

## Physical Science GSE Learning Map

**Prioritized Standard: S8P1.a Obtain, evaluate, and communicate information about the structure and properties of matter. Develop and use a model to compare and contrast pure substances (elements and compounds) and mixtures. (Clarification statement: Include heterogeneous and homogeneous mixtures. Types of bonds and compounds will be addressed in high school physical science.) *Physical Science***

	Proficiency Scale
4.0	<p><b>In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught. For example, the student will:</b></p> <p><b><u>Learning Target 1:</u></b> Construct an explanation that demonstrates a real world application of the use of compounds and mixtures to produce a substance with specific properties</p> <p><b><u>Learning Target 2:</u></b> Develop a scientific model that illustrates the breakdown of a pure substance and mixture into the smallest possible components</p>
3.5	In addition to score 3.0 performance, partial success at score 4.0 content
3.0	<p><b>The student will</b></p> <p><b><u>Learning Target 1:</u></b> Develop and use a model to compare and contrast pure substances (elements and compounds) and mixtures</p> <p><b><u>Learning Target 2:</u></b> Develop and use a model to differentiate between heterogeneous and homogeneous mixtures</p> <p><b>The student exhibits no major errors or omissions.</b></p>
2.5	No major errors or omissions regarding score 2.0 content and partial success at score 3.0
2.0	<p><b>There are no major errors or omissions regarding the simpler details and processes.</b></p> <p><b>The student will recognize or recall specific vocabulary:</b></p> <p><b><u>Learning Target 1:</u></b> atom, molecule, pure substance, element, mixture, compound, heterogeneous, homogeneous</p> <p><b>The student will perform basic processes:</b></p> <p><b><u>Learning Target 2:</u></b> Classify substances as mixtures or pure substances</p> <p><b><u>Learning Target 3:</u></b> Identify the differences between compounds and mixtures, including that compounds are created by a chemical reaction</p> <p><b>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</b></p>
1.5	Partial success at score 2.0 content and major errors or omissions regarding score 3.0 content
1.0	With help, partial success at score 2.0 and score 3.0
0.5	With help, partial success at score 2.0 content but not at score 3.0 content
0.0	Even with help, no success

## Physical Science GSE Learning Map

**Prioritized Standard: S8P1.b Obtain, evaluate, and communicate information about the structure and properties of matter. Develop and use models to describe the movement of particles in solids, liquids, gases, and plasma states when thermal energy is added or removed. *Physical Science***

Proficiency Scale	
4.0	<p><b>In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught. For example, the student will:</b></p> <p><b><u>Learning Target 1:</u></b> Ask questions and investigate in order to construct an explanation about how particle movement, phase changes, and thermal energy are applied to uses in everyday life and provide justification from independent research</p> <p><b><u>Learning Target 2:</u></b> Construct an explanation of the phenomenon of the creation of plasma in the natural world and evaluate the importance of the use of plasma</p>
3.5	In addition to score 3.0 performance, partial success at score 4.0 content
3.0	<p><b>The student will</b></p> <p><b><u>Learning Target 1:</u></b> Develop and use models to describe the movement of particles in solids, liquids, gases, and plasma</p> <p><b><u>Learning Target 2:</u></b> Develop and use models to predict and describe particle movement in changes of state when thermal energy is added or removed</p> <p><b>The student exhibits no major errors or omissions.</b></p>
2.5	No major errors or omissions regarding score 2.0 content and partial success at score 3.0
2.0	<p><b>There are no major errors or omissions regarding the simpler details and processes.</b></p> <p><b>The student will recognize or recall specific vocabulary:</b></p> <p><b><u>Learning Target 1:</u></b> plasma, thermal energy, melting point, freezing point, boiling point, condensation, evaporation, sublimation</p> <p><b>The student will perform basic processes:</b></p> <p><b><u>Learning Target 2:</u></b> Identify the molecular arrangement of the states of matter</p> <p><b><u>Learning Target 3:</u></b> Analyze and interpret the phase change diagram to identify trends in the data</p> <p><b>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</b></p>
1.5	Partial success at score 2.0 content and major errors or omissions regarding score 3.0 content
1.0	With help, partial success at score 2.0 and score 3.0
0.5	With help, partial success at score 2.0 content but not at score 3.0 content
0.0	Even with help, no success

## Physical Science GSE Learning Map

**Prioritized Standard: S8P1.d Obtain, evaluate, and communicate information about the structure and properties of matter. Construct an argument to support the claim that when a change occurs it is either chemical or physical. (Clarification statement: Evidence could include ability to separate mixtures, development of a gas, formation of a precipitate, change in energy, color, and/or form.) *Physical Science***

Proficiency Scale	
4.0	<p><b>In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught. For example, the student will:</b></p> <p><b><u>Learning Target 1:</u></b> Ask questions and investigate real-world examples of physical and chemical changes such as baking. Include information about how the change demonstrates the law of conservation of matter</p>
3.5	In addition to score 3.0 performance, partial success at score 4.0 content
3.0	<p><b>The student will</b></p> <p><b><u>Learning Target 1:</u></b> Construct an argument to support the claim that when a change occurs it is either physical or chemical</p> <p><b>The student exhibits no major errors or omissions.</b></p>
2.5	No major errors or omissions regarding score 2.0 content and partial success at score 3.0
2.0	<p><b>There are no major errors or omissions regarding the simpler details and processes.</b></p> <p><b>The student will recognize or recall specific vocabulary:</b></p> <p><b><u>Learning Target 1:</u></b> physical property, physical change, chemical property, chemical change, reactivity, combustibility, density, melting point, boiling point, precipitate</p> <p><b>The student will perform basic processes:</b></p> <p><b><u>Learning Target 2:</u></b> Distinguish between physical and chemical properties  <b><u>Learning Target 3:</u></b> Recognize indicators of physical and chemical changes  <b><u>Learning Target 4:</u></b> Plan and carry out investigations to compare and contrast chemical and physical properties of matter (S8P1c)</p> <p><b>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</b></p>
1.5	Partial success at score 2.0 content and major errors or omissions regarding score 3.0 content
1.0	With help, partial success at score 2.0 and score 3.0
0.5	With help, partial success at score 2.0 content but not at score 3.0 content
0.0	Even with help, no success

## Physical Science GSE Learning Map

**Prioritized Standard: S8P1.e Obtain, evaluate, and communicate information about the structure and properties of matter. Develop models (e.g., atomic-level models, including drawings, and computer representations) by analyzing patterns within the periodic table that illustrate the structure, composition, and characteristics of atoms (including protons, neutrons, and electrons) and simple molecules. *Physical Science***

Proficiency Scale	
4.0	<p><b>In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught. For example, the student will:</b></p> <p><b><u>Learning Target 1:</u></b> Ask questions and investigate real-world applications (such as medicines, tracers) of the use of isotopes  <b><u>Learning Target 2:</u></b> Construct an explanation of how the structure, composition, and characteristics of matter influence the type of materials that would be suitable for certain applications such as materials engineering (Hardness, conductivity, etc.)</p>
3.5	In addition to score 3.0 performance, partial success at score 4.0 content
3.0	<p><b>The student will</b></p> <p><b><u>Learning Target 1:</u></b> Develop models (e.g., atomic-level models, including drawings, and computer representations) by analyzing patterns within the periodic table that illustrate the structure, composition, and characteristics of atoms (including protons, neutrons, and electrons) and simple molecules</p> <p><b>The student exhibits no major errors or omissions.</b></p>
2.5	No major errors or omissions regarding score 2.0 content and partial success at score 3.0
2.0	<p><b>There are no major errors or omissions regarding the simpler details and processes.</b></p> <p><b>The student will recognize or recall specific vocabulary:</b></p> <p><b><u>Learning Target 1:</u></b> atomic number, atomic mass, groups, periods, protons, neutrons, electrons, element, periodic table, molecule</p> <p><b>The student will perform basic processes:</b></p> <p><b><u>Learning Target 2:</u></b> Identify that the periodic table is arranged by increasing atomic number  <b><u>Learning Target 3:</u></b> Recall or recognize the type of information that is included for each element in the periodic table (inside the element's box)  <b><u>Learning Target 4:</u></b> Explain the relationships between elements in a group and between elements in a period  <b><u>Learning Target 5:</u></b> Describe and explain the properties of different types of elements (metals, metalloids, non-metals)</p> <p><b>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</b></p>
1.5	Partial success at score 2.0 content and major errors or omissions regarding score 3.0 content
1.0	With help, partial success at score 2.0 and score 3.0
0.5	With help, partial success at score 2.0 content but not at score 3.0 content
0.0	Even with help, no success

## Physical Science GSE Learning Map

**Prioritized Standard: S8P1.f Obtain, evaluate, and communicate information about the structure and properties of matter. Construct an explanation based on evidence to describe conservation of matter and mass in a chemical reaction including the resulting differences between products and reactants.**

**(Clarification statement: Evidence could include models with balanced chemical equations.) *Physical Science***

Proficiency Scale	
4.0	<p><b>In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught. For example, the student will:</b></p> <p><b><u>Learning Target 1:</u></b> Develop a model that demonstrates the Law of Conservation of Matter and Mass that would be appropriate for a 5th grade student</p>
3.5	In addition to score 3.0 performance, partial success at score 4.0 content
3.0	<p><b>The student will</b></p> <p><b><u>Learning Target 1:</u></b> Construct an explanation based on evidence to describe conservation of matter and mass in a chemical reaction including the resulting differences between products and reactants</p> <p><b>The student exhibits no major errors or omissions.</b></p>
2.5	No major errors or omissions regarding score 2.0 content and partial success at score 3.0
2.0	<p><b>There are no major errors or omissions regarding the simpler details and processes.</b></p> <p><b>The student will recognize or recall specific vocabulary:</b></p> <p><b><u>Learning Target 1:</u></b> matter, mass, reactant, product, chemical reaction, Law of Conservation of Matter, chemical equation</p> <p><b>The student will perform basic processes:</b></p> <p><b><u>Learning Target 2:</u></b> Use evidence to support a given explanation of the Law of Conservation of matter or mass</p> <p><b><u>Learning Target 3:</u></b> Explain the difference between products and reactants</p> <p><b><u>Learning Target 4:</u></b> Predict the relationship between products and reactants based on experimentation</p> <p><b>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</b></p>
1.5	Partial success at score 2.0 content and major errors or omissions regarding score 3.0 content
1.0	With help, partial success at score 2.0 and score 3.0
0.5	With help, partial success at score 2.0 content but not at score 3.0 content
0.0	Even with help, no success

## Physical Science GSE Learning Map

**Prioritized Standard: S8P2.b Obtain, evaluate, and communicate information about the law of conservation of energy to develop arguments that energy can transform from one form to another within a system. Plan and carry out an investigation to explain the transformation between kinetic and potential energy within a system (e.g., roller coasters, pendulums, rubber bands). *Physical Science***

Proficiency Scale	
4.0	<p><b>In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught. For example, the student will:</b></p> <p><b><u>Learning Target 1:</u></b> Develop a scientific or mathematical model that demonstrates a system of energy and identify factors that affect potential and kinetic energy (identify energy transformations within the model)</p>
3.5	In addition to score 3.0 performance, partial success at score 4.0 content
3.0	<p><b>The student will</b></p> <p><b><u>Learning Target 1:</u></b> Plan and carry out an investigation that demonstrates the transfer of energy that drives the motion or cycling of potential and kinetic energy within a system (e.g., roller coasters, pendulums, rubber bands)</p> <p><b>The student exhibits no major errors or omissions.</b></p>
2.5	No major errors or omissions regarding score 2.0 content and partial success at score 3.0
2.0	<p><b>There are no major errors or omissions regarding the simpler details and processes.</b></p> <p><b>The student will recognize or recall specific vocabulary:</b></p> <p><b><u>Learning Target 1:</u></b> potential energy, kinetic energy, gravitational potential energy, transformation, Law of Conservation of Energy  <b><u>Learning Target 2:</u></b> Collect, display (as a graph or table), and analyze data that represents the relationship of kinetic energy to mass and speed  <b><u>Learning Target 3:</u></b> Collect, display (as a graph or table), and analyze data that represents the relationship of potential energy to mass and height</p> <p><b>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</b></p>
1.5	Partial success at score 2.0 content and major errors or omissions regarding score 3.0 content
1.0	With help, partial success at score 2.0 and score 3.0
0.5	With help, partial success at score 2.0 content but not at score 3.0 content
0.0	Even with help, no success

## Physical Science GSE Learning Map

**Prioritized Standard: S8P2.d Obtain, evaluate, and communicate information about the law of conservation of energy to develop arguments that energy can transform from one form to another within a system. Plan and carry out investigations on the effects of heat transfer on molecular motion as it relates to the collision of atoms (conduction) or through space (radiation) or in currents in a liquid or a gas (convection). *Physical Science***

Proficiency Scale	
4.0	<p><b>In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught. For example, the student will:</b></p> <p><b><u>Learning Target 1:</u></b> Use a model to predict or describe natural phenomena related to heat transfer (i.e., Greenhouse Effect, Global Warming) and identify cause and effect relationships</p>
3.5	In addition to score 3.0 performance, partial success at score 4.0 content
3.0	<p><b>The student will</b></p> <p><b><u>Learning Target 1:</u></b> Plan an investigation of the effects of heat transfer on molecular motion as it relates to the collision of atoms (conduction) or through space (radiation) or in currents in a liquid or a gas (convection)</p> <p><b>The student exhibits no major errors or omissions.</b></p>
2.5	No major errors or omissions regarding score 2.0 content and partial success at score 3.0
2.0	<p><b>There are no major errors or omissions regarding the simpler details and processes.</b></p> <p><b>The student will recognize or recall specific vocabulary:</b></p> <p><b><u>Learning Target 1:</u></b> convection, conduction, radiation, motion, thermal energy, heat transfer</p> <p><b>The student will perform basic processes:</b></p> <p><b><u>Learning Target 2:</u></b> Identify and explain examples of conduction, convection, radiation</p> <p><b><u>Learning Target 3:</u></b> Compare and contrast conduction, convection, radiation</p> <p><b><u>Learning Target 4:</u></b> Develop and use a model to explain the movement of molecules that occurs in conduction, convection, and radiation</p> <p><b>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</b></p>
1.5	Partial success at score 2.0 content and major errors or omissions regarding score 3.0 content
1.0	With help, partial success at score 2.0 and score 3.0
0.5	With help, partial success at score 2.0 content but not at score 3.0 content
0.0	Even with help, no success

## Physical Science GSE Learning Map

**Prioritized Standard: S8P3.a Obtain, evaluate, and communicate information about cause and effect relationships between force, mass, and the motion of objects. Analyze and interpret data to identify patterns in the relationships between speed and distance, and velocity and acceleration. (Clarification statement: Students should be able to analyze motion graphs, but students should not be expected to calculate changes in velocity or acceleration.) *Physical Science***

	Proficiency Scale
4.0	<p><b>In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught. For example, the student will:</b></p> <p><b><u>Learning Target 1:</u></b> Analyze and interpret data to ask questions that determine the relationships between speed, distance, velocity, and acceleration within real-world situations</p>
3.5	In addition to score 3.0 performance, partial success at score 4.0 content
3.0	<p><b>The student will</b></p> <p><b><u>Learning Target 1:</u></b> Analyze and interpret motion graphs to identify patterns in the relationships between speed and distance, and velocity and acceleration</p> <p><b>The student exhibits no major errors or omissions.</b></p>
2.5	No major errors or omissions regarding score 2.0 content and partial success at score 3.0
2.0	<p><b>There are no major errors or omissions regarding the simpler details and processes.</b></p> <p><b>The student will recognize or recall specific vocabulary:</b></p> <p><b><u>Learning Target 1:</u></b> force, motion, speed, distance, velocity, acceleration, mass, weight, inertia</p> <p><b>The student will perform basic processes:</b></p> <p><b><u>Learning Target 2:</u></b> Clarify the differences between speed, velocity, and acceleration  <b><u>Learning Target 3:</u></b> Compare and contrast graphs of speed and distance and velocity and acceleration  <b><u>Learning Target 4:</u></b> Explain the effect of force and mass on acceleration</p> <p><b>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</b></p>
1.5	Partial success at score 2.0 content and major errors or omissions regarding score 3.0 content
1.0	With help, partial success at score 2.0 and score 3.0
0.5	With help, partial success at score 2.0 content but not at score 3.0 content
0.0	Even with help, no success



## Physical Science GSE Learning Map

**Prioritized Standard: S8P4.a Obtain, evaluate, and communicate information to support the claim that electromagnetic (light) waves behave differently than mechanical (sound) waves. Ask questions to develop explanations about the similarities and differences between electromagnetic and mechanical waves. (Clarification statement: Include transverse and longitudinal waves and wave parts such as crest, trough, compressions, and rarefactions.) *Physical Science***

Proficiency Scale	
4.0	<p><b>In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught. For example, the student will:</b></p> <p><b><u>Learning Target 1:</u></b> Apply scientific knowledge of the properties of electromagnetic and mechanical waves to the real world scenarios. Research an application of waves and include benefits, risks, and current uses</p>
3.5	In addition to score 3.0 performance, partial success at score 4.0 content
3.0	<p><b>The student will</b></p> <p><b><u>Learning Target 1:</u></b> Ask questions to develop explanations about the similarities and differences between electromagnetic and mechanical waves</p> <p><b>The student exhibits no major errors or omissions.</b></p>
2.5	No major errors or omissions regarding score 2.0 content and partial success at score 3.0
2.0	<p><b>There are no major errors or omissions regarding the simpler details and processes.</b></p> <p><b>The student will recognize or recall specific vocabulary:</b></p> <p><b><u>Learning Target 1:</u></b> electromagnetic waves, mechanical waves, transverse waves, longitudinal waves, medium, crest, trough, amplitude, wavelength, compression, refraction, rarefactions</p> <p><b>The student will perform basic processes:</b></p> <p><b><u>Learning Target 2:</u></b> Identify the parts of transverse and longitudinal waves  <b><u>Learning Target 3:</u></b> Explain the movement of transverse and longitudinal waves  <b><u>Learning Target 4:</u></b> Categorize examples of electromagnetic and mechanical waves</p> <p><b>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</b></p>
1.5	Partial success at score 2.0 content and major errors or omissions regarding score 3.0 content
1.0	With help, partial success at score 2.0 and score 3.0
0.5	With help, partial success at score 2.0 content but not at score 3.0 content
0.0	Even with help, no success

## Physical Science GSE Learning Map

**Prioritized Standard: S8P4.b Obtain, evaluate, and communicate information to support the claim that electromagnetic (light) waves behave differently than mechanical (sound) waves. Construct an explanation using data to illustrate the relationship between the electromagnetic spectrum and energy. *Physical Science***

Proficiency Scale	
4.0	<p><b>In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught. For example, the student will:</b></p> <p><b><u>Learning Target 1:</u></b> Construct an argument using evidence that supports or refutes the idea that electromagnetic waves are harmful to the human body and provide justification for the claim or argument. (Possible instructional tool is the C-E-R Framework)</p>
3.5	In addition to score 3.0 performance, partial success at score 4.0 content
3.0	<p><b>The student will</b></p> <p><b><u>Learning Target 1:</u></b> Construct an explanation using data to explain the relationship between the electromagnetic spectrum and energy</p> <p><b>The student exhibits no major errors or omissions.</b></p>
2.5	No major errors or omissions regarding score 2.0 content and partial success at score 3.0
2.0	<p><b>There are no major errors or omissions regarding the simpler details and processes.</b></p> <p><b>The student will recognize or recall specific vocabulary:</b></p> <p><b><u>Learning Target 1:</u></b> electromagnetic spectrum, energy, frequency, wavelength, radio, ultraviolet, x-ray, infrared, microwaves, gamma rays, visible light</p> <p><b>The student will perform basic processes:</b></p> <p><b><u>Learning Target 2:</u></b> Identify high energy EM waves and low energy EM waves when observing the EM spectrum</p> <p><b><u>Learning Target 3:</u></b> Identify the levels of EM energy and relate them to real-world applications such as radio waves for cell phone transmission</p> <p><b><u>Learning Target 4:</u></b> Explain the relationship between wave properties (frequency, amplitude, wavelength) and wave energy (S8P4f)</p> <p><b>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</b></p>
1.5	Partial success at score 2.0 content and major errors or omissions regarding score 3.0 content
1.0	With help, partial success at score 2.0 and score 3.0
0.5	With help, partial success at score 2.0 content but not at score 3.0 content
0.0	Even with help, no success

## Physical Science GSE Learning Map

**Prioritized Standard: S8P4.d Obtain, evaluate, and communicate information to support the claim that electromagnetic (light) waves behave differently than mechanical (sound) waves. Develop and use a model to compare and contrast how light and sound waves are reflected, refracted, absorbed, diffracted, or transmitted through various materials. (Clarification statement: Include echo and how color is seen but not interference and scattering.) Physical Science**

Proficiency Scale	
4.0	<p><b>In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught. For example, the student will:</b></p> <p><b><u>Learning Target 1:</u></b> Investigate and communicate information about the Doppler Effect, Sonic Booms, and other phenomenon associated with waves  <b><u>Learning Target 2:</u></b> Analyze data that is the result of the behavior of waves in various scientific fields and provide justification and reasoning to explain and interpret data</p>
3.5	In addition to score 3.0 performance, partial success at score 4.0 content
3.0	<p><b>The student will</b></p> <p><b><u>Learning Target 1:</u></b> Develop and use a model to compare and contrast how light and sound waves are reflected, refracted, absorbed, diffracted, or transmitted through various materials</p> <p><b>The student exhibits no major errors or omissions.</b></p>
2.5	No major errors or omissions regarding score 2.0 content and partial success at score 3.0
2.0	<p><b>There are no major errors or omissions regarding the simpler details and processes.</b></p> <p><b>The student will recognize or recall specific vocabulary:</b></p> <p><b><u>Learning Target 1:</u></b> light wave, sound wave, refraction, reflection, diffraction, echo, medium, absorption, transmission</p> <p><b>The student will perform basic processes:</b></p> <p><b><u>Learning Target 2:</u></b> Differentiate between light and sound waves  <b><u>Learning Target 3:</u></b> Develop and use a model to compare and contrast how light and sound waves are reflected, refracted, absorbed, diffracted or transmitted through various materials (S8P4e)</p> <p><b>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</b></p>
1.5	Partial success at score 2.0 content and major errors or omissions regarding score 3.0 content
1.0	With help, partial success at score 2.0 and score 3.0
0.5	With help, partial success at score 2.0 content but not at score 3.0 content
0.0	Even with help, no success

## Physical Science GSE Learning Map

**Prioritized Standard: S8P5.a Obtain, evaluate, and communicate information about the phenomena of gravity, electricity, and magnetism as major forces acting in nature. Construct an argument using evidence to support the claim that fields (i.e., magnetic fields, gravitational fields, and electric fields) exist between objects exerting forces on each other even when the objects are not in contact. *Physical Science***

Proficiency Scale	
4.0	<p><b>In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught. For example, the student will:</b></p> <p><b><u>Learning Target 1:</u></b> Describe the application of patterns caused by fields (magnetic, gravitational, electrical) in the natural and designed world (i.e., healthcare, travel, GPS, satellites) by critically reading scientific texts to obtain scientific and technical information</p> <p><b><u>Learning Target 2:</u></b> Make directional hypotheses that specify the effects of fields on each other when an independent variable is manipulated in a novel setting and provide justification</p>
3.5	In addition to score 3.0 performance, partial success at score 4.0 content
3.0	<p><b>The student will</b></p> <p><b><u>Learning Target 1:</u></b> Construct an argument using evidence to support the claim that fields (i.e., magnetic fields, gravitational fields, and electric fields) exist between objects exerting forces on each other even when the objects are not in contact</p> <p><b>The student exhibits no major errors or omissions.</b></p>
2.5	No major errors or omissions regarding score 2.0 content and partial success at score 3.0
2.0	<p><b>There are no major errors or omissions regarding the simpler details and processes.</b></p> <p><b>The student will recognize or recall specific vocabulary:</b></p> <p><b><u>Learning Target 1:</u></b> gravitational field, magnetic field, electric field, force, gravity, magnetism, electricity, electrical current, voltage, poles, domains</p> <p><b>The student will perform basic processes:</b></p> <p><b><u>Learning Target 2:</u></b> Compare and contrast the forces that cause gravitational, magnetic, and electric fields</p> <p><b><u>Learning Target 3:</u></b> Support or refute an explanation that magnetic, gravitational, and electric fields exist between objects</p> <p><b><u>Learning Target 4:</u></b> Plan and carry out investigations to demonstrate the distribution of charge in conductors and insulators. Include conduction, induction, and friction (S8P5b)</p> <p><b>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</b></p>
1.5	Partial success at score 2.0 content and major errors or omissions regarding score 3.0 content
1.0	With help, partial success at score 2.0 and score 3.0
0.5	With help, partial success at score 2.0 content but not at score 3.0 content
0.0	Even with help, no success

## Physical Science GSE Learning Map

**Prioritized Standard: S8P5.c Obtain, evaluate, and communicate information about the phenomena of gravity, electricity, and magnetism as major forces acting in nature. Plan and carry out investigations to identify factors (e.g., distance between objects, magnetic force produced by an electromagnet with varying number of wire turns, varying number or size of dry cells, and varying size of iron core) that affect the strength of electric and magnetic forces. (Clarification statement: The investigations included, but are not limited to, generators or motors.) *Physical Science***

	Proficiency Scale
4.0	<p><b>In addition to score 3.0 performance, the student demonstrates in-depth inferences and applications that go beyond what was taught. For example, the student will:</b></p> <p><b><u>Learning Target 1:</u></b> Evaluate the limitations of various technological applications of electromagnets (VCRs, tape decks, CDs, disks, etc.) in areas such as security, transportation, healthcare</p> <p><b><u>Learning Target 2:</u></b> Define a design problem that can be solved through the development of an object, tool, process, or system related to gravity, electricity, and magnetism (i.e.- a more efficient motor and/or generator)</p>
3.5	In addition to score 3.0 performance, partial success at score 4.0 content
3.0	<p><b>The student will</b></p> <p><b><u>Learning Target 1:</u></b> Plan an investigation that identifies factors that affect the strength of electric and magnetic forces</p> <p><b><u>Learning Target 2:</u></b> Conduct an investigation that identifies the factors that affect the strength of electric and magnetic forces</p> <p><b><u>Learning Target 3:</u></b> Identify how certain factors such as distance between objects, number of wire turns in an electromagnet, varying number or size of dry cells, and varying size of iron core affect the strength of electric and magnetic forces</p> <p><b>The student exhibits no major errors or omissions.</b></p>
2.5	No major errors or omissions regarding score 2.0 content and partial success at score 3.0
2.0	<p><b>There are no major errors or omissions regarding the simpler details and processes.</b></p> <p><b>The student will recognize or recall specific vocabulary:</b></p> <p><b><u>Learning Target 1:</u></b> electric force, magnetic force, dry cell, iron core, gravity, electromagnet, field, attraction, generators, motors, electricity, magnetism</p> <p><b>The student will perform basic processes:</b></p> <p><b><u>Learning Target 2:</u></b> Explain that a changing magnetic field makes an electric field, and a changing electric field makes a magnetic field</p> <p><b><u>Learning Target 3:</u></b> Construct a model of an electric circuit and modify it to become an electromagnetic circuit</p> <p><b>However, the student exhibits major errors or omissions regarding the more complex ideas and processes.</b></p>
1.5	Partial success at score 2.0 content and major errors or omissions regarding score 3.0 content
1.0	With help, partial success at score 2.0 and score 3.0
0.5	With help, partial success at score 2.0 content but not at score 3.0 content
0.0	Even with help, no success