PITTSGROVE TOWNSHIP SCHOOL DISTRICT

Pittsgrove Township
School District
P.R.I.D.E. Patience Respect Integrity Diligence Empathy

Course Name: Middle School Science	**Grade Level(s): 7**
Department: Science	**Credits: NA**
BOE Adoption Date: September 17, 2020	**Revision Date(s): June 2020**

Course Description

The goal of science education curriculum is to produce students who have gained sufficient knowledge of the practices, crosscutting concepts, and core ideas of science and engineering to engage in public discussions on science-related issues, to be critical consumers of scientific information related to their everyday lives, and to continue to learn about science throughout their lives. They should come to appreciate that science and the current scientific understanding of the world are the result of many hundreds of years of creative human endeavor. It is especially important to note that the above goals are for all students, not just those who pursue careers in science, engineering, or technology or those who continue on to higher education (p. 9, NRC, 2012).

Given this goal, an integrated science curriculum model should drive the formation of middle school science curriculum because:

- The nature of science is complex and multidisciplinary.
- Learning theory research in science shows expert knowledge base develops better through interdisciplinary connections and not through isolated content.
- Effective research-based practices for curriculum and instruction in science and engineering are supported through this approach.

Mission Statement

The Pittsgrove Township School District believes in growing all learners to thrive. *The district offers an intellectually rigorous, dynamic curriculum aligned to state and national standards coupled with research-based practices in classrooms. The Pittsgrove Township School District strives to highlight critical thinking, problem-solving, intercultural literacy, digital literacy, collaboration, innovation, and a growth mindset as part of the instructional core of learning. The district provides high quality resources to provide young people the knowledge they need to approach the future as leaders and learners.*

Curriculum & Instruction Goals

1. To ensure students are college and career ready upon graduation
2. To vertically and horizontally align curriculum PreK-12 to ensure successful transition of students at each grade level
3. To identify individual student strengths and weaknesses utilizing various assessment measures (formative, summative, alternative, etc.) so as to differentiate instruction while meeting the rigor of the applicable content standards
4. To improve student achievement as assessed through multiple measures including, but not limited to, state testing, local assessments, and ongoing progress monitoring

How to Read this Document

This curricular document contains both a *pacing guide* and *curriculum units*. The pacing guide serves to communicate an estimated timeframe as to *when* critical knowledge and skills will be taught throughout the year. The pacing, however, may differ slightly depending upon the unique needs of each learner. The *curriculum units* contain more detailed information as to the content, goals, objectives, instructional strategies, resources, and assessments.

NJ Administrative Code and Statutes Key
^=Amistad Law **O=Diversity & Inclusion Law** **<>=Holocaust** **+=LGBT and Disabilities Law** ***=AAPI (Asian American and Pacific Islanders)** **$=Financial Literacy** **Use this key to understand where the NJ mandates are being implemented in the K-12 curriculum units.**

Pacing Guide

Course Title:7th Grade Science
Prerequisite(s): 6th Grade Science

Unit Title	Duration/ Month(s)	Related Standards	Learning Goals	Critical Knowledge and Skills
Unit 1: Structure and Properties of Matter	**20 Days**	**(MS-PS1-1)** **(MS-PS1-2)**	Develop models to describe the atomic composition of simple molecules and extended structures. Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.	Students build understandings of what occurs at the atomic and molecular scale. Students apply their understanding that pure substances have characteristic properties and are made from a single type of atom or molecule. Students demonstrate grade appropriate proficiency in *developing and using models*, and *obtaining, evaluating, and communicating information*. Students are also expected to use the scientific and engineering practices to demonstrate understanding of the core ideas.
Unit 2: Interactions of Matter	**20 Days**	**(MS-PS1-3)** **(MS-PS1-4)**	Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed. Gather and make sense of information to describe that synthetic materials come from natural resources and impact society.	*How can we trace synthetic materials back to natural ingredients?* Students build understandings of what occurs at the atomic and molecular scale. Students apply their understanding that pure substances have characteristic properties and are made from a single type of atom or molecule. Students demonstrate grade appropriate proficiency in *developing and using models*, and *obtaining, evaluating, and communicating information*. Students are also expected to use the scientific and engineering practices to demonstrate understanding of the core ideas.
Unit 3: Chemical Reactions	**25 Days**	**(MS-PS1-5)** **(MS-PS1-6)** **(MS-ETS1-3)**	Undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes.* Analyze data from tests to determine	*How do substances combine or change (react) to make new substances?* Students provide molecular-level accounts of states of matters and changes between states, of how chemical reactions involve regrouping of atoms to form new substances, and of how atoms rearrange during chemical reactions.

			similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.	Students also apply their understanding of optimization design and process in engineering to chemical reaction systems. Students are expected to demonstrate proficiency in *developing and using models, analyzing and interpreting data, designing solutions*, and *obtaining, evaluating, and communicating information*. Students are also expected to use these science and engineering practices to demonstrate understanding of the disciplinary core ideas.
Unit 4: Structure and Function	**15 days**	**(MS-LS1-1) MS-LS1-2)**	Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells. Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function.	*How do cells contribute to the functioning of an organism?* Students demonstrate age appropriate abilities to plan and carry out investigations to develop *evidence* that living organisms are made of cells. Students gather information to support explanations of the relationship between structure and function in cells. They are able to communicate an understanding of cell theory and understand that all organisms are made of cells. Students understand that special structures are responsible for particular functions in organisms. They then are able to use their understanding of cell theory to develop and use physical and conceptual models of cells. The crosscutting concepts of *scale, proportion, and quantity* and *structure and function* provide a framework for understanding the disciplinary core ideas. Students are expected to demonstrate proficiency in ***planning and carrying out*** *investigations*, *analyzing and interpreting data*, and *developing and using models*, Students are also expected to use these to use these science and engineering practices to demonstrate understanding of the disciplinary core ideas.
Unit 5: Body Systems	**15 Days**	**(MS-LS1-8) (MS-LS1-3)**	Use arguments supported by evidence for how the body is a system of interacting subsystems composed of groups of cells.	*What are humans made of?* Students develop a basic understanding of the role of cells in body systems and how those systems work to support the life functions of the organism. Students will construct explanations for the interactions of systems in cells and organisms. Students understand that special structures are responsible for particular functions in organisms, and that for many organisms, the body is a system of multiple-interaction subsystems that form a hierarchy, from cells to the body. Students construct explanations for the interactions of systems in cells and organisms and for how organisms gather and use

				information from the environment. The crosscuttings concepts of *systems and system models* and *cause and effect* provide a framework for understanding the disciplinary core ideas. Students are expected to demonstrate proficiency in *engaging in argument from evidence* and *obtaining, evaluating, and communicating information*. Students use these science and engineering practices to demonstrate understanding of the disciplinary core ideas.
Unit 6: Inheritance and Variations of Traits	**15 Days**	**(MS-LS3-2)** **(MS-LS3-1)**	Develop and use a model to describe why structural changes to genes (mutations) located on chromosomes may affect proteins and may result in harmful, beneficial, or neutral effects to the structure and function of the organism. Develop and use a model to describe why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation.	*Why do kids look similar to their parents?* Students develop and use models to describe how gene mutations and sexual reproduction contribute to genetic variation. Students understand how genetic factors determine the growth of an individual organism. They also demonstrate understanding of the genetic implications of sexual and asexual reproduction. The crosscutting concepts of *cause and effect* and *structure and function* provide a framework for understanding how gene structure determines differences in the functioning of organisms. Students are expected to demonstrate proficiency in *developing and using models*. Students use these science and engineering practices to demonstrate understanding of the disciplinary core ideas.
Unit 7: Organization for Matter and Energy Flow in Organisms	**15 Days**	**(MS-LS1-6)** **(MS-LS1-7)**	Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism.	*How do some organisms turn* *electromagnetic radiation into matter* *and energy?* Students provide a mechanistic account for how cells provide a structure for the plant process of photosynthesis in the movement of matter and energy needed for the cell. Students use conceptual and physical models to explain the transfer of energy and cycling of matter as they construct explanations for the role of photosynthesis in cycling matter in ecosystems. They construct scientific explanations for the cycling of matter in organisms and the interactions of organisms to obtain matter and energy from an ecosystem to survive and grow. They understand that sustaining life requires substantial energy and matter inputs, and that the structure and functions of organisms contribute to the capture, transformation, transport, release, and elimination of matter and energy. The

				crosscutting concepts of *matter and energy* and *structure and function* provide a framework for understanding of the cycling of matter and energy flow into and out of organisms. Students are also expected to demonstrate proficiency in *developing and using models*. Students use these science and engineering practices to demonstrate understanding of the disciplinary core ideas.
Unit 8: Earth Systems	**30 Days**	**(MS-ESS1-4) (MS-ESS2-1) (MS-ESS2-2) (MS-ESS2-3)**	Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth's 4.6-billion-year-old history. Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process. *Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.* *Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions.*	*If no one was there, how do we know the Earth's history?* *What provides the forces that drive Earth's systems?* Students examine geoscience data in order to understand processes and events in Earth's history. Important crosscutting concepts in this unit are *scale, proportion, and quantity*, *stability and change*, and *patterns* in relation to the different ways geologic processes operate over geologic time. An important aspect of the history of Earth is that geologic events and conditions have affected the evolution of life, but different life forms have also played important roles in altering Earth's systems. Students understand how Earth's geosystems operate by modeling the flow of energy and cycling of matter within and among different systems. Students investigate the controlling properties of important materials and construct explanations based on the analysis of real geoscience data. Students are expected to demonstrate proficiency in *analyzing and interpreting* data and *constructing explanations*. They are also expected to use these practices to demonstrate understanding of the core ideas.

Instructional Unit Map				
Course Title: 7th Grade Science				
Unit 1	How is *everything* made from stardust?		**Start Date:**	***Start Date of School***
Unit Title			**Length of Unit:**	20 Days
Content Standards *What do we want them to know, understand, & do?*	MS-PS1-1. Develop models to describe the atomic composition of simple molecules and extended structures. MS-PS1-2. Analyze and interpret data on the properties of substances before and after the substances interact to determine if a chemical reaction has occurred.	**Learning Goals**	MS-PS1-1. Students will be able to develop models of atomic composition of simple molecules and extended structures that vary in complexity. In the models, students identify the relevant components, including: i. Individual atoms. ii. Molecules. iii. Extended structures with repeating subunits. iv. Substances (e.g., solids, liquids, and gases at the macro level). *MS-PS1-2.. Students will be able to organize given data about the characteristic physical and chemical properties (e.g., density, melting point, boiling point, solubility, flammability, odor) of pure substances before and after they interact. b Students organize the given data in a way that facilitates analysis and interpretation.*	
Essential Questions	How is all matter in the universe made from the same 100, or so, naturally occurring materials?			
Assessments *How will we know they have gained the knowledge & skills?*	**Formative**	**Summative**	**Alternative**	
	● Choral and individual responses to questioning ● Entrance/Exit Tickets ● Quizzes (paper-based and/or Google forms)	● End of Unit Test ● Extended Constructed Response Questions ● Project ● Lab Analysis/Conclusion	● Student-Taught Lesson (small groups of students will teach the class)	

	• Signals (thumbs up/down, sit/stand, and other answering strategies) • Graded Classwork/ Homework • Plickers Assessments • Kahoot games/reviews • Individual white boards • "Brain Dump" • Observations & informal discussions with small groups or individuals during labs • Silent classroom polls	• Demonstration with explanation & fielding questions	• BrainPop Video (students create their own BrainPop-style video to explain a science phenomena) • Advice Column (students write advice to an "anonymous friend" to help solve a scientific problem) • Trivia Game (students create the questions and answers to be used in a review game)
Unit Pre-Assessment(s) *What do they already know?*	**Student's prior knowledge should include the following items:** • Matter of any type can be subdivided into particles that are too small to see, but even then the matter still exists and can be detected by other means. • A model showing that gasses are made from matter particles that are too small to see and are moving freely around in space can explain many observations, including the inflation and shape of a balloon and the effects of air on larger particles or objects. • The amount (weight) of matter is conserved when it changes form, even in transitions in which it seems to vanish. • Measurements of a variety of observable properties can be used to identify materials. [Note: In the fifth grade, no attempt was made to define the unseen particles or explain the atomic-scale mechanism of evaporation and condensation.] • When two or more different substances are mixed, a new substance with different properties may be formed. • No matter what reaction or change in properties occurs, the total mass of the substances does not change. [Note: Mass and weight were distinguished in 5th grade.] **Prior Knowledge will be demonstrated via the following means:** • Pre-Test (paper-based, Google Form, Plickers, etc.) • Teacher-generated warm up questions with class discussion • Individual Whiteboards (students hold up agree/disagree or short answers in response to questions or statements)		

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Blind-Polling with Thumbs Up/Down (teacher asks a question or provides a vocabulary word; students close their eyes and demonstrate their comfort level with the information by indicating a thumbs up or down)
“Four Corners” (students are given a series of statements, decide for each one the level to which they agree/disagree, and then move to the appropriate area of the classroom identified with one of the options. Students will discuss their positions with the others in their group and present their opinions to the rest of the class)
KWL Chart

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<tr><td>Instructional Strategies/Student Activities</td><td colspan="4">

Direct Instruction
Scaffolding
Guided Practice
Cooperative learning
Modeling
Learning Stations
Graphic organizers
Note-taking sheets
Turn and Talk / Think-Pair-Share
Flexible grouping
Student Choice Menu Project
Inquiry-based learning
RAFT assignments
Self and Peer Review
Word/picture/object sorts
Read & Think Alouds

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Preferential seating on an as-needed basis

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Preferential seating on an as-needed basis
Read directions aloud

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Learning stations
Independent study

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</table>

	• Buddy with a bilingual student (if able) • Provide key vocabulary with definitions in native language at the start of each unit • Provide leveled reading material • Use native language (for written directions) • Allow use of online translator during independent work time • Read directions aloud • Highlight/underline key words • Simplify language • Single step directions • Modify format/length of tests • Allow oral responses • Additional time • Allow retakes • Chunk projects or long-term assignments • Use of visual representations of concepts	• Read directions aloud • Highlight/underline key words • Additional time • Vary essay lengths • Chunk projects or long-term assignments • Read assessments aloud • Modify format/ length of tests • Allow oral responses • Allow retakes • Provide leveled reading material • Differentiated grouping • Use of visual representations of concepts • Small group instruction • Read test passages/articles aloud (if assessing reading comprehension)	• Clarifying directions or conducting check-ins as needed • Highlight/underline key words • Additional time • Concrete examples / examples related to personal interests or background • Use of mnemonics • Provide leveled reading material • Differentiated grouping • Use of visual representations of concepts • Flexible grouping • Provide study guides or copies of class notes prior to tests • Allow retakes • Chunk projects or long-term assignments • Collaborate with after-school programs or clubs to extend learning opportunities.	• Learning menus / Choice boards • Virtual escape rooms (unit specific) • Current event presentations • Creation of presentation, video or written review of a science topic or phenomena to be posted on our classroom website and shared with peers

<table>
<tr><td></td><td></td><td>● Provide study guides or copies of class notes</td><td></td><td></td></tr>
<tr><td rowspan="2">Differentiated Instructional Methods:
(Multiple means for students to access content and multiple modes for student to express understanding)</td><td colspan="2">Access (Resources and/or Process)</td><td colspan="2">Expression (Products and/or Performance)</td></tr>
<tr><td colspan="2">● Interactive Notebook/Note-taking sheet (guided notes, “doodle” notes, Cornell notes, etc.)
● Learning Stations with varied standard-based tasks
● Use of Promethean Board for discussions, visuals, note-taking, interactives, etc.
● Multi-level electronic texts (with audio capability) provided through Google Classroom
● Read & Think Alouds
● Flexible grouping
● Reteaching /Reviewing
● Targeting Different Senses Within the Lesson (verbal, video, hands-on, use of visuals, modeling/acting out, songs/chants, etc)
● Reflection & Goal-setting
● Free Study Time (student choice: reviewing of notes, completion of task cards, watching a video review, small-group game, work completion with teacher-</td><td colspan="2">● Student choice during formal assessment style (eliminate a certain number of questions, answer open-ended option A or B, draw a diagram or explain, etc.)
● Menu Project / Choice Board
● Individual or Small-group presentation
● Rubric/criteria for success generated by teacher and students (may be different for different individuals/groups)</td></tr>
<tr><td>Vocabulary
Highlight key vocabulary (both Tier 2 and Tier 3 words)</td><td colspan="4">Tier 2 Compare, connect, relate, construct, elaborate, evaluate, conduct, answer, express, hypothesis, estimate, experiment, predict, test.

Tier 3
Matter - anything that has mass and takes up space
Volume - the "stuff" around you.
Mass - the amount of matter in an object
Atom - the basic particle from which all elements are made; smallest building block of matter
Nucleus - the central core of an atom containing protons and neutrons</td></tr>
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Integration of Technology SAMR	Substitution: ● Taking notes via Google Docs ● Typing up responses to questioning and sharing with teacher/peer ● Completing graphic organizers via Google Docs or Slides ● Completing digital worksheets via Google Forms, Docs, or Slides ● Use of online-based texts with dictionary and highlighting features ● Conducting research via Google ● Use of Google Classroom for providing and organizing materials Augmentation: ● Completing quizzes/tests via Google Forms ● Researching within Google Docs to add information and graphics to enhance notes ● Use of online-based texts with embedded videos and links to enhance understanding ● Using Gizmos, Phet, and other virtual labs/simulations ● Creation of scientific diagrams/models using Google Drawings ● Sharing videos, simulations, and other "extras" via Google Classroom to supplement notes and understanding ● Posting student created material via Padlet for sharing with peers ● Use of Quizizz or Kahoot! to review before a test Modification: ● Collaboration of students on a multimedia/slides project ● Peer-editing multimedia work ● Using Gizmos, Phet, and other virtual labs/simulations ● Creation of presentation, video, or written review of a science topic or phenomena posted on our classroom website ● Student completion of WebQuests ● Student participation in Digital Escape Rooms ● Plickers assessments Redefinition: ● Collaboration of students on a multimedia/slides project

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Posting, reviewing, and commenting on student created material via Padlet
Student-Created and Student-Taught Lesson with multimedia presentation
Use of Quizizz or Kahoot! to review before a test
Plickers assessments

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<tr><td>Interdisciplinary Connections
NJ Student Learning Standards</td><td colspan="2">English Language Arts/Literacy
• Cite specific textual evidence to support analysis of science and technical texts on the characteristic properties of pure substances. Attend to precise details of explanations or descriptions about the properties of substances before and after they undergo a chemical process.
• Integrate qualitative information (flowcharts, diagrams, models, graphs, or tables) about the characteristic properties of substances before and after a chemical process has occurred with a version of that information expressed visually, or integrate technical information about the characteristic properties of substances before and after a chemical process has occurred with a version of that information expressed visually.

Mathematics
• Integrate quantitative or technical information about the composition of simple molecules and extended structures that is expressed in words in a text with a version of that information expressed in a model.
• Reason quantitatively (with amounts, numbers, sizes) and abstractly (with variables).
• Develop a mathematical model to describe the atomic composition of simple molecules and extended structures.
• Use ratio and rate reasoning to describe the atomic composition of simple molecules and extended structures.
• Reason quantitatively with amounts, numbers, and sizes for properties like density, melting point, boiling point, solubility, flammability, and odor, and reason abstractly by assigning labels or symbols.</td></tr>
<tr><td rowspan="2">21st Century Themes/Skills
P21 Framework</td><td>Themes</td><td>Skills</td></tr>
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People encounter questions about the natural world every day. There are many types of tools produced by engineering that can be used in science to help answer these questions through observation or measurement. Observations and measurements are also used in engineering to help test and refine design ideas.

</td><td>Life and Career Skills

Flexibility and Adaptability
Initiative and Self-Direction
Social and Cross-Cultural Skills
Productivity and Accountability
Leadership and Responsibility

Learning and Innovation Skills</td></tr>
</table>

	● Tools and instruments (e.g., rulers, balances, thermometers, graduated cylinders, telescopes, microscopes) are used in scientific exploration to gather data and help answer questions about the natural world. Engineering design can develop and improve such technologies. Scientific discoveries about the natural world can often lead to new and improved technologies, which are developed through the engineering design process. Knowledge of relevant scientific concepts and research findings is important in engineering. ● Engineering advances have led to important discoveries in virtually every field of science, and scientific discoveries have led to the development of entire industries and engineered systems. In order to design better technologies, new science may need to be explored (e.g., materials research prompted by desire for better batteries or solar cells, biological questions raised by medical problems). Technologies in turn extend the measurement, exploration, modeling, and computational capacity of scientific investigations.	● Creativity and Innovation ● Critical Thinking and Problem Solving ● Communication and Collaboration Information, Media, and Technology Skills ● Information Literacy ● Media Literacy ● Information Communication Technology Literacy
Resources/Materials	● LabAids Chemistry of Materials Activity 1- Exploring Materials ● LabAids Chemistry of Materials Activity 2 Investigating Elements ● Gizmos Simulations (https://www.explorelearning.com/) - ● Discovery Education (https://www.discoveryeducation.com/) ● Scholastic Super Science Magazine (https://superscience.scholastic.com/)	

	• ReadWorks (https://www.readworks.org) • PBS Learning Media (https://www.pbslearningmedia.org/) • CK-12 (https://www.ck12.org/) • BrainPop (https://www.brainpop.com/) • CrashCourseKids (https://www.youtube.com/user/crashcoursekids) • StudyJams! (https://studyjams.scholastic.com/studyjams/) • Teacher Generated Materials • Learning Stations • Task Cards

Instructional Unit Map			
Course Title: 7th Grade Science			
Unit 2	How can we trace synthetic materials back to natural ingredients?	**Start Date:**	October
Unit Title		**Length of Unit:**	Instructional Days: 20
Content Standards *What do we want them to know, understand, & do?*	MS-PS1-3. Gather and make sense of information to describe that synthetic materials come from natural resources and impact society. MS-PS1-4. Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.	**Learning Goals**	*Students will locate information that describes changes in particle motion, changes in temperature, or changes in state as thermal energy is added to or removed from a pure substance. Students will then use models to predict and describe the changes in particle motion, temperature, and state of a pure substance. An example could include the change of state of water from its solid (ice) to liquid and vapor with the addition of thermal energy. Students will come to understand that this process is reversible through the removal of thermal energy, where the pure substance can return from a vapor to a liquid and back to a solid state.*

Essential Questions	Part A: How can you tell what the molecules are doing in a substance? Part B: How can we trace synthetic materials back to natural ingredients?		
Assessments *How will we know they have gained the knowledge & skills?*	**Formative**	**Summative**	**Alternative**
	● Choral and individual responses to questioning ● Entrance/Exit Tickets ● Quizzes (paper-based and/or Google forms) ● Signals (thumbs up/down, sit/stand, and other answering strategies) ● Graded Classwork/ Homework ● Plickers Assessments ● Kahoot games/reviews ● Individual white boards ● "Brain Dump" ● Observations & informal discussions with small groups or individuals during labs ● Silent classroom polls	● End of Unit Test ● Extended Constructed Response Questions ● Project ● Lab Analysis/Conclusion ● Demonstration with explanation & fielding questions	● Student-Taught Lesson (small groups of students will teach the class) ● BrainPop Video (students create their own BrainPop-style video to explain a science phenomena) ● Advice Column (students write advice to an "anonymous friend" to help solve a scientific problem) ● Trivia Game (students create the questions and answers to be used in a review game)
Unit Pre-Assessment(s) *What do they already know?*	● Pre-Test (paper-based, Google Form, Plickers, etc.) ● Teacher-generated warm up questions with class discussion ● Individual Whiteboards (students hold up agree/disagree or short answers in response to questions or statements) ● Blind-Polling with Thumbs Up/Down (teacher asks a question or provides a vocabulary word; students close their eyes and demonstrate their comfort level with the information by indicating a thumbs up or down) ● "Four Corners" (students are given a series of statements, decide for each one the level to which they agree/disagree, and then move to the appropriate area of the classroom identified with one of the options. Students will discuss their positions with the others in their group and present their opinions to the rest of the class)		

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- Graphic organizers
- Note-taking sheets
- Turn and Talk / Think-Pair-Share
- Flexible grouping
- Student Choice Menu Project
- Inquiry-based learning
- RAFT assignments
- Self and Peer Review
- Word/picture/object sorts
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- Preferential seating on an as-needed basis
- Buddy with a bilingual student (if able)
- Provide key vocabulary with definitions in native language at the start of each unit
- Provide leveled reading material

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- Preferential seating on an as-needed basis
- Read directions aloud
- Highlight/underline key words
- Additional time
- Vary essay lengths

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- Preferential seating on an as-needed basis
- Read directions aloud
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- Learning stations
- Independent study
- Learning menus / Choice boards
- Virtual escape rooms (unit specific)
- Current event presentations
- Creation of presentation, video or

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	● Use native language (for written directions) ● Allow use of online translator during independent work time ● Read directions aloud ● Highlight/underline key words ● Simplify language ● Single step directions ● Modify format/length of tests ● Allow oral responses ● Additional time ● Allow retakes ● Chunk projects or long-term assignments ● Use of visual representations of concepts	● Chunk projects or long-term assignments ● Read assessments aloud ● Modify format/ length of tests ● Allow oral responses ● Allow retakes ● Provide leveled reading material ● Differentiated grouping ● Use of visual representations of concepts ● Small group instruction ● Read test passages/articles aloud (if assessing reading comprehension) ● Provide study guides or copies of class notes	● Concrete examples / examples related to personal interests or background ● Use of mnemonics ● Provide leveled reading material ● Differentiated grouping ● Use of visual representations of concepts ● Flexible grouping ● Provide study guides or copies of class notes prior to tests ● Allow retakes ● Chunk projects or long-term assignments ● Collaborate with after-school programs or clubs to extend learning opportunities.	written review of a science topic or phenomena to be posted on our classroom website and shared with peers
Differentiated Instructional Methods: *(Multiple means for students to access content and multiple*	**Access** (Resources and/or Process)		**Expression** (Products and/or Performance)	

modes for student to express understanding)	● Interactive Notebook/Note-taking sheet (guided notes, "doodle" notes, Cornell notes, etc.) ● Learning Stations with varied standard-based tasks ● Use of Promethean Board for discussions, visuals, note-taking, interactives, etc. ● Multi-level electronic texts (with audio capability) provided through Google Classroom ● Read & Think Alouds ● Flexible grouping ● Reteaching /Reviewing ● Targeting Different Senses Within the Lesson (verbal, video, hands-on, use of visuals, modeling/acting out, songs/chants, etc) ● Reflection & Goal-setting ● Free Study Time (student choice: reviewing of notes, completion of task cards, watching a video review, small-group game, work completion with teacher-	● Student choice during formal assessment style (eliminate a certain number of questions, answer open-ended option A or B, draw a diagram or explain, etc.) ● Menu Project / Choice Board ● Individual or Small-group presentation ● Rubric/criteria for success generated by teacher and students (may be different for different individuals/groups)
Vocabulary *Highlight key vocabulary (both Tier 2 and Tier 3 words)*	**Tier 2** Compare, connect, relate, construct, elaborate, evaluate, conduct, answer, express, hypothesis, estimate, experiment, predict, test. **Tier 3** Matter, Mass, Volume, Law of the Conservation of Matter, Physical change, Chemical change	
Integration of Technology SAMR	Substitution: ● Taking notes via Google Docs ● Typing up responses to questioning and sharing with teacher/peer ● Completing graphic organizers via Google Docs or Slides ● Completing digital worksheets via Google Forms, Docs, or Slides ● Use of online-based texts with dictionary and highlighting features	

	● Conducting research via Google ● Use of Google Classroom for providing and organizing materials Augmentation: ● Completing quizzes/tests via Google Forms ● Researching within Google Docs to add information and graphics to enhance notes ● Use of online-based texts with embedded videos and links to enhance understanding ● Using Gizmos, Phet, and other virtual labs/simulations ● Creation of scientific diagrams/models using Google Drawings ● Sharing videos, simulations, and other "extras" via Google Classroom to supplement notes and understanding ● Posting student created material via Padlet for sharing with peers ● Use of Quizizz or Kahoot! to review before a test Modification: ● Collaboration of students on a multimedia/slides project ● Peer-editing multimedia work ● Using Gizmos, Phet, and other virtual labs/simulations ● Creation of presentation, video, or written review of a science topic or phenomena posted on our classroom website ● Student completion of WebQuests ● Student participation in Digital Escape Rooms ● Plickers assessments Redefinition: ● Collaboration of students on a multimedia/slides project ● Posting, reviewing, and commenting on student created material via Padlet ● Student-Created and Student-Taught Lesson with multimedia presentation ● Use of Quizizz or Kahoot! to review before a test ● Plickers assessments

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NJ Student Learning Standards</td><td colspan="2">English Language Arts
Cite specific textual evidence to support analysis of science and technical texts, attending to the precise details of explanations or descriptions. (MS-PS1-3) RST.6-8.1
Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table). (MS-PS1-4) RST.6-8.7
Gather relevant information from multiple print and digital sources, using search terms effectively; assess the credibility and accuracy of each source; and quote or paraphrase the data and conclusions of others while avoiding plagiarism and following a standard format for citation. (MS-PS1-3) WHST.6-8.8
Mathematics
Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation. (MS-PS1-4)</td></tr>
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P21 Framework</td><td>Themes</td><td>Skills</td></tr>
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	world can often lead to new and improved technologies, which are developed through the engineering design process. Knowledge of relevant scientific concepts and research findings is important in engineering. ● Engineering advances have led to important discoveries in virtually every field of science, and scientific discoveries have led to the development of entire industries and engineered systems. In order to design better technologies, new science may need to be explored (e.g., materials research prompted by desire for better batteries or solar cells, biological questions raised by medical problems). Technologies in turn extend the measurement, exploration, modeling, and computational capacity of scientific investigations.	
Resources/Materials	Middle school Chemistry, Chapter 1: Solids, Liquids, and Gases Students are introduced to the idea that matter is composed of atoms and molecules that are attracted to each other and in constant motion. Students explore the attractions and motion of atoms and molecules as they experiment with and observe the heating and cooling of a solid, liquid, and gas. Molecular View of a Liquid: Explore the structure of a liquid at the molecular level. Molecules are always in motion. Molecules in a liquid move moderately. All molecules are attracted to each other. Molecules can be weakly or strongly attracted to each other. The way that large molecules interact in physical, chemical and biological applications is a direct consequence of the many tiny attractions of the smaller parts. Molecular View of a Solid: Explore the structure of a solid at the molecular level. Molecules are always in motion, though molecules in a solid move slowly. All molecules are attracted to each other. Molecules can be weakly or strongly attracted to each other. The way that large molecules interact in physical, chemical and biological applications is a direct consequence of the many tiny attractions of the smaller parts Middle school Chemistry, Chapter 2: Changes of State Students help design experiments to test whether the temperature of water affects the rate of evaporation and whether the temperature of water vapor affects the rate of condensation. Students also look in more detail at the water molecule to help explain the state changes of water. **Selected materials from the following:** ● LabAids Activity 8- What's in a State	

	• LabAids Activity 9- Particles in Motion • LabAids Activity 10- Modeling State Change • PhET Simulations- Phase Change • Gizmos Simulations (https://www.explorelearning.com/) • Discovery Education (https://www.discoveryeducation.com/) • Scholastic Super Science Magazine (https://superscience.scholastic.com/) • ReadWorks (https://www.readworks.org) • PBS Learning Media (https://www.pbslearningmedia.org/) • CK-12 (https://www.ck12.org/ • BrainPop (https://www.brainpop.com/) • CrashCourseKids (https://www.youtube.com/user/crashcoursekids) • StudyJams! (https://studyjams.scholastic.com/studyjams/) • Teacher Generated Materials • Learning Stations • Task Cards

Instructional Unit Map					
Course Title: 7th Grade Science					
Unit Title	Chemical Reactions: How do substances combine or change (react) to make new substances?			**Start Date:**	November
				Length of Unit:	Approx. 25 days
Content Standards	MS-PS1-5. Develop and use a model to describe	**Learning Goals**	Students will be able to:		

What do we want them to know, understand, & do?	how the total number of atoms does not change in a chemical reaction and thus mass is conserved. MS-PS1-6. Undertake a design project to construct, test, and modify a device that either releases or absorbs thermal energy by chemical processes MS-ETS1-3. Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be		● Students provide molecular-level accounts of states of matters and changes between states, of how chemical reactions involve regrouping of atoms to form new substances, and of how atoms rearrange during chemical reactions. ● Students also apply their understanding of optimization design and process in engineering to chemical reaction systems. The crosscutting concept of energy and matter provides a framework for understanding the disciplinary core ideas. ● Students are expected to demonstrate proficiency in developing and using models, analyzing and interpreting data, designing solutions, and obtaining, evaluating, and communicating information. Students are also expected to use these science and engineering practices to demonstrate understanding of the disciplinary core ideas.

	combined into a new solution to better meet the criteria for success.		
Essential Questions	● *What happens to the atoms during chemical and physical changes?* ● *How can a device be designed, constructed, tested, and modified that either releases or absorbs thermal energy by chemical processes?*		
Assessments *How will we know they have gained the knowledge & skills?*	**Formative**	**Summative**	**Alternative**
	● Choral and individual responses to questioning ● Entrance/Exit Tickets ● Quizzes (paper-based and/or Google forms) ● Signals (thumbs up/down, sit/stand, and other answering strategies) ● Graded Classwork/ Homework ● Plickers Assessments ● Kahoot games/reviews ● Individual white boards ● “Brain Dump”	● End of Unit Test ● Extended Constructed Response Questions ● Project ● Lab Analysis/Conclusion ● Demonstration with explanation & fielding questions	● Student-Taught Lesson (small groups of students will teach the class) ● BrainPop Video (students create their own BrainPop-style video to explain a science phenomena) ● Advice Column (students write advice to an “anonymous friend” to help solve a scientific problem) ● Trivia Game (students create the questions and answers to be used in a review game)

	• Observations & informal discussions with small groups or individuals during labs • Silent classroom polls		
Unit Pre-Assessment(s) *What do they already know?*	• Pre-Test (paper-based, Google Form, Plickers, etc.) • Teacher-generated warm up questions with class discussion • Individual Whiteboards (students hold up agree/disagree or short answers in response to questions or statements) • Blind-Polling with Thumbs Up/Down (teacher asks a question or provides a vocabulary word; students close their eyes and demonstrate their comfort level with the information by indicating a thumbs up or down) • "Four Corners" (students are given a series of statements, decide for each one the level to which they agree/disagree, and then move to the appropriate area of the classroom identified with one of the options. Students will discuss their positions with the others in their group and present their opinions to the rest of the class) • KWL Chart (Prior learning statement as per the NJDOE's model curriculum) *By the end of Grade 6, students understand that:* • When two or more different substances are mixed, a new substance with different properties may be formed. • No matter what reaction or change in properties occurs, the total weight of the substances does not change		
Instructional Strategies/Student Activities	• Direct Instruction • Scaffolding • Guided Practice • Cooperative learning • Modeling • Learning Stations • Graphic organizers • Note-taking sheets • Turn and Talk / Think-Pair-Share		

	● Flexible grouping ● Student Choice Menu Project ● Inquiry-based learning ● RAFT assignments ● Self and Peer Review ● Word/picture/object sorts ● Read & Think Alouds			
Instructional/Assessment Scaffolds *(Modifications /Accommodations) – planned for prior to instruction*	**English Language Learners**	**Special Education Learners**	**Struggling Learners**	**Advanced Learners**
	● Preferential seating on an as-needed basis ● Buddy with a bilingual student (if able) ● Provide key vocabulary with definitions in native language at the start of each unit ● Provide leveled reading material ● Use native language (for written directions)	● Preferential seating on an as-needed basis ● Read directions aloud ● Highlight/underline key words ● Additional time ● Vary essay lengths ● Chunk projects or long-term assignments ● Read assessments aloud ● Modify format/ length of tests ● Allow oral responses ● Allow retakes ● Provide leveled reading material	● Preferential seating on an as-needed basis ● Read directions aloud ● Clarifying directions or conducting check-ins as needed ● Highlight/underline key words ● Additional time ● Concrete examples / examples related to personal interests or background ● Use of mnemonics ● Provide leveled reading material ● Differentiated grouping ● Use of visual representations of concepts ● Flexible grouping ● Provide study guides or copies of class notes prior to tests ● Allow retakes ● Chunk projects or long-term assignments ● Collaborate with after-school programs or clubs to extend learning opportunities.	● Learning stations ● Independent study ● Learning menus / Choice boards ● Virtual escape rooms (unit specific) ● Current event presentations ● Creation of presentation, video or written review of a science topic or phenomena to be posted on our classroom website and shared with peers

	● Allow use of online translator during independent work time ● Read directions aloud ● Highlight/underline key words ● Simplify language ● Single step directions ● Modify format/length of tests ● Allow oral responses ● Additional time ● Allow retakes ● Chunk projects or long-term assignments ● Use of visual representations of concepts	● Differentiated grouping ● Use of visual representations of concepts ● Small group instruction ● Read test passages/articles aloud (if assessing reading comprehension) ● Provide study guides or copies of class notes		
Differentiated	**Access** (Resources and/or Process)		**Expression** (Products and/or Performance)	

Instructional Methods: *(Multiple means for students to access content and multiple modes for student to express understanding)*	● Interactive Notebook/Note-taking sheet (guided notes, "doodle" notes, Cornell notes, etc.) ● Learning Stations with varied standard-based tasks ● Use of Promethean Board for discussions, visuals, note-taking, interactives, etc. ● Multi-level electronic texts (with audio capability) provided through Google Classroom ● Read & Think Alouds ● Flexible grouping ● Reteaching /Reviewing ● Targeting Different Senses Within the Lesson (verbal, video, hands-on, use of visuals, modeling/acting out, songs/chants, etc) ● Reflection & Goal-setting ● Free Study Time (student choice: reviewing of notes, completion of task cards, watching a video review, small-group game, work completion with teacher-	● Student choice during formal assessment style (eliminate a certain number of questions, answer open-ended option A or B, draw a diagram or explain, etc.) ● Menu Project / Choice Board ● Individual or Small-group presentation ● Rubric/criteria for success generated by teacher and students (may be different for different individuals/groups)
Vocabulary *Highlight key vocabulary*	Tier II - claim, evidence, reasoning, analyze, interpret, data, abundance, scarcity, competition, model, cycle, conservation, energy, probability, construct, data, observe, analyze, criteria, constraint, evaluate Tier III -	

(both Tier II and Tier III words)	Chemical reaction, Chemical formula, Chemical equation, Reactants, Products, Law of conservation of mass, Exothermic, Endothermic, Law of conservation of energy
Integration of Technology SAMR	Substitution: ● Taking notes via Google Docs ● Typing up responses to questioning and sharing with teacher/peer ● Completing graphic organizers via Google Docs or Slides ● Completing digital worksheets via Google Forms, Docs, or Slides ● Use of online-based texts with dictionary and highlighting features ● Conducting research via Google ● Use of Google Classroom for providing and organizing materials Augmentation: ● Completing quizzes/tests via Google Forms ● Researching within Google Docs to add information and graphics to enhance notes ● Use of online-based texts with embedded videos and links to enhance understanding ● Using Gizmos, Phet, and other virtual labs/simulations ● Creation of scientific diagrams/models using Google Drawings ● Sharing videos, simulations, and other "extras" via Google Classroom to supplement notes and understanding ● Posting student created material via Padlet for sharing with peers ● Use of Quizizz or Kahoot! to review before a test Modification: ● Collaboration of students on a multimedia/slides project ● Peer-editing multimedia work ● Using Gizmos, Phet, and other virtual labs/simulations ● Creation of presentation, video, or written review of a science topic or phenomena posted on our classroom website ● Student completion of WebQuests ● Student participation in Digital Escape Rooms ● Plickers assessments

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Interdisciplinary Connections NJ Student Learning Standards	● *English Language Arts* ● Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks *related to chemical reactions that release energy and some that store energy.* ● Cite specific textual evidence to support analysis of science and technical texts on the design and modification of a device that controls the transfer of energy to the environment using factors such as type and concentration of a substance. ● ·Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text *on the design and modification of a device that controls the transfer of energy to the environment using factors such as type and concentration of a substance.* ● *Conduct* research on the design and modification of a device that controls the transfer of energy to the environment using factors such as type and concentration of a substance to answer a question (including a self-generated question), drawing on several sources and generating additional related, focused questions that allow for multiple avenues of exploration. ● Draw evidence from informational texts to support analysis, reflection, and research on the design and modification of a device that controls the transfer of energy to the environment using factors such as type and concentration of a substance. ● ·Include multimedia components and visual displays in presentations to clarify claims and findings and emphasize salient points *on the design and modification of a device that controls the transfer of energy to the environment.* ***Mathematics*** ● Integrate quantitative information expressed in words about atoms before and after a chemical process with a version of that information expressed in a physical model or drawing, including digital forms. ● Reason quantitatively and abstractly during communication about melting or boiling points. ● Use mathematics to model the law of conservation of matter. ● Use ratio and rate reasoning to describe how the total number of atoms does not change in a chemical reaction, and thus mass is conserved.

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Reason quantitatively and abstractly: Reason quantitatively using numbers to represent the criteria (amount, time, and temperature of substance) when testing a device that either releases or absorbs thermal energy by chemical processes; reason abstractly by assigning labels or symbols.
Collect and analyze numerical data from tests of a device that either releases or absorbs thermal energy by chemical processes. Determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success. Pose problems with positive and negative rational numbers in any form, using tools strategically. Apply properties of operations to calculate the numerical data with numbers in any form, convert between forms as appropriate, and assess the reasonableness of answers using mental computations and estimation strategies.
Develop a probability model and use it as part of an iterative process for testing to find the probability that a promising design solution will lead to an optimal solution. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy in order to ultimately develop an optimal design.

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Resources/ Materials	● LabAids Activity 3-Physical and Chemical Properties ● LabAids Activity 4- Determining Density ● LabAids Activity 5- Evaluating Properties of Materials ● LabAids Activity 6- Modeling Molecules ● Gizmos Simulations (https://www.explorelearning.com/) - ● Discovery Education (https://www.discoveryeducation.com/) ● Scholastic Super Science Magazine (https://superscience.scholastic.com/) ● ReadWorks (https://www.readworks.org)	

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Instructional Unit Map				
Course Title: 7th Grade Science				
Unit Title	Unit 4: Structure and Function: How do cells contribute to the functioning of an organism?		**Start Date:**	December
			Length of Unit:	Approx. 15 days
Content Standards *What do we want them to know, understand, & do?*	MS-LS1-1. Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells.	**Learning Goals**	● This unit of study begins with students distinguishing between living and nonliving things. ● Students will conduct investigations examining both living and nonliving things and using the data they collect as evidence for making this distinction. During this investigation, students will study living things that are made of cells, either one cell or many different numbers and types of cells. ● Students will also study nonliving things, some of which are made up of cells. ● Students will understand that life is a quality that distinguishes living things—composed of living cells—from once-living things that have died or things that never lived.	

	MS-LS1-2. Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function.		

Essential Questions	● How will astrobiologists know if they have found life elsewhere in the solar system? ● How do the functions of cells support an entire organism?

Assessments *How will we know they have gained the knowledge & skills?*	**Formative**	**Summative**	**Alternative**
	● Choral and individual responses to questioning ● Entrance/Exit Tickets ● Quizzes (paper-based and/or Google forms) ● Signals (thumbs up/down, sit/stand, and other answering strategies) ● Graded Classwork/ Homework ● Plickers Assessments ● Kahoot games/reviews ● Individual white boards ● “Brain Dump” ● Observations & informal discussions with small groups or individuals during labs ● Silent classroom polls	● End of Unit Test ● Extended Constructed Response Questions ● Project ● Lab Analysis/Conclusion ● Demonstration with explanation & fielding questions	● Student-Taught Lesson (small groups of students will teach the class) ● BrainPop Video (students create their own BrainPop-style video to explain a science phenomena) ● Advice Column (students write advice to an “anonymous friend” to help solve a scientific problem) ● Trivia Game (students create the questions and answers to be used in a review game)

Unit Pre-Assessment(s) *What do they already know?*	● Pre-Test (paper-based, Google Form, Plickers, etc.) ● Teacher-generated warm up questions with class discussion ● Individual Whiteboards (students hold up agree/disagree or short answers in response to questions or statements) ● Blind-Polling with Thumbs Up/Down (teacher asks a question or provides a vocabulary word; students close their eyes and demonstrate their comfort level with the information by indicating a thumbs up or down) ● "Four Corners" (students are given a series of statements, decide for each one the level to which they agree/disagree, and then move to the appropriate area of the classroom identified with one of the options. Students will discuss their positions with the others in their group and present their opinions to the rest of the class) ● KWL Chart (Prior learning statement as per the NJDOE's model curriculum) *By the end of Grade 6, students understand that:* ● • Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior, and reproduction
Instructional Strategies/Student Activities	● Direct Instruction ● Scaffolding ● Guided Practice ● Cooperative learning ● Modeling ● Learning Stations ● Graphic organizers ● Note-taking sheets ● Turn and Talk / Think-Pair-Share ● Flexible grouping ● Student Choice Menu Project ● Inquiry-based learning ● RAFT assignments ● Self and Peer Review ● Word/picture/object sorts ● Read & Think Alouds

Instructional/Assessment Scaffolds *(Modifications /Accommodations) – planned for prior to instruction*	**English Language Learners**	**Special Education Learners**	**Struggling Learners**	**Advanced Learners**
	● Preferential seating on an as-needed basis ● Buddy with a bilingual student (if able) ● Provide key vocabulary with definitions in native language at the start of each unit ● Provide leveled reading material ● Use native language (for written directions) ● Allow use of online translator during independent work time ● Read directions aloud	● Preferential seating on an as-needed basis ● Read directions aloud ● Highlight/underline key words ● Additional time ● Vary essay lengths ● Chunk projects or long-term assignments ● Read assessments aloud ● Modify format/ length of tests ● Allow oral responses ● Allow retakes ● Provide leveled reading material ● Differentiated grouping ● Use of visual representations of concepts ● Small group instruction ● Read test passages/articles	● Preferential seating on an as-needed basis ● Read directions aloud ● Clarifying directions or conducting check-ins as needed ● Highlight/underline key words ● Additional time ● Concrete examples / examples related to personal interests or background ● Use of mnemonics ● Provide leveled reading material ● Differentiated grouping ● Use of visual representations of concepts ● Flexible grouping ● Provide study guides or copies of class notes prior to tests ● Allow retakes ● Chunk projects or long-term assignments ● Collaborate with after-school programs or clubs to extend learning opportunities.	● Learning stations ● Independent study ● Learning menus / Choice boards ● Virtual escape rooms (unit specific) ● Current event presentations ● Creation of presentation, video or written review of a science topic or phenomena to be posted on our classroom website and shared with peers

	● Highlight/underline key words ● Simplify language ● Single step directions ● Modify format/length of tests ● Allow oral responses ● Additional time ● Allow retakes ● Chunk projects or long-term assignments ● Use of visual representations of concepts	aloud (if assessing reading comprehension) ● Provide study guides or copies of class notes		
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Vocabulary *Highlight key vocabulary (both Tier II and Tier III words)*	Tier II - claim, evidence, reasoning, analyze, interpret, data, abundance, scarcity, competition, model, cycle, conservation, energy, probability, construct, data, observe, analyze, criteria, constraint, evaluate classification, descriptions, similarities, differences, Tier III- animals, living, non-living, dead, cells,, alive, identify, characteristics, plants, habitat, food, water, air, grow, change, breath, reproduce, environment, ecosystem, soil, light, minerals, bacteria, fungus, protist, community, biodiversity, observe, life cycle.	
Integration of Technology SAMR	Substitution: ● Taking notes via Google Docs ● Typing up responses to questioning and sharing with teacher/peer ● Completing graphic organizers via Google Docs or Slides ● Completing digital worksheets via Google Forms, Docs, or Slides ● Use of online-based texts with dictionary and highlighting features	

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• Conduct a short research project collecting evidence that living things are made of cells to answer a question (including a self-generated question). Draw on several sources and generate additional related, focused questions that allow for multiple avenues of exploration.
• Integrate multimedia and visual displays of cells and specific cell parts into presentations to clarify information, strengthen claims and evidence, and add interest.
Mathematics
• Use variables to represent two quantities, such as the number of cells that makes up an organism and units representing the size or type of the organism, and determine the relationship between these two variables.
• Write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation.
• Use variables to represent two quantities in a real-world problem that change in relationship to one another—for example, determining the ratio of a cell's surface area to its volume. Write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the</td></tr>
<tr><td>21st Century Themes/Skills
P21 Framework</td><td>Themes</td><td>Skills</td></tr>
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● Tools and instruments (e.g., rulers, balances, thermometers, graduated</td><td>Life and Career Skills
● Flexibility and Adaptability
● Initiative and Self-Direction
● Social and Cross-Cultural Skills
● Productivity and Accountability
● Leadership and Responsibility

Learning and Innovation Skills
● Creativity and Innovation
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	cylinders, telescopes, microscopes) are used in scientific exploration to gather data and help answer questions about the natural world. Engineering design can develop and improve such technologies. Scientific discoveries about the natural world can often lead to new and improved technologies, which are developed through the engineering design process. Knowledge of relevant scientific concepts and research findings is important in engineering. ● Engineering advances have led to important discoveries in virtually every field of science, and scientific discoveries have led to the development of entire industries and engineered systems. In order to design better technologies, new science may need to be explored (e.g., materials research prompted by desire for better batteries or solar cells, biological questions raised by medical problems). Technologies in turn extend the measurement, exploration, modeling, and computational capacity of scientific investigations.	Information, Media, and Technology Skills ● Information Literacy ● Media Literacy ● Information Communication Technology Literacy

Resources/ Materials	• LabAids: From Cells to Organisms Activity 1- Disease Outbreak! • LabAids: From Cells to Organisms Activity 2- An Invisible Organism • LabAids: From Cells to Organisms Activity 3- Evidence of Microscopic Organisms • LabAids: From Cells to Organisms Activity 4- The History of Cell Theory • Gizmos Simulations (https://www.explorelearning.com/) • Discovery Education (https://www.discoveryeducation.com/) • Scholastic Super Science Magazine (https://superscience.scholastic.com/) • ReadWorks (https://www.readworks.org) • PBS Learning Media (https://www.pbslearningmedia.org/) • CK-12 (https://www.ck12.org/) • BrainPop (https://www.brainpop.com/) • CrashCourseKids (https://www.youtube.com/user/crashcoursekids) • StudyJams! (https://studyjams.scholastic.com/studyjams/) • Teacher Generated Materials • Learning Stations • Task Cards

Instructional Unit Map			
Course Title: 7th Grade Science			
Unit Title	Unit 5: Body Systems: What are humans made of?	**Start Date:**	January
		Length of Unit:	Approx. 15 days
Content Standards *What do we want them*	MS-LS1-3. Use arguments supported by evidence for how	**Learning Goals**	• Students will use informational text and models to support their understanding that the body is a system of interacting subsystems. Instruction should begin with students understanding that the cell is a specialized structure that is a functioning system.

to know, understand, & do?	the body is a system of interacting subsystems composed of groups of cells. MS-LS1-8. Gather and synthesize information that sensory receptors respond to stimuli by sending messages to the brain for immediate behavior or storage as memories.		• Students will need to understand that different types of cells have different functions; therefore, each cell system is specialized to perform its particular function. Building on this understanding, students learn that different types of cells serve as subsystems for larger systems called tissues. • Students will demonstrate their understanding of this concept by writing an argument, supported by evidence, to support an explanation of how the body is a system of interacting subsystems.
Essential Questions	• What is the evidence that a body is actually a system of interacting subsystems composed of groups of interacting cells? • How do organisms receive and respond to information from their environment?		

Assessments *How will we know they have gained the knowledge & skills?*	**Formative**	**Summative**	**Alternative**
	• Choral and individual responses to questioning • Entrance/Exit Tickets • Quizzes (paper-based and/or Google forms)	• End of Unit Test • Extended Constructed Response Questions • Project • Lab Analysis/Conclusion • Demonstration with explanation & fielding questions	• Student-Taught Lesson (small groups of students will teach the class) • BrainPop Video (students create their own BrainPop-style video to explain a science phenomena) • Advice Column (students write advice to an “anonymous friend” to help solve a scientific problem) • Trivia Game (students create the questions and answers to be used in a review game)

	• Signals (thumbs up/down, sit/stand, and other answering strategies) • Graded Classwork/ Homework • Plickers Assessments • Kahoot games/reviews • Individual white boards • "Brain Dump" • Observations & informal discussions with small groups or individuals during labs • Silent classroom polls		
Unit Pre-Assessment(s) *What do they already know?*	• Pre-Test (paper-based, Google Form, Plickers, etc.) • Teacher-generated warm up questions with class discussion • Individual Whiteboards (students hold up agree/disagree or short answers in response to questions or statements) • Blind-Polling with Thumbs Up/Down (teacher asks a question or provides a vocabulary word; students close their eyes and demonstrate their comfort level with the information by indicating a thumbs up or down) • "Four Corners" (students are given a series of statements, decide for each one the level to which they agree/disagree, and then move to the appropriate area of the classroom identified with one of the options. Students will discuss their positions with the others in their group and present their opinions to the rest of the class) • KWL Chart (Prior learning statement as per the NJDOE's model curriculum) *By the end of Grade 6, students understand that:*		

<table>
<tr><td></td><td colspan="4">• Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior, and reproduction</td></tr>
<tr><td>Instructional Strategies/Student Activities</td><td colspan="4">● Direct Instruction
● Scaffolding
● Guided Practice
● Cooperative learning
● Modeling
● Learning Stations
● Graphic organizers
● Note-taking sheets
● Turn and Talk / Think-Pair-Share
● Flexible grouping
● Student Choice Menu Project
● Inquiry-based learning
● RAFT assignments
● Self and Peer Review
● Word/picture/object sorts
● Read & Think Alouds</td></tr>
<tr><td rowspan="2">Instructional/Assessment Scaffolds (Modifications /Accommodations) – planned for prior to instruction</td><td>English Language Learners</td><td>Special Education Learners</td><td>Struggling Learners</td><td>Advanced Learners</td></tr>
<tr><td>● Preferential seating on an as-needed basis
● Buddy with a bilingual student (if able)</td><td>● Preferential seating on an as-needed basis
● Read directions aloud
● Highlight/underline key words
● Additional time</td><td>● Preferential seating on an as-needed basis
● Read directions aloud
● Clarifying directions or conducting check-ins as needed
● Highlight/underline key words
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● Concrete examples / examples related to personal interests or background
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● Provide leveled reading material</td><td>● Learning stations
● Independent study
● Learning menus / Choice boards
● Virtual escape rooms (unit specific)
● Current event presentations
● Creation of presentation, video or written review of a science topic or phenomena to be posted on our</td></tr>
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	● Provide key vocabulary with definitions in native language at the start of each unit ● Provide leveled reading material ● Use native language (for written directions) ● Allow use of online translator during independent work time ● Read directions aloud ● Highlight/underline key words ● Simplify language ● Single step directions ● Modify format/length of tests ● Allow oral responses	● Vary essay lengths ● Chunk projects or long-term assignments ● Read assessments aloud ● Modify format/ length of tests ● Allow oral responses ● Allow retakes ● Provide leveled reading material ● Differentiated grouping ● Use of visual representations of concepts ● Small group instruction ● Read test passages/articles aloud (if assessing reading comprehension) ● Provide study guides or copies of class notes	● Differentiated grouping ● Use of visual representations of concepts ● Flexible grouping ● Provide study guides or copies of class notes prior to tests ● Allow retakes ● Chunk projects or long-term assignments ● Collaborate with after-school programs or clubs to extend learning opportunities.	classroom website and shared with peers

	• Additional time • Allow retakes • Chunk projects or long-term assignments • Use of visual representations of concepts			
Differentiated Instructional Methods: *(Multiple means for students to access content and multiple modes for student to express understanding)*	**Access** (Resources and/or Process)		**Expression** (Products and/or Performance)	
	• Interactive Notebook/Note-taking sheet (guided notes, "doodle" notes, Cornell notes, etc.) • Learning Stations with varied standard-based tasks • Use of Promethean Board for discussions, visuals, note-taking, interactives, etc. • Multi-level electronic texts (with audio capability) provided through Google Classroom • Read & Think Alouds • Flexible grouping • Reteaching /Reviewing • Targeting Different Senses Within the Lesson (verbal, video, hands-on, use of visuals, modeling/acting out, songs/chants, etc)		• Student choice during formal assessment style (eliminate a certain number of questions, answer open-ended option A or B, draw a diagram or explain, etc.) • Menu Project / Choice Board • Individual or Small-group presentation • Rubric/criteria for success generated by teacher and students (may be different for different individuals/groups)	

	● Reflection & Goal-setting ● Free Study Time (student choice: reviewing of notes, completion of task cards, watching a video review, small-group game, work completion with teacher-	
Vocabulary *Highlight key vocabulary (both Tier II and Tier III words)*	Tier II - claim, evidence, reasoning, analyze, interpret, data, abundance, scarcity, competition, model, cycle, conservation, energy, probability, construct, data, observe, analyze, criteria, constraint, evaluate classification, descriptions, similarities, differences, Tier III- Blood, Bodysystems, Bones, Brain, Cells, Circulatory, Digestive, Esophagus, Heart, Liver, Lungs, Muscular, Nervous, Respiratory, Skeletal, Spinal Cord, Stomach, Trachea	
Integration of Technology <u>SAMR</u>	Substitution: ● Taking notes via Google Docs ● Typing up responses to questioning and sharing with teacher/peer ● Completing graphic organizers via Google Docs or Slides ● Completing digital worksheets via Google Forms, Docs, or Slides ● Use of online-based texts with dictionary and highlighting features ● Conducting research via Google ● Use of Google Classroom for providing and organizing materials Augmentation: ● Completing quizzes/tests via Google Forms ● Researching within Google Docs to add information and graphics to enhance notes ● Use of online-based texts with embedded videos and links to enhance understanding ● Using Gizmos, Phet, and other virtual labs/simulations ● Creation of scientific diagrams/models using Google Drawings ● Sharing videos, simulations, and other “extras” via Google Classroom to supplement notes and understanding	

	● Posting student created material via Padlet for sharing with peers ● Use of Quizizz or Kahoot! to review before a test Modification: ● Collaboration of students on a multimedia/slides project ● Peer-editing multimedia work ● Using Gizmos, Phet, and other virtual labs/simulations ● Creation of presentation, video, or written review of a science topic or phenomena posted on our classroom website ● Student completion of WebQuests ● Student participation in Digital Escape Rooms ● Plickers assessments Redefinition: ● Collaboration of students on a multimedia/slides project ● Posting, reviewing, and commenting on student created material via Padlet ● Student-Created and Student-Taught Lesson with multimedia presentation ● Use of Quizizz or Kahoot! to review before a test ● Plickers assessments
Interdisciplinary Connections NJ Student Learning Standards	**English Language Arts** • Cite specific textual evidence to support analysis of science and technical texts that provide evidence for how the body is a system of interacting subsystems composed of cells. • Trace and evaluate a text's argument that the body is a system of interacting subsystems composed of cells, distinguishing claims that are supported by reasons **Mathematics** •N/A

21st Century Themes/Skills P21 Framework	**Themes**	**Skills**
	● People encounter questions about the natural world every day. There are many types of tools produced by engineering that can be used in science to help answer these questions through observation or measurement. Observations and measurements are also used in engineering to help test and refine design ideas. ● Tools and instruments (e.g., rulers, balances, thermometers, graduated cylinders, telescopes, microscopes) are used in scientific exploration to gather data and help answer questions about the natural world. Engineering design can develop and improve such technologies. Scientific discoveries about the natural world can often lead to new and improved technologies, which are developed through the engineering design process. Knowledge of relevant scientific concepts and research findings is important in engineering. ● Engineering advances have led to important discoveries in virtually every field of science, and scientific discoveries have led to the development of entire industries and engineered systems. In order to design better technologies, new science may need to be explored (e.g., materials research prompted by desire for better batteries or solar cells, biological questions raised by medical problems). Technologies in turn extend the measurement, exploration, modeling, and computational capacity of scientific investigations.	Life and Career Skills ● Flexibility and Adaptability ● Initiative and Self-Direction ● Social and Cross-Cultural Skills ● Productivity and Accountability ● Leadership and Responsibility Learning and Innovation Skills ● Creativity and Innovation ● Critical Thinking and Problem Solving ● Communication and Collaboration Information, Media, and Technology Skills ● Information Literacy ● Media Literacy ● Information Communication Technology Literacy
Resources/ Materials	● LabAids: From Cells to Organisms Activity 9- Observing Multicellular Organisms ● LabAids: From Cells to Organisms Activity 10- Cells, Tissues, and Organs ● LabAids: From Cells to Organisms Activity 14- Fighting Disease ● Gizmos Simulations (https://www.explorelearning.com/) -	

	• Discovery Education (https://www.discoveryeducation.com/) • Scholastic Super Science Magazine (https://superscience.scholastic.com/) • PBS Learning Media (https://www.pbslearningmedia.org/) • CK-12 (https://www.ck12.org/) • BrainPop (https://www.brainpop.com/) • CrashCourseKids (https://www.youtube.com/user/crashcoursekids) • StudyJams! (https://studyjams.scholastic.com/studyjams/) • Teacher Generated Materials • Learning Stations • Task Cards

Instructional Unit Map			
Course Title: 7th Grade Science			
Unit Title	Unit 6: Inheritance and Variation of Traits: Why do Kids Look Like Their Parents?	**Start Date:**	March/May
		Length of Unit:	Approx. 25 days
Content Standards *What do we want them to know, understand, & do?*	MS-LS3-1 Develop and use a model to describe why structural changes to genes (mutations) located on chromosomes may affect proteins and may result in	**Learning Goals**	• Students will learn that genes are located in the chromosomes of cells and each chromosome pair contains two variants of each gene. • Students will need to make distinctions between chromosomes and genes and understand the connections between them. DNA will be introduced in high school. • Students will learn that chromosomes are the genetic material that is found in the nucleus of the cell and that chromosomes are made up of genes. They will also learn that each gene chiefly controls the production of specific proteins, which in turn affect the traits of the individual.

	harmful, beneficial, or neutral effects to the structure and function of the organism. MS-LS3-2 Develop and use a model to describe why asexual reproduction results in offspring with identical genetic information and sexual reproduction results in offspring with genetic variation.		

Essential Questions	● How do asexual reproduction and sexual reproduction affect the genetic variation of offspring? ● How do structural changes to genes (mutations) located on chromosomes affect proteins or affect the structure and function of an organism?

Assessments *How will we know they have gained the knowledge & skills?*	**Formative**	**Summative**	**Alternative**
	● Choral and individual responses to questioning ● Entrance/Exit Tickets ● Quizzes (paper-based and/or Google forms) ● Signals (thumbs up/down, sit/stand, and other answering strategies) ● Graded Classwork/ Homework ● Plickers Assessments ● Kahoot games/reviews ● Individual white boards ● “Brain Dump”	● End of Unit Test ● Extended Constructed Response Questions ● Project ● Lab Analysis/Conclusion ● Demonstration with explanation & fielding questions	● Student-Taught Lesson (small groups of students will teach the class) ● BrainPop Video (students create their own BrainPop-style video to explain a science phenomena) ● Advice Column (students write advice to an “anonymous friend” to help solve a scientific problem) ● Trivia Game (students create the questions and answers to be used in a review game)

	• Observations & informal discussions with small groups or individuals during labs • Silent classroom polls		
Unit Pre-Assessment(s) *What do they already know?*	• Pre-Test (paper-based, Google Form, Plickers, etc.) • Teacher-generated warm up questions with class discussion • Individual Whiteboards (students hold up agree/disagree or short answers in response to questions or statements) • Blind-Polling with Thumbs Up/Down (teacher asks a question or provides a vocabulary word; students close their eyes and demonstrate their comfort level with the information by indicating a thumbs up or down) • "Four Corners" (students are given a series of statements, decide for each one the level to which they agree/disagree, and then move to the appropriate area of the classroom identified with one of the options. Students will discuss their positions with the others in their group and present their opinions to the rest of the class) • KWL Chart (Prior learning statement as per the NJDOE's model curriculum) *By the end of Grade 6, students understand that:* • Many characteristics of organisms are inherited from parents. • Other characteristics result from individuals' interactions with the environment, which can range from diet to learning. Many characteristics involve both inheritance and environment. • ·Different organisms vary in how they look and function because they have different inherited information. • The environment also affects the traits that an organism develops.		
Instructional Strategies/Student Activities	• Direct Instruction • Scaffolding • Guided Practice • Cooperative learning • Modeling • Learning Stations • Graphic organizers • Note-taking sheets • Turn and Talk / Think-Pair-Share		

	● Flexible grouping ● Student Choice Menu Project ● Inquiry-based learning ● RAFT assignments ● Self and Peer Review ● Word/picture/object sorts ● Read & Think Alouds			
Instructional/Assessment Scaffolds *(Modifications /Accommodations) – planned for prior to instruction*	**English Language Learners**	**Special Education Learners**	**Struggling Learners**	**Advanced Learners**
	● Preferential seating on an as-needed basis ● Buddy with a bilingual student (if able) ● Provide key vocabulary with definitions in native language at the start of each unit ● Provide leveled reading material ● Use native language (for written directions)	● Preferential seating on an as-needed basis ● Read directions aloud ● Highlight/underline key words ● Additional time ● Vary essay lengths ● Chunk projects or long-term assignments ● Read assessments aloud ● Modify format/ length of tests ● Allow oral responses ● Allow retakes ● Provide leveled reading material	● Preferential seating on an as-needed basis ● Read directions aloud ● Clarifying directions or conducting check-ins as needed ● Highlight/underline key words ● Additional time ● Concrete examples / examples related to personal interests or background ● Use of mnemonics ● Provide leveled reading material ● Differentiated grouping ● Use of visual representations of concepts ● Flexible grouping ● Provide study guides or copies of class notes prior to tests ● Allow retakes ● Chunk projects or long-term assignments ● Collaborate with after-school programs or clubs to extend learning opportunities.	● Learning stations ● Independent study ● Learning menus / Choice boards ● Virtual escape rooms (unit specific) ● Current event presentations ● Creation of presentation, video or written review of a science topic or phenomena to be posted on our classroom website and shared with peers

	● Allow use of online translator during independent work time ● Read directions aloud ● Highlight/underline key words ● Simplify language ● Single step directions ● Modify format/length of tests ● Allow oral responses ● Additional time ● Allow retakes ● Chunk projects or long-term assignments ● Use of visual representations of concepts	● Differentiated grouping ● Use of visual representations of concepts ● Small group instruction ● Read test passages/articles aloud (if assessing reading comprehension) ● Provide study guides or copies of class notes		
Differentiated	**Access** (Resources and/or Process)		**Expression** (Products and/or Performance)	

Instructional Methods: *(Multiple means for students to access content and multiple modes for student to express understanding)*	● Interactive Notebook/Note-taking sheet (guided notes, "doodle" notes, Cornell notes, etc.) ● Learning Stations with varied standard-based tasks ● Use of Promethean Board for discussions, visuals, note-taking, interactives, etc. ● Multi-level electronic texts (with audio capability) provided through Google Classroom ● Read & Think Alouds ● Flexible grouping ● Reteaching /Reviewing ● Targeting Different Senses Within the Lesson (verbal, video, hands-on, use of visuals, modeling/acting out, songs/chants, etc) ● Reflection & Goal-setting ● Free Study Time (student choice: reviewing of notes, completion of task cards, watching a video review, small-group game, work completion with teacher-	● Student choice during formal assessment style (eliminate a certain number of questions, answer open-ended option A or B, draw a diagram or explain, etc.) ● Menu Project / Choice Board ● Individual or Small-group presentation ● Rubric/criteria for success generated by teacher and students (may be different for different individuals/groups)
Vocabulary *Highlight key vocabulary*	Tier II - claim, evidence, reasoning, analyze, interpret, data, abundance, scarcity, competition, model, cycle, conservation, energy, probability, construct, data, observe, analyze, criteria, constraint, evaluate classification, descriptions, similarities, differences,.	

(both Tier II and Tier III words)	Tier III- Allele,Heterozygous, Chromosome, Protein, Codominance, Hybrid, Recessive, DNA, Meiosis, Dominant, Somatic cell, Evolution, Mitosis, Sperm, Gametes, Mutation, Trait, Gene, Organelle, Transcription, Genetics,Genotype, Phenotype, Zygote
Integration of Technology SAMR	Substitution: ● Taking notes via Google Docs ● Typing up responses to questioning and sharing with teacher/peer ● Completing graphic organizers via Google Docs or Slides ● Completing digital worksheets via Google Forms, Docs, or Slides ● Use of online-based texts with dictionary and highlighting features ● Conducting research via Google ● Use of Google Classroom for providing and organizing materials Augmentation: ● Completing quizzes/tests via Google Forms ● Researching within Google Docs to add information and graphics to enhance notes ● Use of online-based texts with embedded videos and links to enhance understanding ● Using Gizmos, Phet, and other virtual labs/simulations ● Creation of scientific diagrams/models using Google Drawings ● Sharing videos, simulations, and other "extras" via Google Classroom to supplement notes and understanding ● Posting student created material via Padlet for sharing with peers ● Use of Quizizz or Kahoot! to review before a test Modification: ● Collaboration of students on a multimedia/slides project ● Peer-editing multimedia work ● Using Gizmos, Phet, and other virtual labs/simulations ● Creation of presentation, video, or written review of a science topic or phenomena posted on our classroom website ● Student completion of WebQuests ● Student participation in Digital Escape Rooms ● Plickers assessments

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• Trace and evaluate a text’s argument that the body is a system of interacting subsystems composed of cells, distinguishing claims that are supported by reasons
Mathematics
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<tr><td rowspan="2">21st Century Themes/Skills
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● Tools and instruments (e.g., rulers, balances, thermometers, graduated</td><td>Life and Career Skills
● Flexibility and Adaptability
● Initiative and Self-Direction
● Social and Cross-Cultural Skills
● Productivity and Accountability
● Leadership and Responsibility

Learning and Innovation Skills
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	cylinders, telescopes, microscopes) are used in scientific exploration to gather data and help answer questions about the natural world. Engineering design can develop and improve such technologies. Scientific discoveries about the natural world can often lead to new and improved technologies, which are developed through the engineering design process. Knowledge of relevant scientific concepts and research findings is important in engineering. ● Engineering advances have led to important discoveries in virtually every field of science, and scientific discoveries have led to the development of entire industries and engineered systems. In order to design better technologies, new science may need to be explored (e.g., materials research prompted by desire for better batteries or solar cells, biological questions raised by medical problems). Technologies in turn extend the measurement, exploration, modeling, and computational capacity of scientific investigations.	● Communication and Collaboration Information, Media, and Technology Skills ● Information Literacy ● Media Literacy ● Information Communication Technology Literacy
Resources/ Materials	● Meiosis: How Does the Process of Meiosis Reduce the Number of Chromosomes in Reproductive Cells? This lab activity introduces students to the process of meiosis at the chromosomal level. The guiding question for the investigation is: How does the process of meiosis reduce the number of chromosomes in reproductive cells? Students develop an explanatory model based on their knowledge of mitosis and how cells divide. Students are provided with pictures showing various stages of meiosis. Students sequence the pictures and provide a description of what they think may be going on during each stage.	

	• Pedigrees and the Inheritance of Lactose Intolerance: In this activity students analyze a family's pedigrees to make a claim based on evidence about mode of inheritance of a lactose intolerance trait, determine the most likely inheritance pattern of a trait, and analyze variations in DNA to make a claim about which variants are associated with specific traits. • How do Siamese Cats Get Their Color? This resource is an article from the January 2016 issue of The Science Teacher. The unit focuses on an essential question: How do Siamese cats develop their coloration? Students develop explanations by making connections among genes, proteins, and traits. The unit is designed to be implemented over six or seven instructional days. However, each activity can be used as a stand-alone instructional strategy. • Gizmos Simulations (https://www.explorelearning.com/) - • Discovery Education (https://www.discoveryeducation.com/) • Scholastic Super Science Magazine (https://superscience.scholastic.com/) • ReadWorks (https://www.readworks.org) • PBS Learning Media (https://www.pbslearningmedia.org/) • BrainPop (https://www.brainpop.com/) • CrashCourseKids (https://www.youtube.com/user/crashcoursekids) • StudyJams! (https://studyjams.scholastic.com/studyjams/) • Teacher Generated Materials • Learning Stations • Task Cards

Instructional Unit Map			
Course Title: 7th Grade Science			
Unit Title	Unit 7: Organization for Matter and Energy Flow in Organisms: How do some organisms turn electromagnetic radiation into matter and energy?	**Start Date:**	May
		Length of Unit:	Approx. 15 days

<table>
<tr><td>Content Standards
What do we want them to know, understand, & do?</td><td>MS-LS1-6. Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.
MS-LS1-7. Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism.</td><td>Learning Goals</td><td colspan="3">● Students will construct explanations about the role of photosynthesis using evidence obtained from sources, including the students' own experiments or outside sources.

● Students will represent the matter and energy involved in the process of photosynthesis using the equation for this reaction. Using this equation, students will build ball-and-stick models to show how carbon dioxide and water are rearranged to form glucose.
● Students will be able to draw conclusions about the cycling of matter and the flow of energy by observing plants such as elodea.
● Students can also trace the flow of energy using models such as energy pyramids.</td></tr>
<tr><td>Essential Questions</td><td colspan="4">● What is the role of photosynthesis in the cycling of matter and flow of energy into and out of an organism?

● How is food rearranged through chemical reactions to form new molecules that support growth and/or release energy as this matter moves through an organism?</td></tr>
<tr><td>Assessments</td><td>Formative</td><td>Summative</td><td colspan="2">Alternative</td></tr>
</table>

<table>
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<td>How will we know they have gained the knowledge & skills?</td>
<td>

Choral and individual responses to questioning
Entrance/Exit Tickets
Quizzes (paper-based and/or Google forms)
Signals (thumbs up/down, sit/stand, and other answering strategies)
Graded Classwork/ Homework
Plickers Assessments
Kahoot games/reviews
Individual white boards
“Brain Dump”
Observations & informal discussions with small groups or individuals during labs
Silent classroom polls

</td>
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End of Unit Test
Extended Constructed Response Questions
Project
Lab Analysis/Conclusion
Demonstration with explanation & fielding questions

</td>
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Student-Taught Lesson (small groups of students will teach the class)
BrainPop Video (students create their own BrainPop-style video to explain a science phenomena)
Advice Column (students write advice to an “anonymous friend” to help solve a scientific problem)
Trivia Game (students create the questions and answers to be used in a review game)

</td>
</tr>
<tr>
<td>Unit Pre-Assessment(s)
What do they already know?</td>
<td colspan="3">

Pre-Test (paper-based, Google Form, Plickers, etc.)
Teacher-generated warm up questions with class discussion
Individual Whiteboards (students hold up agree/disagree or short answers in response to questions or statements)
Blind-Polling with Thumbs Up/Down (teacher asks a question or provides a vocabulary word; students close their eyes and demonstrate their comfort level with the information by indicating a thumbs up or down)
“Four Corners” (students are given a series of statements, decide for each one the level to which they agree/disagree, and then move to the appropriate area of the classroom identified with one of the options. Students will discuss their positions with the others in their group and present their opinions to the rest of the class)
KWL Chart

(Prior learning statement as per the NJDOE’s model curriculum) By the end of Grade 6, students understand that

The energy released [from] food was once energy from the sun that was captured by plants in the chemical process that forms plant matter (from air and water).
Food provides animals with the materials they need for body repair and growth and the energy they need to maintain body warmth and for motion.

</td>
</tr>
</table>

	● The food of almost any kind of animal can be traced back to plants ● Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants. ● Some organisms, such as fungi and bacteria, break down dead organisms (both plants or plants parts and animals) and therefore operate as "decomposers." Decomposition eventually restores (recycles) some materials back to the soil. ● Organisms can survive only in environments in which their particular needs are met. ● A healthy ecosystem is one in which multiple species of different types are each able to meet their needs in a relatively stable web of life. ● Newly introduced species can damage the balance of an ecosystem. ● Matter cycles between the air and soil and among plants, animals, and microbes as these organisms live and die. ● Organisms obtain gases and water from the environment and release waste matter (gas, liquid, or solid) back into the environment.
Instructional Strategies/Student Activities	● Direct Instruction ● Scaffolding ● Guided Practice ● Cooperative learning ● Modeling ● Learning Stations ● Graphic organizers ● Note-taking sheets ● Turn and Talk / Think-Pair-Share ● Flexible grouping ● Student Choice Menu Project ● Inquiry-based learning ● RAFT assignments ● Self and Peer Review ● Word/picture/object sorts ● Read & Think Alouds

Instructional/Assessment Scaffolds *(Modifications /Accommodations) – planned for prior to instruction*	**English Language Learners**	**Special Education Learners**	**Struggling Learners**	**Advanced Learners**
	● Preferential seating on an as-needed basis ● Buddy with a bilingual student (if able) ● Provide key vocabulary with definitions in native language at the start of each unit ● Provide leveled reading material ● Use native language (for written directions) ● Allow use of online translator during independent work time ● Read directions aloud	● Preferential seating on an as-needed basis ● Read directions aloud ● Highlight/underline key words ● Additional time ● Vary essay lengths ● Chunk projects or long-term assignments ● Read assessments aloud ● Modify format/ length of tests ● Allow oral responses ● Allow retakes ● Provide leveled reading material ● Differentiated grouping ● Use of visual representations of concepts ● Small group instruction ● Read test passages/articles	● Preferential seating on an as-needed basis ● Read directions aloud ● Clarifying directions or conducting check-ins as needed ● Highlight/underline key words ● Additional time ● Concrete examples / examples related to personal interests or background ● Use of mnemonics ● Provide leveled reading material ● Differentiated grouping ● Use of visual representations of concepts ● Flexible grouping ● Provide study guides or copies of class notes prior to tests ● Allow retakes ● Chunk projects or long-term assignments ● Collaborate with after-school programs or clubs to extend learning opportunities.	● Learning stations ● Independent study ● Learning menus / Choice boards ● Virtual escape rooms (unit specific) ● Current event presentations ● Creation of presentation, video or written review of a science topic or phenomena to be posted on our classroom website and shared with peers

	● Highlight/underline key words ● Simplify language ● Single step directions ● Modify format/length of tests ● Allow oral responses ● Additional time ● Allow retakes ● Chunk projects or long-term assignments ● Use of visual representations of concepts	aloud (if assessing reading comprehension) ● Provide study guides or copies of class notes		
Differentiated Instructional Methods: *(Multiple means for students to access content and*	**Access** (Resources and/or Process)		**Expression** (Products and/or Performance)	
	● Interactive Notebook/Note-taking sheet (guided notes, "doodle" notes, Cornell notes, etc.) ● Learning Stations with varied standard-based tasks ● Use of Promethean Board for discussions, visuals, note-taking, interactives, etc. ● Multi-level electronic texts (with		● Student choice during formal assessment style (eliminate a certain number of questions, answer open-ended option A or B, draw a diagram or explain, etc.) ● Menu Project / Choice Board ● Individual or Small-group presentation ● Rubric/criteria for success generated by teacher and students (may be different for different individuals/groups)	

multiple modes for student to express understanding)	audio capability) provided through Google Classroom ● Read & Think Alouds ● Flexible grouping ● Reteaching /Reviewing ● Targeting Different Senses Within the Lesson (verbal, video, hands-on, use of visuals, modeling/acting out, songs/chants, etc) ● Reflection & Goal-setting ● Free Study Time (student choice: reviewing of notes, completion of task cards, watching a video review, small-group game, work completion with teacher-	
Vocabulary *Highlight key vocabulary (both Tier II and Tier III words)*	Tier II - claim, evidence, reasoning, analyze, interpret, data, abundance, scarcity, competition, model, cycle, conservation, energy, probability, construct, data, observe, analyze, criteria, constraint, evaluate classification, descriptions, similarities, differences,. Tier III- Energy Pyramid, Food Web, Food Chain, Decomposer, Scavenger, Omnivore, Carnivore, Herbivore, Consumer, Producer	
Integration of Technology SAMR	Substitution: ● Taking notes via Google Docs ● Typing up responses to questioning and sharing with teacher/peer ● Completing graphic organizers via Google Docs or Slides ● Completing digital worksheets via Google Forms, Docs, or Slides ● Use of online-based texts with dictionary and highlighting features	

	● Conducting research via Google ● Use of Google Classroom for providing and organizing materials Augmentation: ● Completing quizzes/tests via Google Forms ● Researching within Google Docs to add information and graphics to enhance notes ● Use of online-based texts with embedded videos and links to enhance understanding ● Using Gizmos, Phet, and other virtual labs/simulations ● Creation of scientific diagrams/models using Google Drawings ● Sharing videos, simulations, and other "extras" via Google Classroom to supplement notes and understanding ● Posting student created material via Padlet for sharing with peers ● Use of Quizizz or Kahoot! to review before a test Modification: ● Collaboration of students on a multimedia/slides project ● Peer-editing multimedia work ● Using Gizmos, Phet, and other virtual labs/simulations ● Creation of presentation, video, or written review of a science topic or phenomena posted on our classroom website ● Student completion of WebQuests ● Student participation in Digital Escape Rooms ● Plickers assessments Redefinition: ● Collaboration of students on a multimedia/slides project ● Posting, reviewing, and commenting on student created material via Padlet ● Student-Created and Student-Taught Lesson with multimedia presentation ● Use of Quizizz or Kahoot! to review before a test ● Plickers assessments

<table>
<tr><td>Interdisciplinary Connections
NJ Student Learning Standards</td><td colspan="2">English Language Arts
Cite specific textual evidence to support analysis of science and technical texts about the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.
Determine the central ideas about the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinion.
Write informative/explanatory texts to examine the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms, and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.
Draw evidence from informational texts to support analysis, reflection, and research about the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms
Integrate multimedia and visual displays into presentations about how food is rearranged through chemical reactions to form new molecules that support growth and/or release energy as the matter moves through an organism to clarify information, strengthen claims and evidence, and add interest.
Mathematics
Use variables to represent two quantities involved in the process whereby photosynthesis plays a part in the cycling of matter and energy into and out of organisms. Write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation.</td></tr>
<tr><td>21st Century Themes/Skills
P21 Framework</td><td>Themes</td><td>Skills</td></tr>
<tr><td></td><td>People encounter questions about the natural world every day. There are many types of tools produced by engineering that can be used in science to help answer these questions through observation or measurement. Observations and measurements are also used in engineering to help test and refine design ideas.
Tools and instruments (e.g., rulers, balances, thermometers, graduated cylinders, telescopes, microscopes) are</td><td>Life and Career Skills
Flexibility and Adaptability
Initiative and Self-Direction
Social and Cross-Cultural Skills
Productivity and Accountability
Leadership and Responsibility
Learning and Innovation Skills
Creativity and Innovation
Critical Thinking and Problem Solving</td></tr>
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	used in scientific exploration to gather data and help answer questions about the natural world. Engineering design can develop and improve such technologies. Scientific discoveries about the natural world can often lead to new and improved technologies, which are developed through the engineering design process. Knowledge of relevant scientific concepts and research findings is important in engineering. ● Engineering advances have led to important discoveries in virtually every field of science, and scientific discoveries have led to the development of entire industries and engineered systems. In order to design better technologies, new science may need to be explored (e.g., materials research prompted by desire for better batteries or solar cells, biological questions raised by medical problems). Technologies in turn extend the measurement, exploration, modeling, and computational capacity of scientific investigations.	● Communication and Collaboration Information, Media, and Technology Skills ● Information Literacy ● Media Literacy ● Information Communication Technology Literacy
Resources/ Materials	● LabAids From Cells to Organisms: Activity 11 Energy and Matter in Cells ● LabAids From Cells to Organisms: Activity 13 A Plants Source of Energy ● Plant Growth and Gas Exchange Unit: This model unit from Michigan State University includes 11 lessons that guide students through the process of collecting evidence and developing explanations of where the dry matter of plants comes from and of the roles of photosynthesis and respiration in the carbon cycle. (https://ngss.nsta.org/Resource.aspx?ResourceID=247) ● Gizmos Simulations (https://www.explorelearning.com/) -	

	• Discovery Education (https://www.discoveryeducation.com/) • Scholastic Super Science Magazine (https://superscience.scholastic.com/) • ReadWorks (https://www.readworks.org) • PBS Learning Media (https://www.pbslearningmedia.org/) • CK-12 (https://www.ck12.org/) • BrainPop (https://www.brainpop.com/) • CrashCourseKids (https://www.youtube.com/user/crashcoursekids) • StudyJams! (https://studyjams.scholastic.com/studyjams/) • Teacher Generated Materials • Learning Stations • Task Cards

Instructional Unit Map			
Course Title: 7th Grade Science			
Unit Title	Unit 8: Earth Systems: If no one was there, how do we know Earth's history?	**Start Date:**	May/June
		Length of Unit:	Approx. 30 days

Content Standards *What do we want them to know, understand, & do?*	MS-ESS1-4. Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth's 4.6-billion-year-old history. MS-ESS2-1. Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process. MS-ESS2-2. Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales. MS-ESS2-2. Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales. MS-ESS2-3. Analyze and interpret data on the distribution of fossils and rocks, continental shapes, and seafloor structures to provide evidence of the past plate motions.	**Learning Goals**	• Students will use the geologic time scale to organize Earth's 4.6-billion-year-old history. They will cite specific textual evidence from science and technical texts to support analysis of rock strata to show how the geologic time scale is used to organize Earth's 4.6-billion-year-old history. • Students will develop and use models to describe the cycling of Earth materials and the flow of energy that drives this process. This energy comes from the heat of the core of the Earth, which is transferred to the mantle. • Students will construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales. Emphasis is on how processes change Earth's surface at time and spatial scales that can be large (such as slow plate motions or the uplift of large mountain ranges) or small (such as rapid landslides or microscopic geochemical reactions). • Students will analyze and interpret data on the distribution of fossils and rocks, and they will look at the continental shapes and sea floor structures to provide evidence of past plate motions.

<table>
<tr><td>Essential Questions</td><td colspan="3">How do we know that the Earth is approximately 4.6-billion-year-old history?
What drives the cycling of Earth’s materials?
Do all of the changes to Earth systems occur in similar time scales?
How is it possible for the same kind of fossils to be found in New Jersey and in Africa?</td></tr>
<tr><td rowspan="2">Assessments
How will we know they have gained the knowledge & skills?</td><td>Formative</td><td>Summative</td><td>Alternative</td></tr>
<tr><td>Choral and individual responses to questioning
Entrance/Exit Tickets
Quizzes (paper-based and/or Google forms)
Signals (thumbs up/down, sit/stand, and other answering strategies)
Graded Classwork/ Homework
Plickers Assessments
Kahoot games/reviews
Individual white boards
“Brain Dump”
Observations & informal discussions with small groups or individuals during labs
Silent classroom polls</td><td>End of Unit Test
Extended Constructed Response Questions
Project
Lab Analysis/Conclusion
Demonstration with explanation & fielding questions</td><td>Student-Taught Lesson (small groups of students will teach the class)
BrainPop Video (students create their own BrainPop-style video to explain a science phenomena)
Advice Column (students write advice to an “anonymous friend” to help solve a scientific problem)
Trivia Game (students create the questions and answers to be used in a review game)</td></tr>
<tr><td>Unit Pre-Assessment(s)
What do they already know?</td><td colspan="3">Pre-Test (paper-based, Google Form, Plickers, etc.)
Teacher-generated warm up questions with class discussion
Individual Whiteboards (students hold up agree/disagree or short answers in response to questions or statements)
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</table>

	● KWL Chart (Prior learning statement as per the NJDOE's model curriculum) *By the end of Grade 6, students understand that:* ● Some kinds of plants and animals that once lived on Earth are no longer found anywhere. ● Fossils provide evidence about the types of organisms that lived long ago and also about the nature of their environments. ● For any particular environment, some kinds of organisms survive well, some survive less well, and some cannot survive at all. ● A variety of natural hazards result from natural processes. ● Humans cannot eliminate natural hazards but can take steps to reduce their impacts. ● Local, regional, and global patterns of rock formations reveal changes over time due to earth forces, such as earthquakes. ● The presence and location of certain fossil types indicate the order in which rock layers were formed. ● Water, ice, wind, living organisms, and gravity break rocks, soils, and sediments into smaller particles and move them around. ● The locations of mountain ranges, deep ocean trenches, ocean floor structures, earthquakes, and volcanoes occur in patterns. ● Most earthquakes and volcanoes occur in bands that are often along the boundaries between continents and oceans. ● Major mountain chains form inside continents or near their edges. Maps can help locate the different land and water features of Earth. ● Living things affect the physical characteristics of their regions. ● A variety of hazards result from natural processes (e.g., earthquakes, tsunamis, volcanic eruptions). ● Humans cannot eliminate the hazards but can take steps to reduce their impacts.
Instructional Strategies/Student Activities	● Direct Instruction ● Scaffolding ● Guided Practice ● Cooperative learning ● Modeling ● Learning Stations ● Graphic organizers ● Note-taking sheets ● Turn and Talk / Think-Pair-Share ● Flexible grouping ● Student Choice Menu Project ● Inquiry-based learning ● RAFT assignments ● Self and Peer Review

	● Word/picture/object sorts ● Read & Think Alouds			
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	● Use of visual representations of concepts	● Modify format/ length of tests ● Allow oral responses ● Allow retakes ● Provide leveled reading material ● Differentiated grouping ● Use of visual representations of concepts ● Small group instruction ● Read test passages/articles aloud (if assessing reading comprehension) ● Provide study		

		guides or copies of class notes		
Differentiated Instructional Methods: *(Multiple means for students to access content and multiple modes for student to express understanding)*	**Access** (Resources and/or Process)		**Expression** (Products and/or Performance)	
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Vocabulary *Highlight key vocabulary (both Tier II and Tier III words)*	Tier II - claim, evidence, reasoning, analyze, interpret, data, abundance, scarcity, competition, model, cycle, conservation, energy, probability, construct, data, observe, analyze, criteria, constraint, evaluate classification, descriptions, similarities, differences,. Tier III- Rain, Erosion, Earth, Life, Convection, Oceans, Photosynthesis, Habitat, Animals, Plants, Nitrogen, Weather, Water, Phosphorus, Crust, Oxygen, Soil, Clouds, Carbon, Rock Cycle, Cryosphere, Biosphere, Geosphere, Hydrosphere, Atmosphere
Integration of Technology SAMR	Substitution: ● Taking notes via Google Docs ● Typing up responses to questioning and sharing with teacher/peer ● Completing graphic organizers via Google Docs or Slides ● Completing digital worksheets via Google Forms, Docs, or Slides ● Use of online-based texts with dictionary and highlighting features ● Conducting research via Google ● Use of Google Classroom for providing and organizing materials Augmentation: ● Completing quizzes/tests via Google Forms ● Researching within Google Docs to add information and graphics to enhance notes ● Use of online-based texts with embedded videos and links to enhance understanding ● Using Gizmos, Phet, and other virtual labs/simulations ● Creation of scientific diagrams/models using Google Drawings ● Sharing videos, simulations, and other "extras" via Google Classroom to supplement notes and understanding ● Posting student created material via Padlet for sharing with peers ● Use of Quizizz or Kahoot! to review before a test Modification: ● Collaboration of students on a multimedia/slides project ● Peer-editing multimedia work ● Using Gizmos, Phet, and other virtual labs/simulations

	● Creation of presentation, video, or written review of a science topic or phenomena posted on our classroom website ● Student completion of WebQuests ● Student participation in Digital Escape Rooms ● Plickers assessments Redefinition: ● Collaboration of students on a multimedia/slides project ● Posting, reviewing, and commenting on student created material via Padlet ● Student-Created and Student-Taught Lesson with multimedia presentation ● Use of Quizizz or Kahoot! to review before a test ● Plickers assessments
Interdisciplinary Connections NJ Student Learning Standards	**English Language Arts** • Cite specific textual evidence based on evidence from rock strata for how the geologic time scale is used to organize Earth's 4.6-billion-year-old history to support analysis of science and technical texts. • Write informative/explanatory texts to examine evidence from rock strata for how the geologic time scale is used to organize Earth's 4.6 billion-year-old history and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content. • Cite specific textual evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales to support analysis of science and technical texts. • Use informative/explanatory texts to examine evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content Include multimedia components and visual displays in presentations about evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales to clarify claims and findings and emphasize salient point • Cite specific textual evidence of past plate motion to support analysis of science texts. • Integrate quantitative or technical information about evidence of past plate motions expressed in words in a text with a version of that information expressed in a flowchart, diagram, model, graph, or table. • Compare and contrast the information gained from experiments, simulations, video, or multimedia sources showing evidence of past plate motion with that gained from reading a text on the same topic.

<table>
<tr><td></td><td colspan="2">Mathematics
• Use variables to represent numbers and write expressions when solving problems while constructing explanations from evidence from rock strata for how the geologic time scale is used to organize Earth’s 4.6-billion-year-old history; understand that a variable can represent an unknown number or, depending on the purpose at hand, any number in a specific set.
• Use variables to represent quantities in a real-world or mathematical problem when solving problems while constructing explanations from evidence from rock strata for how the geologic time scale is used to organize Earth’s 4.6-billion-year-old history, and construct simple equations and inequalities to solve problems by reasoning about the quantities.
• Reason abstractly and quantitatively when analyzing evidence for how geoscience processes have changed Earth’s surface at varying time and spatial scales.
• Use variables to represent numbers and write expressions when solving a real-world or mathematical problem involving evidence for how geoscience processes have changed Earth’s surface at varying time and spatial scales. Understand that a variable can represent an unknown number or, depending on the purpose at hand, any number in a specified set.
• Use variables to represent quantities in a real-world or mathematical problem involving evidence for how geoscience processes have changed Earth’s surface at varying time and spatial scales, and construct simple equations and inequalities to solve problems by reasoning about the quantities.
• Use numbers, symbols, and words while analyzing and interpreting data on the distribution of fossils and rocks, continental shapes, and sea floor structures to provide evidence of past plate motions.
• Use variables to represent numerical data and write expressions when solving a problems involved in the analysis of data about past plate motions. Understand that a variable can represent an unknown number or, depending on the purpose at hand, any number in a specified set.</td></tr>
<tr><td>21st Century Themes/Skills
P21 Framework</td><td>Themes</td><td>Skills</td></tr>
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Resources/ Materials	● Rock Cycle Journey: This is an activity out of one of the DLESE Teaching boxes. The Teaching Box is titled Mountain Building. This activity is from Lesson 4 Activity #2 called Rock Cycle Journey. Stations are set up to represent different parts of the rock cycle. There is a die at each station. Students begin at one point and roll the die. The students record on their data sheet what happens to them (the rock). ● Interactives-Dynamic Earth: Dynamic Earth is an interactive website where students can learn about the structure of the Earth, the movements of its tectonic plates, as well as the forces that create mountains, valleys, volcanoes and earthquakes. This site consists of four sections with both embedded assessments to check progress and a final summative assessment. Each section explores one aspect of the earth's structure and the movement of its tectonic plates. ● Gizmos Simulations (https://www.explorelearning.com/) - ● Discovery Education (https://www.discoveryeducation.com/) ● Scholastic Super Science Magazine (https://superscience.scholastic.com/) ● ReadWorks (https://www.readworks.org) ● PBS Learning Media (https://www.pbslearningmedia.org/) ● CK-12 (https://www.ck12.org/) ● BrainPop (https://www.brainpop.com/) ● CrashCourseKids (https://www.youtube.com/user/crashcoursekids) ● StudyJams! (https://studyjams.scholastic.com/studyjams/) ● Teacher Generated Materials ● Learning Stations ● Task Cards