraints.		Applies high-level scientific reasoning, theory, and models to provide an explanation for and solve complex, real-world design problems, using the design cycle. Student-generated, quantitative measures are used to anticipate possible effects as related to specific theory-based and pre-tested quantitative design criteria and constraints.
Student evaluates and refines solution(s).	Optimizes performance of a design by prioritizing real-world criteria based on pre-testing, making refined tradeoffs, quantitatively testing, multiple revisions, and multiple retests.		Optimizes performance of a design by prioritizing multiple real-world criteria based on pre-testing, making refined tradeoffs, quantitatively testing, multiple revisions, and multiple retests.		Optimizes performance of a design by prioritizing multiple, complex, and real-world criteria based on pre-testing, making refined tradeoffs, quantitatively testing, multiple revisions, and multiple retests.		Optimizes performance of a design by prioritizing multiple, complex, and real-world criteria based on pre-testing, making refined tradeoffs, quantitatively testing, multiple revisions, and multiple retests. May include complex quantitative analysis.

Linear Alignment of Criteria

Enduring Skill: Enduring Skill #9: Design and refine solutions to problems.

Criteria: Student systematically designs a solution to a problem K -12

Criteria	K - 1		K - 2		K - 3 and 1st Grade - 1		K - 4 and 1st Grade - 2		1st Grade – 3 and 2nd Grade – 1
Student systematically designs a solution to a problem	Unable to collaboratively design and build a device that solves a given problem.		Collaboratively designs and builds a device that does not or only partly solves a given problem.		With teacher support, collaboratively designs and builds a device that solves a given problem.		With support, provided teacher-selected tools and materials, design a solution to a specific problem and/or builds a device that solves a given problem.		Provided teacher-selected tools and materials, designs a solution to a specific problem and/or builds a device that solves a given problem.
	1st Grade - 4 and 2nd Grade - 2		**2nd Grade - 3 and 3rd Grade - 1**		**2nd Grade - 4 and 3rd Grade - 2**		**3rd Grade - 3 and 4th Grade - 1**		**3rd Grade - 4 and 4th Grade - 2**
Student systematically designs a solution to a problem	With support, uses tools and/or materials to design a solution to a specific problem and/or builds a device that solves a specific problem.		Uses tools and/or materials to design a solution to a specific problem and/or builds a device that solves a specific problem.		With some inconsistency or inaccuracy, attempts to design a solution to a specific problem and/or build a device using scientific ideas or evidence as the basis for design.		Designs a solution to a specific problem and/or builds a device based on scientific ideas or collection of evidence (e.g., measurements, observations, patterns).		With support, uses evidence (e.g., measurements, observations, patterns) AND applies scientific ideas to generate a solution to a problem.
.	**4th Grade – 3 and 5th Grade - 1**		**4th Grade - 4 and 5th Grade - 2**		**5th Grade - 3 and 6th Grade - 1**		**5th Grade - 4 and 6th Grade - 2**		**6th Grade - 3 / 7th Grade - 1**
Student systematically designs a solution to a problem	Uses evidence (e.g., measurements, observations, patterns) AND applies scientific ideas to generate a solution to a problem.		With support, uses evidence (e.g., measurements, observations, patterns) AND applies scientific ideas to generate multiples solutions to a problem.		Uses evidence (e.g., measurements, observations, patterns) AND applies scientific ideas to generate multiple solutions to a problem.		Uses evidence (e.g., measurements, observations, patterns) AND applies scientific ideas or principles to generate multiple solutions to a problem.		Applies scientific ideas or principles to undertake a project engaging in the design cycle, to construct and/or implement a solution.

	6th Grade - 4 and 7th Grade - 2		**7th Grade - 3 and 8th Grade - 1**		**7th Grade - 4 and 8th Grade - 2**		**8th Grade – 3 and 1st HS – 1**		**8th Grade – 4 and 1st HS - 2**
Student systematically designs a solution to a problem	Applies scientific ideas or principles to undertake a project engaging in the design cycle, to construct and/or implement multiple solutions.		Applies scientific ideas or principles to undertake a project engaging in the design cycle, to construct and/or implement a solution that meets a range of design criteria and constraints.		Applies scientific ideas or principles to undertake a project engaging in the design cycle, to construct and/or implement a solution that attempts to address specific design criteria and constraints.		Applies scientific ideas or principles to undertake a project engaging in the design cycle, to construct and/or implement a solution that meets specific design criteria and constraints.		Applies scientific ideas or principles to undertake a project engaging in the design cycle, to construct and implement a solution that meets specific quantitative design criteria and constraints.
	1st HS – 3 and 2nd HS - 1		**1st HS – 4 and 2nd HS – 2**		**2nd HS – 3 and 3rd HS – 1**		**2nd HS – 4 and 3rd HS – 2**		**3rd HS - 3**
Student systematically designs a solution to a problem	Applies scientific ideas or principles to systematically undertake a project engaging in the design cycle, to construct and implement a solution that meets specific, theory-based quantitative design criteria and constraints.		Applies scientific ideas or principles to systematically undertake a project engaging in the design cycle, to construct and implement a solution to a real world problem that meets specific, theory-based and pre-tested quantitative design criteria and constraints.		Applies scientific reasoning, theory, and/or models to provide an explanation of phenomena and solve real-world design problems, using the design cycle. Quantitative measures are used to anticipate possible effects as related to specific theory-based and pre-tested quantitative design criteria and constraints.		Applies scientific reasoning, theory, and/or models to provide an explanation of phenomena and solve real-world design problems, using the design cycle. Student-generated quantitative measures are used to anticipate possible effects as related to specific theory-based and pre-tested quantitative design criteria and constraints.		Applies scientific reasoning, theory, and/or models to provide an explanation of phenomena and solve complex real-world design problems, using the design cycle. Student-generated quantitative measures are used to anticipate possible effects as related to specific theory-based and pre-tested quantitative design criteria and constraints.

	3rd HS - 4							
Student systematically designs a solution to a problem	Applies high-level scientific reasoning, theory, and models to provide an explanation for and solve complex, real-world design problems, using the design cycle. Student-generated, quantitative measures are used to anticipate possible effects as related to specific theory-based and pre-tested quantitative design criteria and constraints.							

Linear Alignment of Criteria

Enduring Skill: Enduring Skill #9: Design and refine solutions to problems. **Criteria: Student evaluates and refines solution(s). K - 12**

Criteria	K - 1		K - 2		K - 3 and 1st Grade - 1		K - 4 and 1st Grade - 2		1st Grade – 3 and 2nd Grade - 1
Student evaluates and refines solution(s).	Unable to determine if a design solution works as intended.		With support, determines if a design solution works as intended.		Determines if a design solution works as intended.		With support, attempts to generate and/ or compare multiple solutions to a problem.		With support, generate and/or compares multiple solutions to a problem.
	1st Grade - 4 and 2nd Grade - 2		**2nd Grade - 3 and 3rd Grade - 1**		**2nd Grade - 4 and 3rd Grade - 2**		**3rd Grade - 3 and 4th Grade - 1**		**3rd Grade - 4 and 4th Grade - 2**
Student evaluates and refines solution(s).	Attempts to independently generate and/or compares multiple solutions to a problem.		Generates and/or compares multiple solutions to a problem.		With support, makes a claim about the merit of a solution to a problem based on scientific ideas.		Makes a claim about the merit of a solution to a problem based on scientific ideas.		With support, compares multiple solutions to a problem. [Comparisons are based on scientific ideas and criteria for a successful solution].
	4th Grade – 3 and 5th Grade - 1		**4th Grade - 4 and 5th Grade - 2**		**5th Grade - 3 and 6th Grade - 1**		**5th Grade - 4 and 6th Grade - 2**		**6th Grade - 3 / 7th Grade - 1**
Student evaluates and refines solution(s).	Compares multiple student-generated solutions [Comparisons are based on scientific ideas and criteria for a successful solution].		With support, compares multiple student-generated solutions based on how well they meet the criteria and constraints of the design solution. With support, applies scientific ideas to evaluate and refine the design.		Compares multiple student-generated solutions based on how well they meet the criteria and constraints of the design solution. Applies scientific ideas to solve design problems.		Compares multiple solutions, using scientific ideas, based on how well they meet the criteria and constraints of the design solution.		Improves performance of a design by identifying criteria, making tradeoffs, testing, revising, and retesting.

	6th Grade - 4 and 7th Grade - 2		7th Grade - 3 and 8th Grade - 1		7th Grade - 4 and 8th Grade - 2		8th Grade – 3 and 1st HS – 1		8th Grade – 4 and 1st HS - 2
Student evaluates and refines solution(s).	Improves performance of a design by identifying criteria, making tradeoffs, testing, revising, and retesting.		Improves performance of a design by identifying and analyzing criteria, making tradeoffs, testing, revising, and retesting.		Improves performance of a design by attempting to prioritize, identify, and analyze criteria, making tradeoffs, testing, revising, and retesting.		Optimizes performance of a design by prioritizing criteria, making tradeoffs, testing, revising, and retesting.		Optimizes performance of a design by prioritizing criteria, making tradeoffs, quantitatively testing, revising, and retesting.
	1st HS – 3 and 2nd HS - 1		**1st HS – 4 and 2nd HS – 2**		**2nd HS – 3 and 3rd HS – 1**		**2nd HS – 4 and 3rd HS – 2**		**3rd HS - 3**
Student evaluates and refines solution(s).	Optimizes performance of a design by prioritizing criteria based on pre-testing, making refined tradeoffs, quantitatively testing, revising, and retesting.		Optimizes performance of a design by prioritizing real-world criteria based on pre-testing, making refined tradeoffs, quantitatively testing, revising, and retesting.		Optimizes performance of a design by prioritizing real-world criteria based on pre-testing, making refined tradeoffs, quantitatively testing, multiple revisions, and multiple retests.		Optimizes performance of a design by prioritizing multiple real-world criteria based on pre-testing, making refined tradeoffs, quantitatively testing, multiple revisions, and multiple retests.		Optimizes performance of a design by prioritizing multiple, complex, and real-world criteria based on pre-testing, making refined tradeoffs, quantitatively testing, multiple revisions, and multiple retests.
	3rd HS - 4								
Student evaluates and refines solution(s).	Optimizes performance of a design by prioritizing multiple, complex, and real-world criteria based on pre-testing, making refined tradeoffs, quantitatively testing, multiple revisions, and multiple retests. May include complex quantitative analysis.								

Science Enduring Skill #10 - Argue using scientific evidence

Framework for K-12 Science Education, Practice 7: Engaging in Argumentation from Evidence, pages 71-74.
NGSS Appendix F, pages 13-14, 29-30

Criteria: Construct an argument supported by scientific evidence

Grade Level	Proficiency by Grade Level For Construct an argument supported by scientific evidence
Kindergarten	Collaboratively constructs a simple argument using opinions and/or observations.
1st Grade	Collaboratively constructs a simple argument with evidence to support a claim. Collaboratively distinguishes between opinions and evidence in one's own explanations.
2nd Grade	Independently constructs a simple argument with evidence to support a claim. Independently distinguishes between opinions and evidence in one's own explanations.
3rd Grade	Collaboratively constructs a scientific argument with limited but relevant evidence. With support, refines arguments based on an evaluation of evidence or teacher critique.
4th Grade	Independently constructs and/or supports a scientific argument with limited but relevant evidence, data, and/or a model. With support, refines arguments based on an evaluation of evidence or peer and/or teacher critique.
5th Grade	Independently constructs and/or supports a scientific argument with relevant evidence, data, and/or a model. Independently refines arguments based on an evaluation of evidence or peer critique.
6th Grade	Construct, use and/or present a written or oral scientific argument supported by limited amounts of empirical evidence. Ask and respond to questions about the argument that provide limited nonscientific elaboration. Provide and receive critiques about explanations, procedures, models and questions with limited non-scientific evidence.
7th Grade	Construct, use and/or present a written or oral scientific argument supported by sufficient empirical evidence and limited scientific reasoning. Ask and respond to questions regarding the argument that provide limited scientific elaboration. Cite a minimal amount of relevant evidence to respectfully provide and receive critiques about explanations, procedures, models and questions.

8th Grade	Construct, use and/or present a written and oral scientific argument supported by multiple sources of empirical evidence and scientific reasoning. Ask and respond to questions regarding the argument that provide sufficient scientific elaboration and support. Cite sources of relevant empirical evidence to respectfully provide and receive critiques about explanations, procedures, models and questions.
1st High School Science Course	Using data and evidence, construct and respectfully compare and critique competing arguments or design solutions. Integrate currently accepted explanations, new evidence, limitations (e.g., trade-offs), constraints, and at least one relevant factor (e.g. economic, societal, environmental, ethical considerations).
2nd High School Science Course	Using data and evidence construct and respectfully compare and critique diverse, competing arguments or design solutions. Integrate currently accepted explanations, new evidence, limitations (e.g., trade-offs), constraints, and two relevant factors (e.g. economic, societal, environmental, ethical considerations).
3rd High School Science Course	Using data and evidence construct and respectfully compare and critique diverse, competing arguments or design solutions. Integrate currently accepted explanations, new evidence, limitations (e.g., trade-offs), constraints, and all relevant factors (e.g. economic, societal, environmental, ethical considerations).

Subject: Science **Teacher:** _____ **Grade Level:** Kindergarten

Enduring Skill: Science Enduring Skill #10 - Argue using scientific evidence

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Construct an argument supported by scientific evidence	Unable to construct a simple argument using opinions and/or observations.		Constructs a simple argument using random or irrelevant opinions and/or observations.		Collaboratively constructs a simple argument using opinions and/or observations.		With support, collaboratively constructs a simple argument with evidence to support a claim. Collaboratively distinguishes between opinions and evidence in other's explanations.

Subject: Science **Teacher:** _____ **Grade Level:** 1st Grade

Enduring Skill: Science Enduring Skill #10 - Argue using scientific evidence

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Construct an argument supported by scientific evidence	Collaboratively constructs a simple argument using opinions and/or observations.		With support, collaboratively constructs a simple argument with evidence to support a claim. Collaboratively distinguishes between opinions and evidence in other's explanations.		Collaboratively constructs a simple argument with evidence to support a claim. Collaboratively distinguishes between opinions and evidence in one's own explanations.		With support, independently constructs a simple argument with evidence to support a claim. Independently distinguishes between opinions and evidence in one's own explanations.

Subject: Science **Teacher:** _____ **Grade Level:** 2nd Grade

Enduring Skill: Science Enduring Skill #10 - Argue using scientific evidence

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Construct an argument supported by scientific evidence	Collaboratively constructs a simple argument with evidence to support a claim. Collaboratively distinguishes between opinions and evidence in one's own explanations.		With support, independently constructs a simple argument with evidence to support a claim. Independently distinguishes between opinions and evidence in one's own explanations.		Independently constructs a simple argument with evidence to support a claim. Independently distinguishes between opinions and evidence in one's own explanations.		Collaboratively constructs an argument with limited but relevant evidence. With support, refines arguments based on teacher critique.

Subject: Science **Teacher:** _____ **Grade Level:** 3rd Grade

Enduring Skill: Science Enduring Skill #10 - Argue using scientific evidence

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Construct an argument supported by scientific evidence	Independently constructs a simple argument with evidence to support a claim. Independently distinguishes between opinions and evidence in one's own explanations.		Collaboratively constructs an argument with limited but relevant evidence. With support, refines arguments based on teacher critique.		Collaboratively constructs a scientific argument with limited but relevant evidence. With support, refines arguments based on an evaluation of evidence or teacher critique.		With support, independently constructs and/or supports a scientific argument with limited but relevant evidence, data, and/or a model. With support, refines arguments based on an evaluation of evidence or peer and/or teacher critique.

Subject: Science **Teacher:** _____ **Grade Level:** 4th Grade

Enduring Skill: Science Enduring Skill #10 - Argue using scientific evidence

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Construct an argument supported by scientific evidence	Collaboratively constructs a scientific argument with limited but relevant evidence. With support, refines arguments based on an evaluation of evidence or teacher critique.		With support, independently constructs and/or supports a scientific argument with limited but relevant evidence, data, and/or a model. With support, refines arguments based on an evaluation of evidence or peer and/or teacher critique.		Independently constructs and/or supports a scientific argument with limited but relevant evidence, data, and/or a model. With support, refines arguments based on an evaluation of evidence or peer and/or teacher critique.		Independently constructs and/or supports a scientific argument with relevant evidence, data, and/or a model. With support, refines arguments based on an evaluation of evidence or peer critique.

Subject: Science **Teacher:** _____ **Grade Level:** 5th Grade

Enduring Skill: Science Enduring Skill #10 - Argue using scientific evidence

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Construct an argument supported by scientific evidence	Independently constructs and/or supports a scientific argument with limited but relevant evidence, data, and/or a model. With support, refines arguments based on an evaluation of evidence or peer and/or teacher critique.		Independently constructs and/or supports a scientific argument with relevant evidence, data, and/or a model. With support, refines arguments based on an evaluation of evidence or peer critique.		Independently constructs and/or supports a scientific argument with relevant evidence, data, and/or a model. Independently refines arguments based on an evaluation of evidence or peer critique.		Constructs and/or supports a scientific argument with relevant evidence, data, and/or a model. Ask and respond to questions about the argument that do not provide elaboration Provide and receive critiques about explanations, procedures, models and questions with little or no evidence.

Subject: Science **Teacher:** _____ **Grade Level:** 6th Grade

Enduring Skill: Science Enduring Skill #10 - Argue using scientific evidence

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Construct an argument supported by scientific evidence	Independently constructs and/or supports a scientific argument with relevant evidence, data, and/or a model. Independently refines arguments based on an evaluation of evidence or peer critique.		Constructs and/or supports a scientific argument with relevant evidence, data, and/or a model. Ask and respond to questions about the argument that do not provide elaboration. Provide and receive critiques about explanations, procedures, models and questions with little or no evidence.		Construct, use and/or present a written or oral scientific argument supported by limited amounts of empirical evidence. Ask and respond to questions about the argument that provide limited nonscientific elaboration. Provide and receive critiques about explanations, procedures, models and questions with limited non-scientific evidence.		Construct, use and/or present a written or oral scientific argument supported by sufficient empirical evidence. Ask and respond to questions about the argument provide limited nonscientific elaboration and detail. Provide and receive critiques about explanations, procedures, models and questions with sufficient non-scientific evidence.

Subject: Science **Teacher:** _____ **Grade Level:** 7th Grade

Enduring Skill: Science Enduring Skill #10 - Argue using scientific evidence

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Construct an argument supported by scientific evidence	Construct, use and/or present a written or oral scientific argument supported by limited amounts of empirical evidence. Ask and respond to questions about the argument that provide limited nonscientific elaboration. Provide and receive critiques about explanations, procedures, models and questions with limited non-scientific evidence.		Construct, use and/or present a written or oral scientific argument supported by sufficient empirical evidence. Ask and respond to questions about the argument provide limited nonscientific elaboration and detail. Provide and receive critiques about explanations, procedures, models and questions with sufficient non-scientific evidence.		Construct, use and/or present a written or oral scientific argument supported by sufficient empirical evidence and limited scientific reasoning. Ask and respond to questions regarding the argument that provide limited scientific elaboration. Cite a minimal amount of relevant evidence to respectfully provide and receive critiques about explanations, procedures, models and questions.		Construct, use and/or present a written or oral scientific argument supported by sufficient empirical evidence and scientific reasoning. Ask and respond to questions regarding the argument that provide sufficient scientific elaboration. Cite a sufficient amount of relevant evidence to respectfully provide and receive critiques about explanations, procedures, models and questions.

Subject: Science **Teacher:** _____ **Grade Level:** 8th Grade

Enduring Skill: Science Enduring Skill #10 - Argue using scientific evidence

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Construct an argument supported by scientific evidence	Construct, use and/or present a written or oral scientific argument supported by sufficient empirical evidence and limited scientific reasoning. Ask and respond to questions regarding the argument that provide limited scientific elaboration. Cite a minimal amount of relevant evidence to respectfully provide and receive critiques about explanations, procedures, models and questions.		Construct, use and/or present a written or oral scientific argument supported by sufficient empirical evidence and scientific reasoning. Ask and respond to questions regarding the argument that provide sufficient scientific elaboration. Cite a sufficient amount of relevant evidence to respectfully provide and receive critiques about explanations, procedures, models and questions.		Construct, use and/or present a written and oral scientific argument supported by multiple sources of empirical evidence and scientific reasoning. Ask and respond to questions regarding the argument that provide sufficient scientific elaboration and support. Cite sources of relevant empirical evidence to respectfully provide and receive critiques about explanations, procedures, models and questions.		Construct, use and/or present a written and oral scientific argument or counter argument supported by multiple sources of empirical evidence and scientific reasoning. Ask and respond to questions regarding the argument that provides abundant scientific elaboration and support. Cite sources of relevant empirical evidence to respectfully provide and receive critiques about explanations, procedures, models and questions. Determines additional information required to resolve contradictions.

Subject: Science **Teacher:** _____ **Grade Level:** 1st HS Course

Enduring Skill: Science Enduring Skill #10 - Argue using scientific evidence

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Construct an argument supported by scientific evidence	Construct, use and/or present a written and oral scientific argument supported by multiple sources of empirical evidence and scientific reasoning. Ask and respond to questions regarding the argument that provide sufficient scientific elaboration and support. Cite sources of relevant empirical evidence to respectfully provide and receive critiques about explanations, procedures, models and questions.		Construct, use and/or present a written and oral scientific argument or counter argument supported by multiple sources of empirical evidence and scientific reasoning. Ask and respond to questions regarding the argument that provides abundant scientific elaboration and support. Cite sources of relevant empirical evidence to respectfully provide and receive critiques about explanations, procedures, models and questions. Determines additional information required to resolve contradictions.		Using data and evidence, construct and respectfully compare and critique competing arguments or design solutions. Integrate currently accepted explanations, new evidence, limitations (e.g., trade-offs), constraints, and at least one relevant factor (e.g. economic, societal, environmental, ethical considerations).		Using data and evidence, construct and respectfully compare and critique competing arguments or design solutions. Integrate currently accepted explanations, new evidence, limitations (e.g., trade-offs), constraints, and one relevant factors (e.g. economic, societal, environmental, ethical considerations) in depth.

Subject: Science **Teacher:** _____ **Grade Level:** 2nd HS Course

Enduring Skill: Science Enduring Skill #10 - Argue using scientific evidence

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Construct an argument supported by scientific evidence	Using data and evidence, construct and respectfully compare and critique competing arguments or design solutions. Integrate currently accepted explanations, new evidence, limitations (e.g., trade-offs), constraints, and at least one relevant factor (e.g. economic, societal, environmental, ethical considerations).		Using data and evidence, construct and respectfully compare and critique competing arguments or design solutions. Integrate currently accepted explanations, new evidence, limitations (e.g., trade-offs), constraints, and one relevant factors (e.g. economic, societal, environmental, ethical considerations) in depth.		Using data and evidence construct and respectfully compare and critique diverse, competing arguments or design solutions. Integrate currently accepted explanations, new evidence, limitations (e.g., trade-offs), constraints, and two relevant factors (e.g. economic, societal, environmental, ethical considerations).		Using data and evidence construct and respectfully compare and critique diverse, competing arguments or design solutions. Integrate currently accepted explanations, new evidence, limitations (e.g., trade-offs), constraints, and two relevant factors (e.g. economic, societal, environmental, ethical considerations) in depth.

Subject: Science **Teacher:** _____ **Grade Level:** 3rd HS Course

Enduring Skill: Science Enduring Skill #10 - Argue using scientific evidence

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Construct an argument supported by scientific evidence	Using data and evidence construct and respectfully compare and critique diverse, competing arguments or design solutions. Integrate currently accepted explanations, new evidence, limitations (e.g., trade-offs), constraints, and two relevant factors (e.g. economic, societal, environmental, ethical considerations).		Using data and evidence construct and respectfully compare and critique diverse, competing arguments or design solutions. Integrate currently accepted explanations, new evidence, limitations (e.g., trade-offs), constraints, and two relevant factors (e.g. economic, societal, environmental, ethical considerations) in depth.		Using data and evidence construct and respectfully compare and critique diverse, competing arguments or design solutions. Integrate currently accepted explanations, new evidence, limitations (e.g., trade-offs), constraints, and all relevant factors (e.g. economic, societal, environmental, ethical considerations).		Using data and evidence construct and respectfully compare and critique diverse, competing arguments or design solutions. Integrate currently accepted explanations, new evidence, limitations (e.g., trade-offs), constraints, and all relevant factors (e.g. economic, societal, environmental, ethical considerations) in depth.

Linear Alignment of Criteria

Enduring Skill: Science Enduring Skill #10 - Argue using scientific evidence

Criteria: Construct an argument supported by scientific evidence K – 12

Criteria	K - 1		K - 2		K - 3 and 1st Grade - 1		K - 4 and 1st Grade - 2		1st Grade – 3 and 2nd Grade - 1
Construct an argument supported by scientific evidence	Unable to construct a simple argument using opinions and/or observations.		Constructs a simple argument using random or irrelevant opinions and/or observations.		Collaboratively constructs a simple argument using opinions and/or observations.		With support, collaboratively constructs a simple argument with evidence to support a claim. Collaboratively distinguishes between opinions and evidence in other's explanations.		Collaboratively constructs a simple argument with evidence to support a claim. Collaboratively distinguishes between opinions and evidence in one's own explanations.
	1st Grade - 4 and 2nd Grade - 2		**2nd Grade - 3 and 3rd Grade - 1**		**2nd Grade - 4 and 3rd Grade - 2**		**3rd Grade - 3 and 4th Grade - 1**		**3rd Grade - 4 and 4th Grade - 2**
Construct an argument supported by scientific evidence	With support, independently constructs a simple argument with evidence to support a claim. Independently distinguishes between opinions and evidence in one's own explanations.		Independently constructs a simple argument with evidence to support a claim. Independently distinguishes between opinions and evidence in one's own explanations.		Collaboratively constructs an argument with limited but relevant evidence. With support, refines arguments based on teacher critique.		Collaboratively constructs a scientific argument with limited but relevant evidence. With support, refines arguments based on an evaluation of evidence or teacher critique.		With support, independently constructs and/or supports a scientific argument with limited but relevant evidence, data, and/or a model. With support, refines arguments based on an evaluation of evidence or peer and/or teacher critique.
	4th Grade – 3 and 5th Grade - 1		**4th Grade - 4 and 5th Grade - 2**		**5th Grade - 3 and 6th Grade - 1**		**5th Grade - 4 and 6th Grade - 2**		**6th Grade - 3 / 7th Grade - 1**
	Independently constructs and/or supports a scientific argument with limited		Independently constructs and/or supports a scientific argument with		Independently constructs and/or supports a scientific argument with relevant		Constructs and/or supports a scientific argument with relevant evidence, data, and/or a		Construct, use and/or present a written or oral scientific argument supported by limited

	but relevant evidence, data, and/or a model.		relevant evidence, data, and/or a model.		evidence, data, and/or a model.		model.		amounts of empirical evidence.
Construct an argument supported by scientific evidence	With support, refines arguments based on an evaluation of evidence or peer and/or teacher critique.		With support, refines arguments based on an evaluation of evidence or peer critique.		Independently refines arguments based on an evaluation of evidence or peer critique.		Ask and respond to questions about the argument that do not provide elaboration Provide and receive critiques about explanations, procedures, models and questions with little or no evidence.		Ask and respond to questions about the argument that provide limited nonscientific elaboration. Provide and receive critiques about explanations, procedures, models and questions with limited non-scientific evidence.

	6th Grade - 4 and 7th Grade - 2		7th Grade - 3 and 8th Grade - 1		7th Grade - 4 and 8th Grade - 2		8th Grade – 3 and 1st HS – 1		8th Grade – 4 and 1st HS - 2
Construct an argument supported by scientific evidence	Construct, use and/or present a written or oral scientific argument supported by sufficient empirical evidence. Ask and respond to questions about the argument provide limited nonscientific elaboration and detail. Provide and receive critiques about explanations, procedures, models and questions with sufficient non-scientific evidence.		Construct, use and/or present a written or oral scientific argument supported by sufficient empirical evidence and limited scientific reasoning. Ask and respond to questions regarding the argument that provide limited scientific elaboration. Cite a minimal amount of relevant evidence to respectfully provide and receive critiques about explanations, procedures, models and questions.		Construct, use and/or present a written or oral scientific argument supported by sufficient empirical evidence and scientific reasoning. Ask and respond to questions regarding the argument that provide sufficient scientific elaboration. Cite a sufficient amount of relevant evidence to respectfully provide and receive critiques about explanations, procedures, models and questions.		Construct, use and/or present a written and oral scientific argument supported by multiple sources of empirical evidence and scientific reasoning. Ask and respond to questions regarding the argument that provide sufficient scientific elaboration and support. Cite sources of relevant empirical evidence to respectfully provide and receive critiques about explanations, procedures, models and questions.		Construct, use and/or present a written and oral scientific argument or counter argument supported by multiple sources of empirical evidence and scientific reasoning. Ask and respond to questions regarding the argument that provides abundant scientific elaboration and support. Cite sources of relevant empirical evidence to respectfully provide and receive critiques about explanations, procedures, models and questions. Determines additional information required to resolve contradictions.

	1st HS – 3 and 2nd HS - 1		1st HS – 4 and 2nd HS – 2		2nd HS – 3 and 3rd HS – 1		2nd HS – 4 and 3rd HS – 2		3rd HS - 3
Construct an argument supported by scientific evidence	Using data and evidence, construct and respectfully compare and critique competing arguments or design solutions. Integrate currently accepted explanations, new evidence, limitations (e.g., trade-offs), constraints, and at least one relevant factor (e.g. economic, societal, environmental, ethical considerations).		Using data and evidence, construct and respectfully compare and critique competing arguments or design solutions. Integrate currently accepted explanations, new evidence, limitations (e.g., trade-offs), constraints, and one relevant factors (e.g. economic, societal, environmental, ethical considerations) in depth.		Using data and evidence construct and respectfully compare and critique diverse, competing arguments or design solutions. Integrate currently accepted explanations, new evidence, limitations (e.g., trade-offs), constraints, and two relevant factors (e.g. economic, societal, environmental, ethical considerations).		Using data and evidence construct and respectfully compare and critique diverse, competing arguments or design solutions. Integrate currently accepted explanations, new evidence, limitations (e.g., trade-offs), constraints, and two relevant factors (e.g. economic, societal, environmental, ethical considerations) in depth.		Using data and evidence construct and respectfully compare and critique diverse, competing arguments or design solutions. Integrate currently accepted explanations, new evidence, limitations (e.g., trade-offs), constraints, and all relevant factors (e.g. economic, societal, environmental, ethical considerations).
	3rd HS - 4								
Construct an argument supported by scientific evidence	Using data and evidence construct and respectfully compare and critique diverse, competing arguments or design solutions. Integrate currently accepted explanations, new evidence, limitations (e.g., trade-offs), constraints, and all relevant factors (e.g. economic, societal, environmental, ethical considerations) in depth.								

Science Enduring Skill #11 – Use evidence to evaluate claims.

Framework for K-12 Science Education, Practice 7: Engaging in Argumentation from Evidence, pages 71-74.
NGSS Appendix F, pages 13-14, 29-30

Criteria: Evaluate claim(s) using scientific evidence

Grade Level	Proficiency by Grade Level For Evaluate claim(s) using scientific evidence
Kindergarten	Demonstrates an understanding that scientists use arguments to reach agreements about the answers to scientific questions. Demonstrates an understanding that scientists use evidence to find answers to scientific questions. After listening to an argument, recalls main idea of the argument.
1st Grade	Independently identifies whether an explanation accounts for all gathered evidence. With support, identifies relevance of evidence to a simple scientific question. After listening to an argument, recalls relevant supporting evidence.
2nd Grade	Identifies arguments that are supported by evidence Distinguishes between explanations that account for all gathered evidence and those that do not. Analyzes why some evidence is relevant to a scientific question and some is not. Listens actively to arguments to indicate agreement or disagreement based on evidence, and/or to retell the main points of the argument.
3rd Grade	Independently evaluates the relative strength of particular pieces of evidence in support of an argument. Independently identifies relevant evidence as scientific or speculative. Poses specific, evaluative questions to peers about a proposed procedure, explanation, or model.
4th Grade	Independently evaluates the overall strength of an argument based on its evidence. Collaboratively uses data to evaluate claims about cause and effect. With support, identifies evidence as facts, reasoned judgment based on research findings, or speculation. Independently uses evidence to evaluate peer's proposed procedure, explanation, or model.
5th Grade	Independently compares arguments based on an evaluation of the evidence presented. Independently uses data to evaluate claims about cause and effect. Independently distinguishes among facts, reasoned judgment based on research findings, and speculation in an explanation. Respectfully provides critiques to peers about a proposed procedure, explanation, or model by citing relevant evidence and posing specific questions.

6th Grade	Compare and critique arguments on the same topic. Evaluate competing design solutions based on given design criteria.
7th Grade	Compare and critique arguments on the same topic and analyze whether they emphasize similar or different evidence. Cite evidence when constructing scientific evaluations. Evaluate competing design solutions based on class determined design criteria.
8th Grade	Compare and critique arguments on the same topic, and analyze whether they emphasize similar or different evidence and/or interpretations of facts. Provides support or refutation of a model/phenomenon based on evidence. Cite relevant evidence when constructing scientific evaluations. Evaluate competing design solutions based on small group developed and agreed upon design criteria.
1st High School Science Course	Relevant evidence is provided to compare and evaluate the credibility of the claim(s) and design solution(s). States the merits and limitations of the claim. Evaluate the claim's impact on at least one relevant factor (e.g. economic, societal, environmental, ethical considerations).
2nd High School Science Course	Relevant evidence is provided to compare and evaluate the credibility of the claim(s) and design solution(s). Describes the merits and limitations of the claim. Evaluate the claim's impact on two relevant factors (e.g. economic, societal, environmental, ethical considerations), at least one in depth.
3rd High School Science Course	Relevant and sufficient evidence are provided to compare and evaluate the credibility of the claim(s) and design solution(s). Articulation of the merits and limitations of the claim. Evaluate the claim's impact on economic, societal, environmental, and ethical considerations.

Subject: Science **Teacher:** _____ **Grade Level:** Kindergarten

Enduring Skill: Science Enduring Skill #11 – Use evidence to evaluate claims

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Evaluate claim(s) using scientific evidence	Unable to demonstrate understanding of scientific use of argument and evidence. After listening to an argument, unable to recall main idea of the argument.		Demonstrates a vague understanding that scientists use arguments to reach agreements about the answers to scientific questions. Demonstrates a vague understanding that scientists use evidence to find answers to scientific questions. After listening to an argument, with support, recalls main idea of the argument.		Demonstrates an understanding that scientists use arguments to reach agreements about the answers to scientific questions. Demonstrates an understanding that scientists use evidence to find answers to scientific questions. After listening to an argument, recalls main idea of the argument.		With support, identifies whether an explanation accounts for all gathered evidence. After listening to an argument, recall a piece of relevant supporting evidence.

Subject: Science **Teacher:** _____ **Grade Level:** 1st Grade

Enduring Skill: Science Enduring Skill #11 – Use evidence to evaluate claims

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Evaluate claim(s) using scientific evidence	Demonstrates an understanding that scientists use arguments to reach agreements about the answers to scientific questions. Demonstrates an understanding that scientists use evidence to find answers to scientific questions. After listening to an argument, recalls main idea of the argument.		With support, identifies whether an explanation accounts for all gathered evidence. After listening to an argument, recall a piece of relevant supporting evidence.		Independently identifies whether an explanation accounts for all gathered evidence. With support, identifies relevance to a scientific question. After listening to an argument, recalls relevant supporting evidence.		With support, identifies arguments that are supported by evidence With support, distinguishes between explanations that account for all gathered evidence and those that do not. With support, analyzes why some evidence is relevant to a scientific question and some is not. Listens actively to arguments to indicate agreement or disagreement based on evidence, and/or to retell the main points of the argument.

Subject: Science **Teacher:** _____ **Grade Level:** 2nd Grade

Enduring Skill: Science Enduring Skill #11 – Use evidence to evaluate claims

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Evaluate claim(s) using scientific evidence	Independently identifies whether an explanation accounts for all gathered evidence. With support, identifies relevance to a scientific question. After listening to an argument, recalls relevant supporting evidence.		With support, identifies arguments that are supported by evidence With support, distinguishes between explanations that account for all gathered evidence and those that do not. With support, analyzes why some evidence is relevant to a scientific question and some is not. Listens actively to arguments to indicate agreement or disagreement based on evidence, and/or to retell the main points of the argument.		Identifies arguments that are supported by evidence Distinguishes between explanations that account for all gathered evidence and those that do not. Analyzes why some evidence is relevant to a scientific question and some is not. Listens actively to arguments to indicate agreement or disagreement based on evidence, and/or to retell the main points of the argument.		With support, evaluates the relative strength of particular pieces of evidence in support of an argument. With support, identifies relevant evidence as scientific or speculative. Poses general questions to peers regarding a proposed procedure, explanation, or model.

Subject: Science **Teacher:** _____ **Grade Level:** 3rd Grade

Enduring Skill: Science Enduring Skill #11 – Use evidence to evaluate claims

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Evaluate claim(s) using scientific evidence	Identifies arguments that are supported by evidence Distinguishes between explanations that account for all gathered evidence and those that do not. Analyzes why some evidence is relevant to a scientific question and some is not. Listens actively to arguments to indicate agreement or disagreement based on evidence, and/or to retell the main points of the argument.		With support, evaluates the relative strength of particular pieces of evidence in support of an argument. With support, identifies relevant evidence as scientific or speculative. Poses general questions to peers regarding a proposed procedure, explanation, or model.		Independently evaluates the relative strength of particular pieces of evidence in support of an argument. Independently identifies relevant evidence as scientific or speculative. Poses specific, evaluative questions to peers about a proposed procedure, explanation, or model.		Collaboratively evaluates the overall strength of an argument based on its evidence. Collaboratively uses data to evaluate claims about cause and effect. Independently identifies relevant evidence as scientific or speculative. With support identifies reasoned judgments based on research findings. Collaboratively uses evidence to evaluate peer's proposed procedure, explanation, or model.

Subject: Science **Teacher:** _____ **Grade Level:** 4th Grade

Enduring Skill: Science Enduring Skill #11 – Use evidence to evaluate claims

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Evaluate claim(s) using scientific evidence	Evaluates the relative strength of particular pieces of evidence in support of an argument. Independently identifies relevant evidence as scientific or speculative. Poses specific, evaluative questions to peers about a proposed procedure, explanation, or model.		Collaboratively evaluates the overall strength of an argument based on its evidence. Collaboratively uses data to evaluate claims about cause and effect. Identifies relevant evidence as scientific or speculative. With support identifies reasoned judgments based on research findings. Collaboratively uses evidence to evaluate peer's proposed procedure, explanation, or model.		Independently evaluates the overall strength of an argument based on its evidence. Collaboratively uses data to evaluate claims about cause and effect. With support, identifies evidence as facts, reasoned judgment based on research findings, or speculation. Independently uses evidence to evaluate peer's proposed procedure, explanation, or model.		Collaboratively compares arguments based on an evaluation of the evidence presented. With support, independently uses data to evaluate claims about cause and effect. Independently identifies individual pieces of evidence as fact, reasoned judgment based on research findings, or speculation. Respectfully provides critiques to peers about a proposed procedure, explanation, or model by citing relevant evidence and/or posing specific questions.

Subject: Science **Teacher:** _____ **Grade Level:** 5th Grade

Enduring Skill: Science Enduring Skill #11 – Use evidence to evaluate claims

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Evaluate claim(s) using scientific evidence	Evaluates the overall strength of an argument based on its evidence. Collaboratively uses data to evaluate claims about cause and effect. With support, identifies individual pieces of evidence as fact, reasoned judgment based on research findings, or speculation. Uses evidence to evaluate peer's proposed procedure, explanation, or model.		Collaboratively compares arguments based on an evaluation of the evidence presented. With support, independently uses data to evaluate claims about cause and effect. Independently identifies individual pieces of evidence as fact, reasoned judgment based on research findings, or speculation. Respectfully provides critiques to peers about a proposed procedure, explanation, or model by citing relevant evidence and/or posing specific questions.		Independently compares arguments based on an evaluation of the evidence presented. Independently uses data to evaluate claims about cause and effect. Independently distinguishes among facts, reasoned judgment based on research findings, and speculation in an explanation. Respectfully provides critiques to peers about a proposed procedure, explanation, or model by citing relevant evidence and posing specific questions.		Compare two arguments on the same topic and with some assistance begin to critique both arguments. With assistance from others, evaluate competing design solution on given criteria.

Subject: Science **Teacher:** _____ **Grade Level:** 6th Grade

Enduring Skill: Science Enduring Skill #11 – Use evidence to evaluate claims

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Evaluate claim(s) using scientific evidence	Independently compares arguments based on an evaluation of the evidence presented. Independently uses data to evaluate claims about cause and effect. Independently distinguishes among facts, reasoned judgment based on research findings, and speculation in an explanation. Respectfully provides critiques to peers about a proposed procedure, explanation, or model by citing relevant evidence and posing specific questions.		Compare two arguments on the same topic and with some assistance begin to critique both arguments. With assistance from others, evaluate competing design solution on given criteria.		Compare and critique arguments on the same topic. Evaluate competing design solutions based on given design criteria.		Compare and critique arguments on the same topic and identify similarities and differences. Evaluate competing design solutions based on given design criteria.

Subject: Science **Teacher:** _____ **Grade Level:** 7th Grade

Enduring Skill: Science Enduring Skill #11 – Use evidence to evaluate claims

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Evaluate claim(s) using scientific evidence	Compare and critique arguments on the same topic. Evaluate competing design solutions based on given design criteria.		Compare and critique arguments on the same topic and identify similarities and differences. Evaluate competing design solutions based on given design criteria.		Compare and critique arguments on the same topic and analyze whether they emphasize similar or different evidence. Cite evidence when constructing scientific evaluations. Evaluate competing design solutions based on class determined design criteria.		Compare and critique arguments on the same topic and analyze whether they emphasize similar or different evidence and interpretations of facts. Cite relevant evidence when constructing scientific evaluations. Evaluate competing design solutions based on class determined design criteria.

Subject: Science **Teacher:** _____ **Grade Level:** 8th Grade

Enduring Skill: Science Enduring Skill #11 – Use evidence to evaluate claims

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Evaluate claim(s) using scientific evidence	Compare and critique arguments on the same topic and analyze whether they emphasize similar or different evidence. Cite evidence when constructing scientific evaluations. Evaluate competing design solutions based on class determined design criteria.		Compare and critique arguments on the same topic and analyze whether they emphasize similar or different evidence and interpretations of facts. Cite relevant evidence when constructing scientific evaluations. Evaluate competing design solutions based on class determined design criteria.		Compare and evaluate claims on the same topic, and analyze whether they emphasize similar or different evidence and/or interpretations of facts. Provides support or refutation of a model/phenomenon based on evidence. Cite relevant evidence when constructing scientific evaluations. Evaluate competing design solutions based on small group developed and agreed upon design criteria.		Compare and evaluate claims or design solutions in light of accepted explanations or new evidence. States the merits and limitations of the claim. Evaluate competing design solutions to a real world problem based on scientific ideas, empirical evidence, and/or other logical arguments.

Subject: Science **Teacher:** _____ **Grade Level:** 1st HS Course

Enduring Skill: Science Enduring Skill #11 – Use evidence to evaluate claims

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Evaluate claim(s) using scientific evidence	Compare and evaluate claims on the same topic, and analyze whether they emphasize similar or different evidence and/or interpretations of facts. Provides support or refutation of a model/phenomenon based on evidence. Cite relevant evidence when constructing scientific evaluations. Evaluate competing design solutions based on small group developed and agreed upon design criteria.		Compare and evaluate claims or design solutions in light of accepted explanations or new evidence. States the merits and limitations of the claim. Evaluate competing design solutions to a real world problem based on scientific ideas, empirical evidence, and/or other logical arguments.		Relevant evidence is provided to compare and evaluate the credibility of the claim(s) and design solution(s). States the merits and limitations of the claim. Evaluate the claim's impact on at least one relevant factor (e.g. economic, societal, environmental, ethical considerations).		Relevant evidence is provided to compare and evaluate the credibility of the claim(s) and design solution(s). Describes the merits and limitations of the claim. Evaluate the claim's impact on one relevant factor (e.g. economic, societal, environmental, ethical considerations), in depth.

Subject: Science **Teacher:** _____ **Grade Level:** 2nd HS Course

Enduring Skill: Science Enduring Skill #11 – Use evidence to evaluate claims

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Evaluate claim(s) using scientific evidence	Relevant evidence is provided to compare and evaluate the credibility of the claim(s) and design solution(s). States the merits and limitations of the claim. Evaluate the claim's impact on at least one relevant factor (e.g. economic, societal, environmental, ethical considerations).		Relevant evidence is provided to compare and evaluate the credibility of the claim(s) and design solution(s). Describes the merits and limitations of the claim. Evaluate the claim's impact on one relevant factor (e.g. economic, societal, environmental, ethical considerations), in depth.		Relevant evidence is provided to compare and evaluate the credibility of the claim(s) and design solution(s). Describes the merits and limitations of the claim. Evaluate the claim's impact on two relevant factors (e.g. economic, societal, environmental, ethical considerations), at least one in depth.		Relevant and sufficient evidence are provided to compare and evaluate the credibility of the claim(s) and design solution(s). Describes the merits and limitations of the claim. Evaluate the claim's impact on two relevant factors (e.g. economic, societal, environmental, ethical considerations) in depth.

Subject: Science **Teacher:** _____ **Grade Level:** 3rd HS Course

Enduring Skill: Science Enduring Skill #11 – Use evidence to evaluate claims

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Evaluate claim(s) using scientific evidence	Relevant evidence is provided to compare and evaluate the credibility of the claim(s) and design solution(s). Describes the merits and limitations of the claim. Evaluate the claim's impact on two relevant factors (e.g. economic, societal, environmental, ethical considerations), at least one in depth.		Relevant and sufficient evidence are provided to compare and evaluate the credibility of the claim(s) and design solution(s). Describes the merits and limitations of the claim. Evaluate the claim's impact on two relevant factors (e.g. economic, societal, environmental, ethical considerations) in depth.		Relevant and sufficient evidence are provided to compare and evaluate the credibility of the claim(s) and design solution(s). Articulation of the merits and limitations of the claim. Evaluate the claim's impact on economic, societal, environmental, and ethical considerations.		Advanced relevant and sufficient evidence are provided to compare and evaluate the credibility of the claim(s) and design solution(s). In-depth articulation of the merits and limitations of the claim, including constructive criticism. In-depth evaluation of the claim's impact on economic, societal, environmental, and ethical considerations.

Linear Alignment of Criteria

Enduring Skill: Science Enduring Skill #11 – Use evidence to evaluate claims

Criteria: Evaluate claim(s) using scientific evidence K – 12

Criteria	K - 1		K - 2		K - 3 and 1st Grade - 1		K - 4 and 1st Grade - 2		1st Grade – 3 and 2nd Grade - 1
Evaluate claim(s) using scientific evidence	Unable to demonstrate understanding of scientific use of argument and evidence. After listening to an argument, unable to recall main idea of the argument.		Demonstrates a vague understanding that scientists use arguments to reach agreements about the answers to scientific questions. Demonstrates a vague understanding that scientists use evidence to find answers to scientific questions. After listening to an argument, with support, recalls main idea of the argument.		Demonstrates a clear understanding that scientists use arguments to reach agreements about the answers to scientific questions. Demonstrates a clear understanding that scientists use evidence to find answers to scientific questions. After listening to an argument, recalls main idea or the argument.		With support, identifies whether an explanation accounts for all gathered evidence. With support, identifies evidence as relevant or irrelevant to a scientific question. After listening to an argument, recall a piece of relevant supporting evidence.		Identifies whether an explanation accounts for all gathered evidence. Identifies evidence as relevant or irrelevant to a scientific question. After listening to an argument, recalls relevant supporting evidence.

	1st Grade - 4 and 2nd Grade - 2		2nd Grade - 3 and 3rd Grade - 1		2nd Grade - 4 and 3rd Grade - 2		3rd Grade - 3 and 4th Grade - 1		3rd Grade - 4 and 4th Grade - 2
Evaluate claim(s) using scientific evidence	With support, identifies arguments that are supported by evidence With support, distinguishes between explanations that account for all gathered evidence and those that do not. With support, analyzes why some evidence is relevant to a scientific question and some is not. Listens actively to arguments to indicate agreement or disagreement based on evidence, and/or to retell the main points of the argument.		Identifies arguments that are supported by evidence Distinguishes between explanations that account for all gathered evidence and those that do not. Analyzes why some evidence is relevant to a scientific question and some is not. Listens actively to arguments to indicate agreement or disagreement based on evidence, and/or to retell the main points of the argument.		With support, evaluates the relative strength of particular pieces of evidence in support of an argument. With support, identifies relevant evidence as scientific or speculative. Poses general questions to peers regarding a proposed procedure, explanation, or model.		Evaluates the relative strength of particular pieces of evidence in support of an argument. Independently identifies relevant evidence as scientific or speculative. Poses specific, evaluative questions to peers about a proposed procedure, explanation, or model.		Collaboratively evaluates the overall strength of an argument based on its evidence. Collaboratively uses data to evaluate claims about cause and effect. Identifies relevant evidence as scientific or speculative. With support identifies reasoned judgments based on research findings. Collaboratively uses evidence to evaluate peer's proposed procedure, explanation, or model.

	4th Grade – 3 and 5th Grade - 1		4th Grade - 4 and 5th Grade - 2		5th Grade - 3 and 6th Grade - 1		5th Grade - 4 and 6th Grade - 2		6th Grade - 3 / 7th Grade - 1
Evaluate claim(s) using scientific evidence	Evaluates the overall strength of an argument based on its evidence. Collaboratively uses data to evaluate claims about cause and effect. With support, identifies individual pieces of evidence as fact, reasoned judgment based on research findings, or speculation. Uses evidence to evaluate peer's proposed procedure, explanation, or model.		Collaboratively compares arguments based on an evaluation of the evidence presented. With support, independently uses data to evaluate claims about cause and effect. Independently identifies individual pieces of evidence as fact, reasoned judgment based on research findings, or speculation. Respectfully provides critiques to peers about a proposed procedure, explanation, or model by citing relevant evidence and/or posing specific questions.		Independently compares arguments based on an evaluation of the evidence presented. Independently uses data to evaluate claims about cause and effect. Independently distinguishes among facts, reasoned judgment based on research findings, and speculation in an explanation. Respectfully provides critiques to peers about a proposed procedure, explanation, or model by citing relevant evidence and posing specific questions.		Compare two arguments on the same topic and with some assistance begin to critique both arguments. With assistance from others, evaluate competing design solution on given criteria.		Compare and critique arguments on the same topic. Evaluate competing design solutions based on given design criteria.

	6th Grade - 4 and 7th Grade - 2		7th Grade - 3 and 8th Grade - 1		7th Grade - 4 and 8th Grade - 2		8th Grade – 3 and 1st HS – 1		8th Grade – 4 and 1st HS - 2
Evaluate claim(s) using scientific evidence	Compare and critique arguments on the same topic and identify similarities and differences. Evaluate competing design solutions based on given design criteria.		Compare and critique arguments on the same topic and analyze whether they emphasize similar or different evidence. Cite evidence when constructing scientific evaluations. Evaluate competing design solutions based on class determined design criteria.		Compare and critique arguments on the same topic and analyze whether they emphasize similar or different evidence and interpretations of facts. Cite relevant evidence when constructing scientific evaluations. Evaluate competing design solutions based on class determined design criteria.		Compare and critique arguments on the same topic, and analyze whether they emphasize similar or different evidence and/or interpretations of facts. Provides support or refutation of a model/phenomenon based on evidence. Cite relevant evidence when constructing scientific evaluations. Evaluate competing design solutions based on small group developed and agreed upon design criteria.		Compare and evaluate claims or design solutions in light of accepted explanations or new evidence. States the merits and limitations of the claim. Evaluate competing design solutions to a real world problem based on scientific ideas, empirical evidence, and/or other logical arguments.

	1st HS – 3 and 2nd HS - 1		1st HS – 4 and 2nd HS – 2		2nd HS – 3 and 3rd HS – 1		2nd HS – 4 and 3rd HS – 2		3rd HS - 3
Evaluate claim(s) using scientific evidence	Relevant evidence is provided to compare and evaluate the credibility of the claim(s) and design solution(s). States the merits and limitations of the claim. Evaluate the claim's impact on at least one relevant factor (e.g. economic, societal, environmental, ethical considerations).		Relevant evidence is provided to compare and evaluate the credibility of the claim(s) and design solution(s). Describes the merits and limitations of the claim. Evaluate the claim's impact on one relevant factor (e.g. economic, societal, environmental, ethical considerations), in depth.		Relevant evidence is provided to compare and evaluate the credibility of the claim(s) and design solution(s). Describes the merits and limitations of the claim. Evaluate the claim's impact on two relevant factors (e.g. economic, societal, environmental, ethical considerations), at least one in depth.		Relevant and sufficient evidence are provided to compare and evaluate the credibility of the claim(s) and design solution(s). Describes the merits and limitations of the claim. Evaluate the claim's impact on two relevant factors (e.g. economic, societal, environmental, ethical considerations) in depth.		Relevant and sufficient evidence are provided to compare and evaluate the credibility of the claim(s) and design solution(s). Articulation of the merits and limitations of the claim. Evaluate the claim's impact on economic, societal, environmental, and ethical considerations.
	3rd HS - 4								
Evaluate claim(s) using scientific evidence	Advanced relevant and sufficient evidence are provided to compare and evaluate the credibility of the claim(s) and design solution(s). In-depth articulation of the merits and limitations of the claim, including constructive criticism. In-depth evaluation of the claim's impact on economic, societal, environmental, and ethical considerations.								

Science Enduring Skill #12 – Obtain information to determine patterns in and/or evidence about the natural or designed world.

Framework for K-12 Science Education, Practice 8: Obtaining, Evaluation, and Communicating Information, pages 74-77.
NGSS Appendix F, pages 31-32

Criteria: Gather and read text and/or media to obtain scientific and/or technical information

Grade Level	Proficiency by Grade Level For Gather and read text and/or media to obtain scientific and/or technical information
Kindergarten	Read and comprehend kindergarten grade appropriate texts (including text features) and/or other media to: ● Obtain scientific and/or technical information. ● Answer a scientific question and/or support a scientific claim.
1st Grade	Read and comprehend first grade appropriate texts (including text features) and/or other media to: ● Obtain scientific and/or technical information. ● Answer a scientific question and/or support a scientific claim.
2nd Grade	Read and comprehend second grade appropriate texts (including text features) and/or other media to: ● Obtain scientific and/or technical information. ● Answer a scientific question and/or support a scientific claim.
3rd Grade	Read and comprehend third grade appropriate texts and/or other reliable media to obtain scientific and technical ideas.
4th Grade	Read and comprehend fourth grade appropriate complex texts and/or other reliable media to obtain scientific and technical ideas.
5th Grade	Read and comprehend fifth grade appropriate complex texts and/or other reliable media to obtain scientific and technical ideas.
6th Grade	Gather and critically read scientific texts to determine the central idea.
7th Grade	Gather and critically read scientific texts to determine the central idea and obtains scientific/technical information.

8th Grade	Gather and critically read scientific text to determine central idea, obtain scientific/technical information, and describes patterns in the natural and designed world(s).
1st High School Science Course	Gather and critically read scientific texts to determine central idea, obtain authoritative scientific/technical information, including tables, diagrams, and graphs, by accurately paraphrasing them in simpler terms and to explain the key ideas to communicate.
2nd High School Science Course	Gather and critically read scientific and/or technical information from multiple authoritative sources, assessing the evidence and usefulness of each source in order to determine central idea, in simpler but still accurate terms and to explain the key ideas to communicate.
3rd High School Science Course	Critically read complex scientific and engineering texts and a wider range of text materials, such as technical reports and science conference presentations.

Subject: Science **Teacher:** _____ **Grade Level:** Kindergarten

Enduring Skill: Science Enduring Skill #12 – Obtain information to determine patterns in and/or evidence about the natural world

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Gather and read text and/or media to obtain scientific and/or technical information	Unable to read and comprehend kindergarten grade appropriate texts but uses other media to: ● Obtain scientific and/or technical information. ● Answer a scientific question and/or support a scientific claim.		With teacher support begin to read and comprehend kindergarten grade appropriate texts (including text features) and/or other media to: ● Obtain scientific and/or technical information. ● Answer a scientific question and/or support a scientific claim.		Read and comprehend kindergarten grade appropriate texts (including text features) and/or other media to: ● Obtain scientific and/or technical information. ● Answer a scientific question and/or support a scientific claim.		With teacher or peer support begin to read and comprehend first grade appropriate texts (including text features) and/or other media to: ● Obtain scientific and/or technical information. ● Answer a scientific question and/or support a scientific claim.

Subject: Science **Teacher:** _____ **Grade Level:** 1st Grade

Enduring Skill: Science Enduring Skill #12 – Obtain information to determine patterns in and/or evidence about the natural world

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Gather and read text and/or media to obtain scientific and/or technical information	Read and comprehend kindergarten grade appropriate texts (including text features) and/or other media to: ● Obtain scientific and/or technical information. ● Answer a scientific question and/or support a scientific claim.		With teacher or peer support begin to read and comprehend first grade appropriate texts (including text features) and/or other media to: ● Obtain scientific and/or technical information. ● Answer a scientific question and/or support a scientific claim.		Read and comprehend first grade appropriate texts (including text features) and/or other media to: ● Obtain scientific and/or technical information. ● Answer a scientific question and/or support a scientific claim.		With teacher or peer support begin to read and comprehend second grade appropriate texts (including text features) and/or other media to: ● Obtain scientific and/or technical information. ● Answer a scientific question and/or support a scientific claim.

Subject: Science **Teacher:** _____ **Grade Level:** 2nd Grade

Enduring Skill: Science Enduring Skill #12 – Obtain information to determine patterns in and/or evidence about the natural world

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Gather and read text and/or media to obtain scientific and/or technical information	Read and comprehend first grade appropriate texts (including text features) and/or other media to: ● Obtain scientific and/or technical information. ● Answer a scientific question and/or support a scientific claim.		With teacher or peer support begin to read and comprehend second grade appropriate texts (including text features) and/or other media to: ● Obtain scientific and/or technical information. ● Answer a scientific question and/or support a scientific claim.		Read and comprehend second grade appropriate texts (including text features) and/or other media to: ● Obtain scientific and/or technical information. ● Answer a scientific question and/or support a scientific claim.		With teacher or peer support begin to read and comprehend third grade appropriate texts and/or other reliable media to obtain scientific and/or technical ideas.

Subject: Science **Teacher:** _____ **Grade Level:** 3rd Grade

Enduring Skill: Science Enduring Skill #12 – Obtain information to determine patterns in and/or evidence about the natural world

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Gather and read text and/or media to obtain scientific and/or technical information	Read and comprehend second grade appropriate texts (including text features) and/or other media to: ● Obtain scientific and/or technical information. ● Answer a scientific question and/or support a scientific claim.		With teacher or peer support begin to read and comprehend third grade appropriate texts and/or other reliable media to obtain scientific and technical ideas.		Read and comprehend third grade appropriate texts and/or other reliable media to obtain scientific and technical ideas.		With teacher or peer support begin to read and comprehend fourth grade appropriate complex texts and/or other reliable media to obtain scientific and technical ideas.

Subject: Science **Teacher:** _____ **Grade Level:** 4th Grade

Enduring Skill: Science Enduring Skill #12 – Obtain information to determine patterns in and/or evidence about the natural world

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Gather and read text and/or media to obtain scientific and/or technical information	Read and comprehend third grade appropriate texts and/or other reliable media to obtain scientific and technical ideas.		With teacher or peer support begin to read and comprehend fourth grade appropriate complex texts and/or other reliable media to obtain scientific and technical ideas.		Read and comprehend fourth grade appropriate complex texts and/or other reliable media to obtain scientific and technical ideas.		With teacher or peer support begin to read and comprehend fifth grade appropriate complex texts and/or other reliable media to obtain scientific and technical ideas.

Subject: Science **Teacher:** _____ **Grade Level:** 5th Grade

Enduring Skill: Science Enduring Skill #12 – Obtain information to determine patterns in and/or evidence about the natural world

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Gather and read text and/or media to obtain scientific and/or technical information	Read and comprehend fourth grade appropriate complex texts and/or other reliable media to obtain scientific and technical ideas.		With teacher or peer support begin to read and comprehend fifth grade appropriate complex texts and/or other reliable media to obtain scientific and technical ideas.		Read and comprehend fifth grade appropriate complex texts and/or other reliable media to obtain scientific and technical ideas.		Read and comprehend higher-level scientific text to determine central idea, obtain scientific and/or technical information.

Subject: Science **Teacher:** _____ **Grade Level:** 6th Grade

Enduring Skill: Science Enduring Skill #12 – Obtain information to determine patterns in and/or evidence about the natural world

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Gather and read text and/or media to obtain scientific and/or technical information	Read and comprehend fifth grade appropriate complex texts and/or other reliable media to obtain scientific and technical ideas.		Gather and read scientific texts to determine the central idea.		Gather and critically read scientific texts to determine the central idea.		Gather and critically read scientific texts to determine the central idea and attempts to obtain scientific/technical information.

Subject: Science **Teacher:** _____ **Grade Level:** 7th Grade

Enduring Skill: Science Enduring Skill #12 – Obtain information to determine patterns in and/or evidence about the natural world

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Gather and read text and/or media to obtain scientific and/or technical information	Gather and critically read scientific texts to determine the central idea.		Gather and critically read scientific texts to determine the central idea and attempts to obtain scientific/technical information.		Gather and critically read scientific texts to determine the central idea and obtains scientific/technical information.		Gather and critically read scientific texts to determine the central idea, obtains scientific/technical information, and attempts to describe patterns in the natural and designed world(s).

Subject: Science **Teacher:** _____ **Grade Level:** 8th Grade

Enduring Skill: Science Enduring Skill #12 – Obtain information to determine patterns in and/or evidence about the natural world

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Gather and read text and/or media to obtain scientific and/or technical information	Gather and critically read scientific text to determine the central idea and obtain scientific/technical information.		Gather and critically read scientific text to determine the central idea, obtains scientific/technical information, and attempts to describe patterns in the natural and designed world(s).		Gather and critically read scientific text to determine central idea, obtain scientific/technical information, and describes patterns in the natural and designed world(s).		Gather and critically read scientific text to determine central idea, obtain scientific/technical information, from a limited sources and paraphrasing them in simpler terms and to describe the key ideas to communicate.

Subject: Science **Teacher:** _____ **Grade Level:** 1st HS Course

Enduring Skill: Science Enduring Skill #12 – Obtain information to determine patterns in and/or evidence about the natural world

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Gather and read text and/or media to obtain scientific and/or technical information	Gather and critically read scientific texts to determine central idea, obtain scientific/technical information, and describes patterns in the natural and designed world(s).		Gather and critically read scientific texts to determine central idea, obtain scientific/technical information, from a limited sources and paraphrasing them in simpler terms and to describe the key ideas to communicate.		Gather and critically read scientific texts to determine central idea, obtain authoritative scientific/technical information, including tables, diagrams, and graphs, by accurately paraphrasing them in simpler terms and to explain the key ideas to communicate.		Gather and critically read and/or watch scientific texts, websites, blogs and news media to determine central idea, obtain scientific/technical information, to explain the key ideas to communicate.

Subject: Science **Teacher:** _____ **Grade Level:** 2nd HS Course

Enduring Skill: Science Enduring Skill #12 – Obtain information to determine patterns in and/or evidence about the natural world

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Gather and read text and/or media to obtain scientific and/or technical information	Gather and critically read scientific texts to determine central idea, obtain authoritative scientific/technical information, including tables, diagrams, and graphs, by accurately paraphrasing them in simpler terms and to explain the key ideas to communicate.		Gather and critically read and/or watch scientific texts, websites, blogs and news media to determine central idea, obtain scientific/technical information, to explain the key ideas to communicate.		Gather and critically read scientific and/or technical information from multiple authoritative sources, assessing the evidence and usefulness of each source in order to determine central idea, in simpler but still accurate terms and to explain the key ideas to communicate.		Critically read complex scientific and engineering texts Students can gather evidence from a wider range of resources such as journals, digital media, clubs and science organizations.

Subject: Science **Teacher:** _____ **Grade Level:** 3rd HS Course

Enduring Skill: Science Enduring Skill #12 – Obtain information to determine patterns in and/or evidence about the natural world

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Gather and read text and/or media to obtain scientific and/or technical information	Gather and critically read scientific and/or technical information from multiple authoritative sources, assessing the evidence and usefulness of each source in order to determine central idea, in simpler but still accurate terms and to explain the key ideas to communicate.		Critically read complex scientific and engineering texts Students can gather evidence from a wider range of resources such as journals, digital media, clubs and science organizations.		Critically read complex scientific and engineering texts and a wider range of text materials, such as technical reports and science conference presentations.		Critically read complex scientific and engineering texts and a wider range of text materials, such as technical reports. Students can gather and critically interpret information from mainstream valid sources such as scientific conference presentations, round table discussions and peer review journals.

Linear Alignment of Criteria

Enduring Skill: Science Enduring Skill #12 – Obtain information to determine patterns in and/or evidence about the natural world

Criteria: Gather and read text and/or media to obtain scientific and/or technical information K – 12

Criteria	K - 1		K - 2		K - 3 and 1st Grade - 1		K - 4 and 1st Grade - 2		1st Grade – 3 and 2nd Grade - 1
Gather and read text and/or media to obtain scientific and/or technical information	Unable to read and comprehend kindergarten grade appropriate texts but uses other media to: ● Obtain scientific and/or technical information. ● Answer a scientific question and/or support a scientific claim.		With teacher support begin to read and comprehend kindergarten grade appropriate texts (including text features) and/or other media to: ● Obtain scientific and/or technical information. ● Answer a scientific question and/or support a scientific claim.		Read and comprehend kindergarten grade appropriate texts (including text features) and/or other media to: ● Obtain scientific and/or technical information. ● Answer a scientific question and/or support a scientific claim.		With teacher or peer support begin to read and comprehend first grade appropriate texts (including text features) and/or other media to: ● Obtain scientific and/or technical information. ● Answer a scientific question and/or support a scientific claim.		Read and comprehend first grade appropriate texts (including text features) and/or other media to: ● Obtain scientific and/or technical information. ● Answer a scientific question and/or support a scientific claim.
	1st Grade - 4 and 2nd Grade - 2		**2nd Grade - 3 and 3rd Grade - 1**		**2nd Grade - 4 and 3rd Grade - 2**		**3rd Grade - 3 and 4th Grade - 1**		**3rd Grade - 4 and 4th Grade - 2**
Gather and read text and/or media to obtain scientific and/or	With teacher or peer support begin to read and comprehend second grade appropriate texts (including text features) and/or other media to: ● Obtain scientific and/or technical information.		Read and comprehend second grade appropriate texts (including text features) and/or other media to: ● Obtain scientific and/or technical information. ● Answer a scientific question and/or		With teacher or peer support begin to read and comprehend third grade appropriate texts and/or other reliable media to obtain scientific and/or technical ideas.		Read and comprehend third grade appropriate texts and/or other reliable media to obtain scientific and technical ideas.		With teacher or peer support begin to read and comprehend fourth grade appropriate complex texts and/or other reliable media to obtain scientific and technical ideas.

technical information	● Answer a scientific question and/or support a scientific claim.		support a scientific claim.							
	4th Grade – 3 and 5th Grade - 1		**4th Grade - 4 and 5th Grade - 2**		**5th Grade - 3 and 6th Grade - 1**		**5th Grade - 4 and 6th Grade - 2**		**6th Grade - 3 / 7th Grade - 1**	
Gather and read text and/or media to obtain scientific and/or technical information	Read and comprehend fourth grade appropriate complex texts and/or other reliable media to obtain scientific and technical ideas.		With teacher or peer support begin to read and comprehend fifth grade appropriate complex texts and/or other reliable media to obtain scientific and technical ideas.		Read and comprehend fifth grade appropriate complex texts and/or other reliable media to obtain scientific and technical ideas.		Read and comprehend higher-level scientific text to determine central idea, obtain scientific and/or technical information.		Gather and critically read scientific texts to determine the central idea.	
	6th Grade - 4 and 7th Grade - 2		**7th Grade - 3 and 8th Grade - 1**		**7th Grade - 4 and 8th Grade - 2**		**8th Grade – 3 and 1st HS – 1**		**8th Grade – 4 and 1st HS - 2**	
Gather and read text and/or media to obtain scientific and/or technical information	Gather and critically read scientific texts to determine the central idea and attempts to obtain scientific/technical information.		Gather and critically read scientific texts to determine the central idea and obtains scientific/technical information.		Gather and critically read scientific texts to determine the central idea, obtains scientific/technical information, and attempts to describe patterns in the natural and designed world(s).		Students can gather and critically read scientific texts to determine central idea, obtain scientific/technical information, and describes patterns in the natural and designed world(s).		Students can gather and critically read scientific texts to determine central idea, obtain scientific/technical information, from a limited sources and paraphrasing them in simpler terms and to describe the key ideas to communicate.	

	1st HS – 3 and 2nd HS - 1		1st HS – 4 and 2nd HS – 2		2nd HS – 3 and 3rd HS – 1		2nd HS – 4 and 3rd HS – 2		3rd HS - 3
Gather and read text and/or media to obtain scientific and/or technical information	Students can gather and critically read scientific texts to determine central idea, obtain scientific/technical information, including tables, diagrams, and graphs, by paraphrasing them in simpler but still accurate terms and to explain the key ideas to communicate.		Students can gather and critically read and/or watch scientific texts, websites, blogs and news media to determine central idea, obtain scientific/technical information, to explain the key ideas to communicate.		Students can gather and critically read scientific and/or technical information from multiple authoritative sources, assessing the evidence and usefulness of each source in order to determine central idea, in simpler but still accurate terms and to explain the key ideas to communicate.		Students can critically read complex scientific and engineering texts Students can gather evidence from a wider range of resources such as journals, digital media, clubs and science organizations.		Students can critically read complex scientific and engineering texts and a wider range of text materials, such as technical reports and science conference presentations.
	3rd HS - 4								
Gather and read text and/or media to obtain scientific and/or technical information	Students can critically read complex scientific and engineering texts and a wider range of text materials, such as technical reports. Students can gather and critically interpret information from mainstream valid sources such as scientific conference presentations, round table discussions and peer review journals.								

Science Enduring Skill #13 – Evaluate information to determine usefulness and value.

Framework for K-12 Science Education, Practice 8: Obtaining, Evaluation, and Communicating Information, pages 74-77.
NGSS Appendix F, pages 31-32

Criteria: Evaluate information obtained for usefulness and value

Grade Level	Proficiency by Grade Level For Evaluate information obtained for usefulness and value
Kindergarten	Using kindergarten appropriate texts and/or other media, determine patterns in and/or evidence about the natural and designed world(s).
1st Grade	Using first grade appropriate texts and/or other media, determine patterns in and/or evidence about the natural and designed world(s).
2nd Grade	Using second grade appropriate texts and/or other media, determine patterns in and/or evidence about the natural and designed world(s).
3rd Grade	Using multiple third grade appropriate written texts (including graphics) and/or other reliable media: ● Compare information to support the engagement in other scientific and/or engineering practices. ● Combine information to explain phenomena or solutions to a design problem.
4th Grade	Using multiple fourth grade appropriate, complex, written texts (including graphics) and/or other reliable media: ● Compare information to support the engagement in other scientific and/or engineering practices. ● Combine information to explain phenomena or solutions to a design problem.
5th Grade	Using multiple fifth grade appropriate, complex, written texts (including graphics) and/or other reliable media: ● Compare information to support the engagement in other scientific and/or engineering practices. ● Combine information to explain phenomena or solutions to a design problem.
6th Grade	Gather, read, and synthesize information from an appropriate scientific source and attempts to assess the credibility and accuracy. Collaboratively evaluates data, hypotheses, and/or conclusion in a scientific or technical text.
7th Grade	Gather, read, and synthesize information from appropriate scientific sources and assesses the credibility and accuracy. Independently evaluates data, hypotheses, and/or conclusions in scientific and technical texts.

8th Grade	Gather, read, and synthesize information from multiple appropriate sources and assess the credibility, accuracy, and possible bias of each publication and methods used, and describes whether it is supported or not by evidence. Evaluate data, hypotheses, and/or conclusions in scientific and technical texts in light of competing information or accounts.
1st High School Science Course	Evaluate scientific and/or technical information from multiple authoritative sources, assessing the evidence and usefulness of each source, by recognizing the salient science, identifying sources of error and/or methodological flaws, and distinguishing observations from inferences.
2nd High School Science Course	Evaluate scientific and/or technical information from multiple authoritative sources, assessing the evidence and usefulness of each source, by recognizing the salient science, identifying sources of error and/or methodological flaws, distinguishing observations from inferences, arguments from explanations, and claims from evidence.
3rd High School Science Course	Evaluate the validity and reliability of multiple claims, methods, and/or designs that appear in scientific and technical texts, peer-reviewed journals, and/or media reports, verifying the data when possible. Evaluate scientific, technical, and/or engineering information from multiple authoritative sources, assessing the evidence and usefulness of each source, by recognizing the salient science, identifying sources of error and/or methodological flaws, distinguishing observations from inferences, arguments from explanations, and claims from evidence.

Subject: Science **Teacher:** _____ **Grade Level:** Kindergarten

Enduring Skill: Science Enduring Skill #13 – Evaluate information to determine usefulness and value

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Evaluate information obtained for usefulness and value	Unable to use kindergarten appropriate texts but can use other media to determine patterns in and/or evidence about the natural and designed world(s).		With teacher support begin to use kindergarten appropriate texts and/or other media, determine patterns in and/or evidence about the natural and designed world(s).		Using kindergarten appropriate texts and/or other media, determine patterns in and/or evidence about the natural and designed world(s).		With teacher support begin to use first grade appropriate texts and/or other media, determine patterns in and/or evidence about the natural and designed world(s).

Subject: Science **Teacher:** _____ **Grade Level:** 1st Grade

Enduring Skill: Science Enduring Skill #13 – Evaluate information to determine usefulness and value

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Evaluate information obtained for usefulness and value	Using kindergarten appropriate texts and/or other media, determine patterns in and/or evidence about the natural and designed world(s).		With teacher support begin to use first grade appropriate texts and/or other media, determine patterns in and/or evidence about the natural and designed world(s).		Using first grade appropriate texts and/or other media, determine patterns in and/or evidence about the natural and designed world(s).		With teacher support begin to use second grade appropriate texts and/or other media, determine patterns in and/or evidence about the natural and designed world(s).

Subject: Science **Teacher:** _____ **Grade Level:** 2nd Grade

Enduring Skill: Science Enduring Skill #13 – Evaluate information to determine usefulness and value

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Evaluate information obtained for usefulness and value	Using first grade appropriate texts and/or other media, determine patterns in and/or evidence about the natural and designed world(s).		With teacher support begin to use second grade appropriate texts and/or other media, determine patterns in and/or evidence about the natural and designed world(s).		Using second grade appropriate texts and/or other media, determine patterns in and/or evidence about the natural and designed world(s).		With teacher support begin using multiple third grade appropriate written texts (including graphics) and/or other reliable media: ● Compare information to support the engagement in other scientific and/or engineering practices. ● Combine information to explain phenomena or solutions to a design problem.

Subject: Science **Teacher:** _____ **Grade Level:** 3rd Grade

Enduring Skill: Science Enduring Skill #13 – Evaluate information to determine usefulness and value

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Evaluate information obtained for usefulness and value	Using second grade appropriate texts and/or other media, determine patterns in and/or evidence about the natural and designed world(s).		With teacher support begin using multiple third grade appropriate written texts (including graphics) and/or other reliable media: ● Compare information to support the engagement in other scientific and/or engineering practices. ● Combine information to explain phenomena or solutions to a design problem.		Using multiple third grade appropriate written texts (including graphics) and/or other reliable media: ● Compare information to support the engagement in other scientific and/or engineering practices. ● Combine information to explain phenomena or solutions to a design problem.		With teacher or peer support begin using multiple fourth grade appropriate, complex, written texts (including graphics) and/or other reliable media: ● Compare information to support the engagement in other scientific and/or engineering practices. ● Combine information to explain phenomena or solutions to a design problem.

Subject: Science **Teacher:** _____ **Grade Level:** 4th Grade

Enduring Skill: Science Enduring Skill #13 – Evaluate information to determine usefulness and value

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Evaluate information obtained for usefulness and value	Using multiple third grade appropriate written texts (including graphics) and/or other reliable media: ● Compare information to support the engagement in other scientific and/or engineering practices. ● Combine information to explain phenomena or solutions to a design problem.		With teacher or peer support begin using multiple fourth grade appropriate, complex, written texts (including graphics) and/or other reliable media: ● Compare information to support the engagement in other scientific and/or engineering practices. ● Combine information to explain phenomena or solutions to a design problem.		Using multiple fourth grade appropriate, complex, written texts (including graphics) and/or other reliable media: ● Compare information to support the engagement in other scientific and/or engineering practices. ● Combine information to explain phenomena or solutions to a design problem.		With teacher or peer support begin using multiple fifth grade appropriate, complex, written texts (including graphics) and/or other reliable media: ● Compare information to support the engagement in other scientific and/or engineering practices. ● Combine information to explain phenomena or solutions to a design problem.

Subject: Science **Teacher:** _____ **Grade Level:** 5th Grade

Enduring Skill: Science Enduring Skill #13 – Evaluate information to determine usefulness and value

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Evaluate information obtained for usefulness and value	Using multiple fourth grade appropriate, complex, written texts (including graphics) and/or other reliable media: ● Compare information to support the engagement in other scientific and/or engineering practices. ● Combine information to explain phenomena or solutions to a design problem.		With teacher or peer support begin using multiple fifth grade appropriate, complex, written texts (including graphics) and/or other reliable media: ● Compare information to support the engagement in other scientific and/or engineering practices. ● Combine information to explain phenomena or solutions to a design problem.		Using multiple fifth grade appropriate, complex, written texts (including graphics) and/or other reliable media: ● Compare information to support the engagement in other scientific and/or engineering practices. ● Combine information to explain phenomena or solutions to a design problem.		Gather, read and synthesize information from a higher-level scientific source. Collaboratively attempts to evaluate data, hypotheses, and/or conclusion from a scientific or technical text.

Subject: Science **Teacher:** _____ **Grade Level:** 6th Grade

Enduring Skill: Science Enduring Skill #13 – Evaluate information to determine usefulness and value

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Evaluate information obtained for usefulness and value	Using multiple fifth grade appropriate, complex, written texts (including graphics) and/or other reliable media: ● Compare information to support the engagement in other scientific and/or engineering practices. ● Combine information to explain phenomena or solutions to a design problem.		Gather, read and synthesize information from a higher-level scientific source. Collaboratively attempts to evaluate data, hypotheses, and/or conclusion from a scientific or technical text.		Gather, read, and synthesize information from an appropriate scientific source and attempts to assess the credibility and accuracy. Collaboratively evaluates data, hypotheses, and/or conclusion in a scientific or technical text.		Gather, read, and synthesize information from an appropriate scientific source and assesses the credibility and accuracy. Independently attempts to evaluate data, hypotheses, and/or conclusions in scientific and technical text.

Subject: Science **Teacher:** _____ **Grade Level:** 7th Grade

Enduring Skill: Science Enduring Skill #13 – Evaluate information to determine usefulness and value

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Evaluate information obtained for usefulness and value	Gather, read, and synthesize information from an appropriate scientific source and attempts to assess the credibility and accuracy. Collaboratively evaluates data, hypotheses, and/or conclusion in a scientific or technical text.		Gather, read, and synthesize information from an appropriate scientific source and assesses the credibility and accuracy. Independently attempts to evaluate data, hypotheses, and/or conclusions in scientific and technical text.		Gather, read, and synthesize information from appropriate scientific sources and assesses the credibility and accuracy. Independently evaluates data, hypotheses, and/or conclusions in scientific and technical texts.		Gather, read, and synthesize information from multiple appropriate sources and assess the credibility, accuracy, and attempts to identify possible bias of each publication and methods used, and describes whether it is supported or not by evidence. Attempts to evaluate data, hypotheses, and/or conclusions in scientific and technical texts in light of competing information or accounts.

Subject: Science **Teacher:** _____ **Grade Level:** 8th Grade

Enduring Skill: Science Enduring Skill #13 – Evaluate information to determine usefulness and value

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Evaluate information obtained for usefulness and value	Gather, read, and synthesize information from appropriate scientific sources and assesses the credibility and accuracy. Independently evaluates data, hypotheses, and/or conclusions in scientific and technical texts.		Gather, read, and synthesize information from multiple appropriate sources and assess the credibility, accuracy, and attempts to identify possible bias of each publication and methods used, and describes whether it is supported or not by evidence. Attempts to evaluate data, hypotheses, and/or conclusions in scientific and technical texts in light of competing information or accounts.		Gather, read, and synthesize information from multiple appropriate sources and assess the credibility, accuracy, and possible bias of each publication and methods used, and describes whether it is supported or not by evidence. Evaluate data, hypotheses, and/or conclusions in scientific and technical texts in light of competing information or accounts.		Begins to gather, read, and synthesize information from an authoritative source(s) and assess the credibility, accuracy, and possible bias of each publication and methods used, and describes whether it is supported or not by evidence. Evaluate data, hypotheses, and/or conclusions in scientific and technical texts in light of competing information or accounts and attempts to verify the data when possible.

Subject: Science **Teacher:** _____ **Grade Level:** 1st HS Course

Enduring Skill: Science Enduring Skill #13 – Evaluate information to determine usefulness and value

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Evaluate information obtained for usefulness and value	Gather, read, and synthesize information from multiple appropriate sources and assess the credibility, accuracy, and possible bias of each publication and methods used, and describes whether it is supported or not by evidence. Evaluate data, hypotheses, and/or conclusions in scientific and technical texts in light of competing information or accounts.		Begins to gather, read, and synthesize information from an authoritative source(s) and assess the credibility, accuracy, and possible bias of each publication and methods used, and describes whether it is supported or not by evidence. Evaluate data, hypotheses, and/or conclusions in scientific and technical texts in light of competing information or accounts and attempts to verify the data when possible.		Evaluate scientific and/or technical information from multiple authoritative sources, assessing the evidence and usefulness of each source, by recognizing the salient science, identifying sources of error and/or methodological flaws, and distinguishing observations from inferences.		Evaluate scientific and/or technical information from multiple authoritative sources, assessing the evidence and usefulness of each source, by recognizing the salient science, identifying sources of error and/or methodological flaws, and distinguishing observations from inferences. Suggest valid and reliable methods for correcting sources of error and/or methodological flaws.

Subject: Science **Teacher:** _____ **Grade Level:** 2nd HS Course

Enduring Skill: Science Enduring Skill #13 – Evaluate information to determine usefulness and value

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Evaluate information obtained for usefulness and value	Evaluate scientific and/or technical information from multiple authoritative sources, assessing the evidence and usefulness of each source, by recognizing the salient science, identifying sources of error and/or methodological flaws, and distinguishing observations from inferences.		Evaluate scientific and/or technical information from multiple authoritative sources, assessing the evidence and usefulness of each source, by recognizing the salient science, identifying sources of error and/or methodological flaws, and distinguishing observations from inferences. Suggest valid and reliable methods for correcting the identified sources of error and/or methodological flaws.		Evaluate scientific and/or technical information from multiple authoritative sources, assessing the evidence and usefulness of each source, by recognizing the salient science, identifying sources of error and/or methodological flaws, distinguishing observations from inferences, arguments from explanations, and claims from evidence.		Evaluate scientific and/or technical information from multiple authoritative sources, assessing the evidence and usefulness of each source, by recognizing the salient science, identifying sources of error and/or methodological flaws, distinguishing observations from inferences, arguments from explanations, and claims from evidence. Suggest detailed methods for strengthening the arguments and/or claims presented.

Subject: Science **Teacher:** _____ **Grade Level:** 3rd HS Course

Enduring Skill: Science Enduring Skill #13 – Evaluate information to determine usefulness and value

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Evaluate information obtained for usefulness and value	Evaluate scientific and/or technical information from multiple authoritative sources, assessing the evidence and usefulness of each source, by recognizing the salient science, identifying sources of error and/or methodological flaws, distinguishing observations from inferences, arguments from explanations, and claims from evidence.		Evaluate scientific and/or technical information from multiple authoritative sources, assessing the evidence and usefulness of each source, by recognizing the salient science, identifying sources of error and/or methodological flaws, distinguishing observations from inferences, arguments from explanations, and claims from evidence. Suggest detailed methods for strengthening the arguments and/or claims presented.		Evaluate the validity and reliability of multiple claims, methods, and/or designs that appear in scientific and technical texts, peer-reviewed journals, and/or media reports, verifying the data when possible. Evaluate scientific, technical, and/or engineering information from multiple authoritative sources, assessing the evidence and usefulness of each source, by recognizing the salient science, identifying sources of error and/or methodological flaws, distinguishing observations from inferences, arguments from explanations, and claims from evidence.		Evaluate the validity and reliability of multiple claims, methods, and/or designs that appear in scientific and technical texts, peer-reviewed journals, and/or media reports, verifying the data when possible, *and suggesting additional method(s) for verification.* Evaluate scientific, technical, and/or engineering information from multiple authoritative sources, assessing the evidence and usefulness of each source, by recognizing the salient science, identifying sources of error and/or methodological flaws, distinguishing observations from inferences, arguments from explanations, and claims from evidence.

Linear Alignment of Criteria

Enduring Skill: Science Enduring Skill #13 – Evaluate information to determine usefulness and value

Criteria: Evaluate information obtained for usefulness and value K – 12

Criteria	K - 1		K - 2		K - 3 and 1st Grade - 1		K - 4 and 1st Grade - 2		1st Grade – 3 and 2nd Grade - 1
Evaluate information obtained for usefulness and value	Unable to use kindergarten appropriate texts but can use other media to determine patterns in and/or evidence about the natural and designed world(s).		With teacher support begin to use kindergarten appropriate texts and/or other media, determine patterns in and/or evidence about the natural and designed world(s).		Using kindergarten appropriate texts and/or other media, determine patterns in and/or evidence about the natural and designed world(s).		With teacher support begin to use first grade appropriate texts and/or other media, determine patterns in and/or evidence about the natural and designed world(s).		Using first grade appropriate texts and/or other media, determine patterns in and/or evidence about the natural and designed world(s).
	1st Grade - 4 and 2nd Grade - 2		**2nd Grade - 3 and 3rd Grade - 1**		**2nd Grade - 4 and 3rd Grade - 2**		**3rd Grade - 3 and 4th Grade - 1**		**3rd Grade - 4 and 4th Grade - 2**
Evaluate information obtained for usefulness and value	With teacher support begin to use second grade appropriate texts and/or other media, determine patterns in and/or evidence about the natural and designed world(s).		Using second grade appropriate texts and/or other media, determine patterns in and/or evidence about the natural and designed world(s).		With teacher support begin using multiple third grade appropriate written texts (including graphics) and/or other reliable media: ● Compare information to support the engagement in other scientific and/or engineering practices. ● Combine information to explain phenomena or solutions to a design problem.		Using multiple third grade appropriate written texts (including graphics) and/or other reliable media: ● Compare information to support the engagement in other scientific and/or engineering practices. ● Combine information to explain phenomena or solutions to a design problem.		With teacher or peer support begin using multiple fourth grade appropriate, complex, written texts (including graphics) and/or other reliable media: ● Compare information to support the engagement in other scientific and/or engineering practices. ● Combine information to explain phenomena or solutions to a design problem.

	4th Grade – 3 and 5th Grade - 1		4th Grade - 4 and 5th Grade - 2		5th Grade - 3 and 6th Grade - 1		5th Grade - 4 and 6th Grade - 2		6th Grade - 3 / 7th Grade - 1
Evaluate information obtained for usefulness and value	Using multiple fourth grade appropriate, complex, written texts (including graphics) and/or other reliable media: ● Compare information to support the engagement in other scientific and/or engineering practices. ● Combine information to explain phenomena or solutions to a design problem.		With teacher or peer support begin using multiple fifth grade appropriate, complex, written texts (including graphics) and/or other reliable media: ● Compare information to support the engagement in other scientific and/or engineering practices. ● Combine information to explain phenomena or solutions to a design problem.		Using multiple fifth grade appropriate, complex, written texts (including graphics) and/or other reliable media: ● Compare information to support the engagement in other scientific and/or engineering practices. ● Combine information to explain phenomena or solutions to a design problem.		Gather, read and synthesize information from a higher-level scientific source. Collaboratively attempts to evaluate data, hypotheses, and/or conclusion from a scientific or technical text.		Gather, read, and synthesize information from an appropriate scientific source and attempts to assess the credibility and accuracy. Collaboratively evaluates data, hypotheses, and/or conclusion in a scientific or technical text.

	6th Grade - 4 and 7th Grade - 2		7th Grade - 3 and 8th Grade - 1		7th Grade - 4 and 8th Grade - 2		8th Grade – 3 and 1st HS – 1		8th Grade – 4 and 1st HS - 2
Evaluate information obtained for usefulness and value	Gather, read, and synthesize information from an appropriate scientific source and assesses the credibility and accuracy. Independently attempts to evaluate data, hypotheses, and/or conclusions in scientific and technical text.		Gather, read, and synthesize information from appropriate scientific sources and assesses the credibility and accuracy. Independently evaluates data, hypotheses, and/or conclusions in scientific and technical texts.		Gather, read, and synthesize information from multiple appropriate sources and assess the credibility, accuracy, and attempts to identify possible bias of each publication and methods used, and describes whether it is supported or not by evidence. Attempts to evaluate data, hypotheses, and/or conclusions in scientific and technical texts in light of competing information or accounts.		Gather, read, and synthesize information from multiple appropriate sources and assess the credibility, accuracy, and possible bias of each publication and methods used, and describes whether it is supported or not by evidence. Evaluate data, hypotheses, and/or conclusions in scientific and technical texts in light of competing information or accounts.		Begins to gather, read, and synthesize information from an authoritative source(s) and assess the credibility, accuracy, and possible bias of each publication and methods used, and describes whether it is supported or not by evidence. Evaluate data, hypotheses, and/or conclusions in scientific and technical texts in light of competing information or accounts and attempts to verify the data when possible.

	1st HS – 3 and 2nd HS - 1		1st HS – 4 and 2nd HS – 2		2nd HS – 3 and 3rd HS – 1		2nd HS – 4 and 3rd HS – 2		3rd HS - 3
Evaluate information obtained for usefulness and value	Evaluate scientific and/or technical information from multiple authoritative sources, assessing the evidence and usefulness of each source, by recognizing the salient science, identifying sources of error and/or methodological flaws, and distinguishing observations from inferences.		Evaluate scientific and/or technical information from multiple authoritative sources, assessing the evidence and usefulness of each source, by recognizing the salient science, identifying sources of error and/or methodological flaws, and distinguishing observations from inferences. Suggest valid and reliable methods for correcting the identified sources of error and/or methodological flaws.		Evaluate scientific and/or technical information from multiple authoritative sources, assessing the evidence and usefulness of each source, by recognizing the salient science, identifying sources of error and/or methodological flaws, distinguishing observations from inferences, <u>arguments from explanations, and claims from evidence.</u>		Evaluate scientific and/or technical information from multiple authoritative sources, assessing the evidence and usefulness of each source, by recognizing the salient science, identifying sources of error and/or methodological flaws, distinguishing observations from inferences, <u>arguments from explanations, and claims from evidence.</u> Suggest detailed methods for strengthening the arguments and/or claims presented.		Evaluate the validity and reliability of multiple claims, methods, and/or designs that appear in scientific and technical texts, peer-reviewed journals, and/or media reports, verifying the data when possible. Evaluate scientific, technical, and/or engineering information from multiple authoritative sources, assessing the evidence and usefulness of each source, by recognizing the salient science, identifying sources of error and/or methodological flaws, distinguishing observations from inferences, arguments from explanations, and claims from evidence.

	3rd HS - 4							
Evaluate information obtained for usefulness and value	Evaluate the validity and reliability of multiple claims, methods, and/or designs that appear in scientific and technical texts, peer-reviewed journals, and/ or media reports, verifying the data when possible, *and suggesting additional method(s) for verification.* Evaluate scientific, technical, and/or engineering information from multiple authoritative sources, assessing the evidence and usefulness of each source, by recognizing the salient science, identifying sources of error and/or methodological flaws, distinguishing observations from inferences, arguments from explanations, and claims from evidence.							

Science Enduring Skill #14 – Communicate information in a variety of developmentally appropriate formats.

Framework for K-12 Science Education, Practice 8: Obtaining, Evaluation, and Communicating Information, pages 74-77.
NGSS Appendix F, pages 31-32

Criteria: Communicate scientific knowledge/information in a variety of appropriate formats

Grade Level	Proficiency by Grade Level For Communicate scientific knowledge/information in a variety of appropriate formats
Kindergarten	Identify specific images that support a scientific or engineering idea. Orally communicate information that provides details about scientific ideas, practices, design ideas and/or solutions using: ● Models ● Drawings ● Numbers
1st Grade	Identify specific images that support a scientific or engineering idea. Communicate (orally and/or written) information that provides details about scientific ideas, practices, design ideas and/or solutions using: ● Models ● Drawings ● Writing ● Numbers
2nd Grade	Describe how specific images support a scientific or engineering idea. Communicate (orally and/or written) information that provides details about scientific ideas, practices, design ideas and/or solutions using: ● Models ● Drawings ● Writing ● Numbers
3rd Grade	Summarize scientific and technical ideas. With teacher support begin to support ideas with evidence. Explain a phenomena or solutions to a design problem. Communicates scientific and/or technical information orally and/or in written formats, including various forms of media and use basic tables, diagrams, and charts.

4th Grade	Summarize scientific and technical ideas and describe how they are supported by evidence. Explain a phenomena or solutions to a design problem. Communicate scientific and/or technical information orally and/or in written formats, including various forms of media and intermediate tables, diagrams, and charts.
5th Grade	Summarize complex scientific and technical ideas and describe how they are supported by evidence. Explain a phenomena or solutions to a design problem. Communicates scientific and/or technical information orally and/or in written formats, including various forms of media and complex tables, diagrams, and charts.
6th Grade	Collaboratively integrates qualitative and/or quantitative scientific and/or technical information in written text which is contained in media and visual displays. Communicate scientific and/or technical information (e.g. about a proposed object, tool, process, system through an oral presentation.
7th Grade	Collaboratively Integrates qualitative and/or quantitative scientific and/or technical information in written text which is contained in media and visual displays to clarify claims and findings. Communicate scientific and/or technical information (e.g. about a proposed object, tool, process, system) in writing or through oral presentations.
8th Grade	Integrate qualitative and/or quantitative scientific and/or technical information in written text which is contained in media and visual displays to clarify claims and findings. Effectively communicates scientific and/or technical information (e.g. about a proposed object, tool, process, complex system) in writing and through oral presentations.
1st High School Science Course	Communicate scientific and/or technical information or ideas (e.g. about phenomena and/or the process of development and the design and performance of a proposed process or system) orally and graphically. For example, science fair and classroom presentations and scientific blogs participation.
2nd High School Science Course	Communicate scientific and/or technical information or ideas (e.g. about phenomena and/or the process of development and the design and performance of a proposed process or system) orally, graphically, and textually. For example, personal scientific journal, lab reports, argumentative and editorial pieces.
3rd High School Science Course	Communicate scientific and/or technical information or ideas (e.g. about phenomena and/or the process of development and the design and performance of a proposed process or system) in multiple formats (i.e. orally, graphically, textually, and mathematically). For example peer review journals and conference presentations.

Subject: Science **Teacher:** _____ **Grade Level:** Kindergarten

Enduring Skill: Science Enduring Skill #14 - Communicate information in a variety of developmentally appropriate formats

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Communicate scientific knowledge/information in a variety of appropriate formats	With teacher support, identify specific images that support a scientific or engineering idea. With teacher support, unable to orally communicate relevant scientific information that provides details about scientific ideas, practices, design ideas and/or solutions.		With teacher support, identify specific images that support a scientific or engineering idea. With teacher support, orally communicate information that provides details about scientific ideas, practices, design ideas and/or solutions using: ● Models ● Drawings ● Numbers		Identify specific images that support a scientific or engineering idea. Orally communicate information that provides details about scientific ideas, practices, design ideas and/or solutions using: ● Models ● Drawings ● Numbers		Identify specific images that support a scientific or engineering idea. Communicate (orally and/or written) information that provides details about scientific ideas, practices, design ideas and/or solutions using: ● Models ● Drawings ● Writing (with teacher support) ● Numbers

Subject: Science **Teacher:** _____ **Grade Level:** 1st Grade

Enduring Skill: Science Enduring Skill #14 - Communicate information in a variety of developmentally appropriate formats

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Communicate scientific knowledge/information in a variety of appropriate formats	Identify specific images that support a scientific or engineering idea. Orally communicate information that provides details about scientific ideas, practices, design ideas and/or solutions using: ● Models ● Drawings ● Numbers		Identify specific images that support a scientific or engineering idea. Communicate (orally and/or written) information that provides details about scientific ideas, practices, design ideas and/or solutions using: ● Models ● Drawings ● Writing (with teacher support) ● Numbers		Identify specific images that support a scientific or engineering idea. Communicate (orally and/or written) information that provides details about scientific ideas, practices, design ideas and/or solutions using: ● Models ● Drawings ● Writing ● Numbers		With teacher support, begin to describe how specific images support a scientific or engineering idea. Communicate (orally and/or written) information that provides details about scientific ideas, practices, design ideas and/or solutions using: ● Models ● Drawings ● Writing ● Numbers

Subject: Science **Teacher:** _____ **Grade Level:** 2nd Grade

Enduring Skill: Science Enduring Skill #14 - Communicate information in a variety of developmentally appropriate formats

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Communicate scientific knowledge/information in a variety of appropriate formats	Identify specific images that support a scientific or engineering idea. Communicate (orally and/or written) information that provides details about scientific ideas, practices, design ideas and/or solutions using: ● Models ● Drawings ● Writing ● Numbers		With teacher support, begin to describe how specific images support a scientific or engineering idea. Communicate (orally and/or written) information that provides details about scientific ideas, practices, design ideas and/or solutions using: ● Models ● Drawings ● Writing ● Numbers		Describe how specific images support a scientific or engineering idea. Communicate (orally and/or written) information that provides details about scientific ideas, practices, design ideas and/or solutions using: ● Models ● Drawings ● Writing ● Numbers		With teacher support begin to summarize scientific and technical ideas. With teacher support begin to explain a phenomena or solutions to a design problem. Communicates scientific and/or technical information orally and/or in written formats, including various forms of media and begin to use basic tables, diagrams, and charts.

Subject: Science **Teacher:** _____ **Grade Level:** 3rd Grade

Enduring Skill: Science Enduring Skill #14 - Communicate information in a variety of developmentally appropriate formats

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Communicate scientific knowledge/information in a variety of appropriate formats	Describe how specific images support a scientific or engineering idea. Communicate (orally and/or written) information that provides details about scientific ideas, practices, design ideas and/or solutions using: ● Models ● Drawings ● Writing ● Numbers		With teacher support begin to summarize scientific and technical ideas. With teacher support begin to explain a phenomena or solutions to a design problem. Communicates scientific and/or technical information orally and/or in written formats, including various forms of media and begin to use basic tables, diagrams, and charts.		Summarize scientific and technical ideas. With teacher support begin to support ideas with evidence. Explain a phenomena or solutions to a design problem. Communicates scientific and/or technical information orally and/or in written formats, including various forms of media and use basic tables, diagrams, and charts.		Summarize scientific and technical ideas and with teacher support begin to describe how they are supported by evidence. Explain a phenomena or solutions to a design problem. Communicate scientific and/or technical information orally and/or in written formats, including various forms of media and begin to use intermediate tables, diagrams, and charts.

Subject: Science **Teacher:** _____ **Grade Level:** 4th Grade

Enduring Skill: Science Enduring Skill #14 - Communicate information in a variety of developmentally appropriate formats

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Communicate scientific knowledge/information in a variety of appropriate formats	Summarize scientific and technical ideas. With teacher support begin to support ideas with evidence. Explain a phenomena or solutions to a design problem. Communicate scientific and/or technical information orally and/or in written formats, including various forms of media and use basic tables, diagrams, and charts.		Summarize scientific and technical ideas and with teacher support begin to describe how they are supported by evidence. Explain a phenomena or solutions to a design problem. Communicate scientific and/or technical information orally and/or in written formats, including various forms of media and begin to use intermediate tables, diagrams, and charts.		Summarize scientific and technical ideas and describe how they are supported by evidence. Explain a phenomena or solutions to a design problem. Communicate scientific and/or technical information orally and/or in written formats, including various forms of media and intermediate tables, diagrams, and charts.		Summarize complex (with teacher support) scientific and technical ideas and describe how they are supported by evidence. Explain a phenomena or solutions to a design problem. Communicate scientific and/or technical information orally and/or in written formats, including various forms of media and begin to use complex tables, diagrams, and charts.

Subject: Science **Teacher:** _____ **Grade Level:** 5th Grade

Enduring Skill: Science Enduring Skill #14 - Communicate information in a variety of developmentally appropriate formats

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Communicate scientific knowledge/information in a variety of appropriate formats	Summarize scientific and technical ideas and describe how they are supported by evidence. Explain a phenomena or solutions to a design problem. Communicates scientific and/or technical information orally and/or in written formats, including various forms of media and intermediate tables, diagrams, and charts.		Summarize complex (with teacher support) scientific and technical ideas and describe how they are supported by evidence. Explain a phenomena or solutions to a design problem. Communicates scientific and/or technical information orally and/or in written formats, including various forms of media and begins to use complex tables, diagrams, and charts.		Summarize complex scientific and technical ideas and describe how they are supported by evidence. Explain a phenomena or solutions to a design problem. Communicates scientific and/or technical information orally and/or in written formats, including various forms of media and complex tables, diagrams, and charts.		Summarize higher-level complex scientific and technical ideas and describe how they are supported by evidence. Explains in depth a phenomena or solutions to a design problem. Communicates higher-level scientific and/or technical information orally and/or in written formats, including various forms of media and complex tables, diagrams, and charts.

Subject: Science **Teacher:** _____ **Grade Level:** 6th Grade

Enduring Skill: Science Enduring Skill #14 - Communicate information in a variety of developmentally appropriate formats

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Communicate scientific knowledge/information in a variety of appropriate formats	Summarize complex scientific and technical ideas and describe how they are supported by evidence. Explain a phenomena or solutions to a design problem. Communicates scientific and/or technical information orally and/or in written formats, including various forms of media and complex tables, diagrams, and charts.		Summarize higher-level complex scientific and technical ideas and describe how they are supported by evidence. Explains in depth a phenomena or solutions to a design problem. Communicates higher-level scientific and/or technical information orally and/or in written formats, including various forms of media and complex tables, diagrams, and charts.		Collaboratively integrates qualitative and/or quantitative scientific and/or technical information in written text which is contained in media and visual displays. Communicate scientific and/or technical information (e.g. about a proposed object, tool, process, system through an oral presentation.		Collaboratively Integrates qualitative and/or quantitative scientific and/or technical information in written text which is contained in media and visual displays to attempts to clarify claims and findings. Communicate scientific and/or technical information (e.g. about a proposed object, tool, process, system through an oral presentation, along with minimal written component.

Subject: Science **Teacher:** _____ **Grade Level:** 7th Grade

Enduring Skill: Science Enduring Skill #14 - Communicate information in a variety of developmentally appropriate formats

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Communicate scientific knowledge/information in a variety of appropriate formats	Collaboratively integrates qualitative and/or quantitative scientific and/or technical information in written text which is contained in media and visual displays. Communicate scientific and/or technical information (e.g. about a proposed object, tool, process, system through an oral presentation.		Collaboratively Integrates qualitative and/or quantitative scientific and/or technical information in written text which is contained in media and visual displays to attempts to clarify claims and findings. Communicate scientific and/or technical information (e.g. about a proposed object, tool, process, system through an oral presentation, along with minimal written component.		Collaboratively Integrates qualitative and/or quantitative scientific and/or technical information in written text which is contained in media and visual displays to clarify claims and findings. Communicate scientific and/or technical information (e.g. about a proposed object, tool, process, system) in writing or through oral presentations.		Independently attempts to integrate qualitative and/or quantitative scientific and/or technical information in written text which is contained in media and visual displays to clarify claims and findings Communicate scientific and/or technical information (e.g. about a proposed object, tool, process, system) in writing and through oral presentations.

Subject: Science **Teacher:** _____ **Grade Level:** 8th Grade

Enduring Skill: Science Enduring Skill #14 - Communicate information in a variety of developmentally appropriate formats

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Communicate scientific knowledge/information in a variety of appropriate formats	Collaboratively Integrates qualitative and/or quantitative scientific and/or technical information in written text which is contained in media and visual displays to clarify claims and findings. Communicate scientific and/or technical information (e.g. about a proposed object, tool, process, system) in writing or through oral presentations.		Independently attempts to integrate qualitative and/or quantitative scientific and/or technical information in written text which is contained in media and visual displays to clarify claims and findings Communicate scientific and/or technical information (e.g. about a proposed object, tool, process, system) in writing and through oral presentations		Integrate qualitative and/or quantitative scientific and/or technical information in written text which is contained in media and visual displays to clarify claims and findings. Effectively communicates scientific and/or technical information (e.g. about a proposed object, tool, process, complex system) in writing and through oral presentations.		Communicate scientific and/or technical information or ideas (e.g. about phenomena and/or the process of development and the design and performance of a proposed process or system) orally and/or graphically.

Subject: Science **Teacher:** _____ **Grade Level:** 1st HS Course

Enduring Skill: Science Enduring Skill #14 - Communicate information in a variety of developmentally appropriate formats

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Communicate scientific knowledge/information in a variety of appropriate formats	Integrate qualitative and/or quantitative scientific and/or technical information in written text which is contained in media and visual displays to clarify claims and findings. Effectively communicates scientific and/or technical information (e.g. about a proposed object, tool, process, complex system) in writing and through oral presentations.		Communicate scientific and/or technical information or ideas (e.g. about phenomena and/or the process of development and the design and performance of a proposed process or system) orally and/or graphically.		Communicate scientific and/or technical information or ideas (e.g. about phenomena and/or the process of development and the design and performance of a proposed process or system) orally and graphically. For example, science fair and classroom presentations and scientific blogs participation.		Communicate scientific and/or technical information or ideas (e.g. about phenomena and/or the process of development and the design and performance of a proposed process or system) orally *and in multiple graphical formats (e.g. tables, diagrams, graphs, models, interactive displays).* For example, science fair and classroom presentations and scientific blogs participation.

Subject: Science **Teacher:** _____ **Grade Level:** 2nd HS Course

Enduring Skill: Science Enduring Skill #14 - Communicate information in a variety of developmentally appropriate formats

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Communicate scientific knowledge/information in a variety of appropriate formats	Communicate scientific and/or technical information or ideas (e.g. about phenomena and/or the process of development and the design and performance of a proposed process or system) orally and graphically.		Communicate scientific and/or technical information or ideas (e.g. about phenomena and/or the process of development and the design and performance of a proposed process or system) orally *and in multiple graphical formats (e.g. tables, diagrams, graphs, models, interactive displays).*		Communicate scientific and/or technical information or ideas (e.g. about phenomena and/or the process of development and the design and performance of a proposed process or system) orally, graphically, and textually. For example, personal scientific journal, lab reports, argumentative and editorial pieces.		Communicate scientific and/or technical information or ideas (e.g. about phenomena and/or the process of development and the design and performance of a proposed process or system) orally, graphically, and *in multiple textual formats (e.g. written, electronic).* For example, personal scientific journal, lab reports, argumentative and editorial pieces.

Subject: Science **Teacher:** _____ **Grade Level:** 3rd HS Course

Enduring Skill: Science Enduring Skill #14 - Communicate information in a variety of developmentally appropriate formats

Criteria	Not Yet		Approaches Expectations		Meets Expectations		Exceeds Expectations
	1	1.5	2	2.5	3	3.5	4
Communicate scientific knowledge/information in a variety of appropriate formats	Communicate scientific and/or technical information or ideas (e.g. about phenomena and/or the process of development and the design and performance of a proposed process or system) orally, graphically, and textually.		Communicate scientific and/or technical information or ideas (e.g. about phenomena and/or the process of development and the design and performance of a proposed process or system) orally, graphically, and *in multiple textual formats (e.g. written, electronic).*		Communicate scientific and/or technical information or ideas (e.g. about phenomena and/or the process of development and the design and performance of a proposed process or system) in multiple formats (i.e. orally, graphically, textually, and mathematically). For example peer review journals and conference presentations.		Communicate scientific and/or technical information or ideas (e.g. about phenomena and/or the process of development and the design and performance of a proposed process or system) in multiple formats (i.e. orally, graphically, textually, and mathematically). For example peer review journals and conference presentations Publish in a professional journal.

Linear Alignment of Criteria

Enduring Skill: Science Enduring Skill #14 - Communicate information in a variety of developmentally appropriate formats

Criteria: Communicate scientific knowledge/information in a variety of appropriate formats K – 12

Criteria	K - 1		K - 2		K - 3 and 1st Grade - 1		K - 4 and 1st Grade - 2		1st Grade – 3 and 2nd Grade - 1
Communicate scientific knowledge/information in a variety of appropriate formats	With teacher support, identify specific images that support a scientific or engineering idea. With teacher support, unable to orally communicate relevant scientific information that provides details about scientific ideas, practices, design ideas and/or solutions.		With teacher support, identify specific images that support a scientific or engineering idea. With teacher support, orally communicate information that provides details about scientific ideas, practices, design ideas and/or solutions using: ● Models ● Drawings ● Numbers		Identify specific images that support a scientific or engineering idea. Orally communicate information that provides details about scientific ideas, practices, design ideas and/or solutions using: ● Models ● Drawings ● Numbers		Identify specific images that support a scientific or engineering idea. Communicate (orally and/or written) information that provides details about scientific ideas, practices, design ideas and/or solutions using: ● Models ● Drawings ● Writing (with teacher support) ● Numbers		Identify specific images that support a scientific or engineering idea. Communicate (orally and/or written) information that provides details about scientific ideas, practices, design ideas and/or solutions using: ● Models ● Drawings ● Writing ● Numbers

	1st Grade - 4 and 2nd Grade - 2		2nd Grade - 3 and 3rd Grade - 1		2nd Grade - 4 and 3rd Grade - 2		3rd Grade - 3 and 4th Grade - 1		3rd Grade - 4 and 4th Grade - 2
Communicate scientific knowledge/information in a variety of appropriate formats	With teacher support, begin to describe how specific images support a scientific or engineering idea. Communicate (orally and/or written) information that provides details about scientific ideas, practices, design ideas and/or solutions using: ● Models ● Drawings ● Writing ● Numbers		Describe how specific images support a scientific or engineering idea. Communicate (orally and/or written) information that provides details about scientific ideas, practices, design ideas and/or solutions using: ● Models ● Drawings ● Writing ● Numbers		With teacher support begin to summarize scientific and technical ideas. With teacher support begin to explain a phenomena or solutions to a design problem. Communicates scientific and/or technical information orally and/or in written formats, including various forms of media and begin to use basic tables, diagrams, and charts.		Summarize scientific and technical ideas. With teacher support begin to support ideas with evidence. Explain a phenomena or solutions to a design problem. Communicate scientific and/or technical information orally and/or in written formats, including various forms of media and use basic tables, diagrams, and charts.		Summarize scientific and technical ideas and with teacher support begin to describe how they are supported by evidence. Explain a phenomena or solutions to a design problem. Communicate scientific and/or technical information orally and/or in written formats, including various forms of media and begin to use intermediate tables, diagrams, and charts.

	4th Grade – 3 and 5th Grade - 1		4th Grade - 4 and 5th Grade - 2		5th Grade - 3 and 6th Grade - 1		5th Grade - 4 and 6th Grade - 2		6th Grade - 3 / 7th Grade - 1
Communicate scientific knowledge/information in a variety of appropriate formats	Summarize scientific and technical ideas and describe how they are supported by evidence. Explain a phenomena or solutions to a design problem. Communicates scientific and/or technical information orally and/or in written formats, including various forms of media and intermediate tables, diagrams, and charts.		Summarize complex (with teacher support) scientific and technical ideas and describe how they are supported by evidence. Explain a phenomena or solutions to a design problem. Communicates scientific and/or technical information orally and/or in written formats, including various forms of media and begins to use complex tables, diagrams, and charts.		Summarize complex scientific and technical ideas and describe how they are supported by evidence. Explain a phenomena or solutions to a design problem. Communicates scientific and/or technical information orally and/or in written formats, including various forms of media and complex tables, diagrams, and charts.		Summarize higher-level complex scientific and technical ideas and describe how they are supported by evidence. Explains in depth a phenomena or solutions to a design problem. Communicates higher-level scientific and/or technical information orally and/or in written formats, including various forms of media and complex tables, diagrams, and charts.		Collaboratively integrates qualitative and/or quantitative scientific and/or technical information in written text which is contained in media and visual displays. Communicate scientific and/or technical information (e.g. about a proposed object, tool, process, system through an oral presentation.

	6th Grade - 4 and 7th Grade - 2		7th Grade - 3 and 8th Grade - 1		7th Grade - 4 and 8th Grade - 2		8th Grade – 3 and 1st HS – 1		8th Grade – 4 and 1st HS - 2
Communicate scientific knowledge/information in a variety of appropriate formats	Collaboratively Integrates qualitative and/or quantitative scientific and/or technical information in written text which is contained in media and visual displays to attempts to clarify claims and findings. Communicate scientific and/or technical information (e.g. about a proposed object, tool, process, system through an oral presentation, along with minimal written component		Collaboratively Integrates qualitative and/or quantitative scientific and/or technical information in written text which is contained in media and visual displays to clarify claims and findings. Communicate scientific and/or technical information (e.g. about a proposed object, tool, process, system) in writing or through oral presentations.		Independently attempts to integrate qualitative and/or quantitative scientific and/or technical information in written text which is contained in media and visual displays to clarify claims and findings Communicate scientific and/or technical information (e.g. about a proposed object, tool, process, system) in writing and through oral presentations.		Integrate qualitative and/or quantitative scientific and/or technical information in written text which is contained in media and visual displays to clarify claims and findings. Effectively communicates scientific and/or technical information (e.g. about a proposed object, tool, process, complex system) in writing and through oral presentations.		Communicate scientific and/or technical information or ideas (e.g. about phenomena and/or the process of development and the design and performance of a proposed process or system) orally and/or graphically.

	1st HS – 3 and 2nd HS - 1		1st HS – 4 and 2nd HS – 2		2nd HS – 3 and 3rd HS – 1		2nd HS – 4 and 3rd HS – 2		3rd HS - 3
Communicate scientific knowledge/information in a variety of appropriate formats	Communicate scientific and/or technical information or ideas (e.g. about phenomena and/or the process of development and the design and performance of a proposed process or system) orally and graphically. For example, science fair and classroom presentations and scientific blogs participation.		Communicate scientific and/or technical information or ideas (e.g. about phenomena and/or the process of development and the design and performance of a proposed process or system) orally and in multiple graphical formats (e.g. tables, diagrams, graphs, models, interactive displays). For example, science fair and classroom presentations and scientific blogs participation.		Communicate scientific and/or technical information or ideas (e.g. about phenomena and/or the process of development and the design and performance of a proposed process or system) orally, graphically, and textually.		Communicate scientific and/or technical information or ideas (e.g. about phenomena and/or the process of development and the design and performance of a proposed process or system) orally, graphically, and in multiple textual formats (e.g. written, electronic).		Communicate scientific and/or technical information or ideas (e.g. about phenomena and/or the process of development and the design and performance of a proposed process or system) in multiple formats (i.e. orally, graphically, textually, and mathematically). For example peer review journals and conference presentations.
	3rd HS - 4								
Communicate scientific knowledge/information in a variety of appropriate formats	Communicate scientific and/or technical information or ideas (e.g. about phenomena and/or the process of development and the design and performance of a proposed process or system) in multiple formats (i.e. orally, graphically, textually, and mathematically). For example peer								

	review journals and conference presentations Publish in a professional journal.								