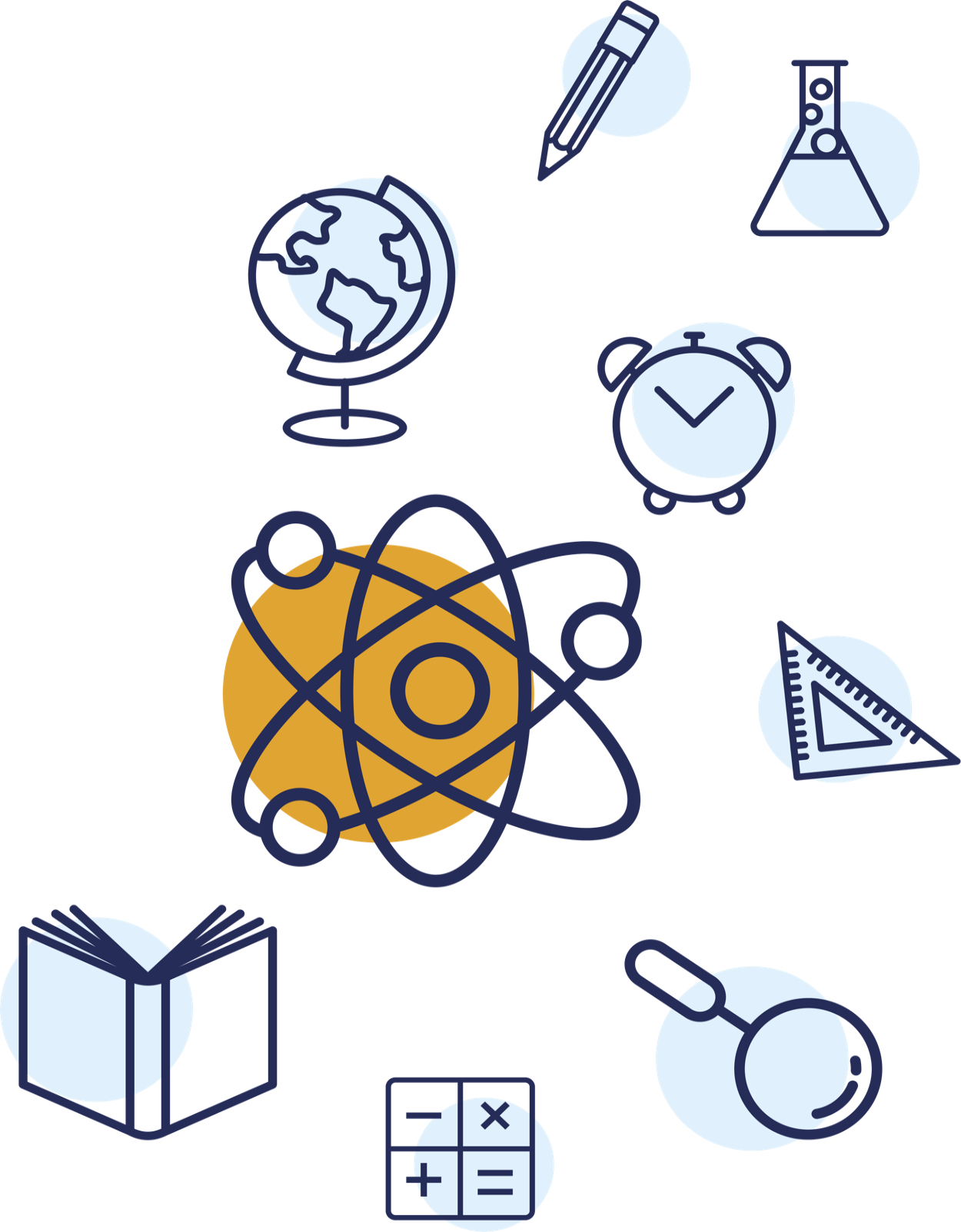
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**SUGGESTED**

**INSTRUCTIONAL PLANNING GUIDE**

*for the Mississippi College- and Career-Readiness Standards*

**q SCIENCE**

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| **GRADE 3** |

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**Mississippi Department of Education**359 North West Street

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**INTRODUCTION**

The unprecedented, nationwide school closures in the spring of 2020 due to the COVID-19 pandemic have created a shift in how districts plan for school re-entry. Instead of the traditional brick-and-mortar planning, administrators are now identifying models that will support a variety of instructional delivery scenarios as they plan for school reopening. The traditional methods of planning and delivery are nearly impossible to implement as a stand-alone model; instead, innovative educators are developing and identifying strategies and resources to support a variety of distance learning scenarios as part of their plans. When using new models of delivery, it is important to recognize that the traditional approach to remediation—providing work better suited for earlier grades—may be insufficient. Instead, the conventional approach to remediation will likely compound the problem educators are trying to correct. According to a 2018 study, ***The Opportunity Myth***[[1]](#footnote-2), the approach of “meeting students where they are”, while often well-intended, only widens the achievement gap. Instead of remediation, teachers and administrators are encouraged to look toward acceleration methods to support student growth and close the gaps.

**PURPOSE**

The purpose of the Suggested Mississippi College- and Career-Readiness Standards Instructional Planning Guide is to provide teachers with an assistive tool for planning units of instruction. This tool will provide suggested standards grouping that should facilitate a coherent and logical delivery of related science concepts. Suggested planning sources and tools are included to assist teachers with curating instructional materials, designing and implementing effective lessons and activities, and building content knowledge and pedagogical practices. This tool encourages instructors to maintain a focus on preparing students to master skills and acquire knowledge at their current grade level.

**DEVELOPMENT**

The following suggested Instructional Planning Guide was developed with a focus on the subsequent key areas, Conceptual Connections, Real-World Connections and Phenomena, Embedded Science and Engineering Practices and Crosscutting Concepts, and Core Vocabulary. The standards are grouped into suggested units based on their underlying conceptual relationships. A list of real-world connections and/or phenomena is associated with each unit group. Their purpose is to give teachers and students researchable opportunities that lead to an in-depth and authentic quest for conceptual understanding. The embedded Science and Engineering Practices (SEPs) and Crosscutting Concepts (CCCs) are extracted from the grouped performance objectives and should encourage students to act and think like scientists. The included list of SEPs and CCCs does not indicate that other SEPs and CCCs are not relevant to the respective standard and performance objectives. Core vocabulary terms are included to emphasize terminology that is essential to the conceptual understandings captured in the standards and performance objectives. It is suggested that instructors pace themselves based on student assessment performance and demonstration of skills mastery and knowledge comprehension.

**RESOURCES for CONSIDERATION**

The resources listed below may be referenced to support classroom teachers in the development of lesson plans and instruction at the local level.   This list is not meant to be exhaustive, rather it represents consultative resources that align with the Units/Themes provided in the Instructional Planning Guides.   Educators are encouraged to use these resources in addition to those curriculum materials that meet the needs of the students they serve.

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| --- | --- | --- | --- |
| **High-Quality**  **Instructional Material**  **(HQIM)** | **Planning and Instruction Resources** | **Assessment**  **Resources** | **Professional Development**  **Resources** |
| * [Adopted Science Texts](https://mdek12.org/OEER/Caravan) * [STEM Teaching Tools](http://stemteachingtools.org/) | * [5 E Science Instructional Model](http://nextgenerationscience.weebly.com/5-es-of-science-instruction.html) * [The Concord Consortium](https://concord.org/ngss/) * [PBS Learning Media](https://mpb.pbslearningmedia.org/standards/0/) * [Teacher Tube](https://www.teachertube.com/) * [Next Generation Science Standards](https://www.nextgenscience.org/) * [Phenomena for Next Generation Science](https://www.ngssphenomena.com/) * [Khan Academy](https://www.khanacademy.org/) * [OpenSciEd](https://www.openscied.org/) * [Science Buddies](https://www.sciencebuddies.org/) * [PhET Interactive Simulations](https://phet.colorado.edu/) * [Phenomenal GRC Lessons](https://sites.google.com/3d-grcscience.org/going3d/home?authuser=0) | * [MS MAAP Program](https://mdek12.org/OSA/MAAP) * [MS MAAP-A Program](https://mdek12.org/OSA/SP/MAAP-A) * [Access for All Guidance](https://mdek12.org/sites/default/files/documents/OAE/OAE/2019-access-for-all-guide.pdf) * [Problem-Attic](https://www.problem-attic.com/) * [EDInformatics](https://www.edinformatics.com/testing/testing.htm) * [STEM Teaching Tools for Assessments](http://stemteachingtools.org/tgs/Assessment) * [Next Generation Science Assessment](http://nextgenscienceassessment.org/) (Middle Focus) | * [MDE Professional Development](https://www.mdek12.org/OPD/home) * [The Teaching Channel](https://www.teachingchannel.com/) * [California Academy of Sciences](https://www.calacademy.org/) * [Teacher Tube](https://www.teachertube.com/) * [Knowles Teacher Short Courses](https://knowlesteachers.org/knowles-academy/short-courses) * [STEM Teaching Tools OER PD](http://stemteachingtools.org/pd) |

| **GRADE 3 SCIENCE**  **THEME: Interactions within an Environment** | | | |
| --- | --- | --- | --- |
| **UNIT OF STUDY**  (REAL-WORLD CONNECTIONS and PHENOMENA)  **q** | **SCIENCE FOUNDATION STANDARDS q** | **SCIENCE AND ENGINEERING PRACTICES  SCIENCE CROSSCUTTING CONCEPTS**  **q** | **VOCABULARY TERMS** CORE ACADEMIC  **q** |
| **COURSE INTRODUCTION**  In Grade 3, students will increase their use of embedded science and engineering practices for obtaining, recording, charting, and analyzing data in the study of a variety of environments. The crosscutting concept can be seen in life science through an organism’s ability to grow, develop, survive, obtain food/energy, and reproduce within a given environment. In physical science, the concept is developed through a study of matter and its properties and their interactions based on environmental changes and surroundings. The study of Earth science in third grade investigates surface features affected by one or more of Earth’s spheres and human impacts on the environment. Students are expected to engage in the engineering design process and conduct research and communicate their understanding of each standard in a variety of ways. Because of this yearlong study, students will gain content knowledge and tools to provide evidence and support arguments about the ways matter and organisms interact and are affected by the environment. | **FOUNDATION STATNDARDS**   * Identify and select appropriate science and engineering tools to collect, analyze, and communicate science and engineering data and information. * Demonstrate effective questioning and observation skills * Communicate science and engineering data using appropriate SI units of measurement * Identify and discuss science and engineering practices * Identify and discuss Crosscutting Concepts | **SCIENCE and ENGINEERING PRACTICES**   * Ask Question and Define Problems * Develop and Use Models * Analyze and Interpret Data * Plan and Conduct Investigations * Use Mathematical and Computational Thinking * Engage in Scientific Argument from Evidence * Construct Explanations and Design Solutions * Obtain, Evaluate, and Communicate Information   **CROSSCUTTING CONCEPTS**   * Patterns * Cause and Effect *(Mechanism and Explanation)* * Scale, Proportion, and Quantity * Systems and System Models * Energy and Matter *(Flows, Cycles, Conservation)* * Structure and Function * Stability and Change | Argument  Change  Concepts  Data  Dependent Variable  Engineering  Evaluate  Evidence  Gram  Independent Variable  Interpret  Investigation  Liter  Meter  Observation  Patterns  Quantity  Science  SI Units of Measurement  Stability |

| **TERM 1** | | | |
| --- | --- | --- | --- |
| **UNIT OF STUDY**  (REAL-WORLD CONNECTIONS and PHENOMENA)  **q** | **MS CCR STANDARDS q** | **SCIENCE AND ENGINEERING PRACTICES  SCIENCE CROSSCUTTING CONCEPTS**  **q** | **VOCABULARY TERMS** CORE ACADEMIC  **q** |
| **HEIRARCHIAL ORGANIZATION:**  **Plants and Animal Parts**  **REAL-WORLD CONNECTIONS and PHENOMENA**   * Explore the role of color in flower petals and its importance to a plant’s survival. * Discuss the possible effects of climate change on hibernation patterns of hibernating animals. | **L.3.1 Students will demonstrate an understanding of internal and external structures in plants and animals and how they relate to their growth, survival, behavior, and reproduction within an environment.**  **L.3.1.1** Examine evidence to communicate information that the internal and external structures of animals (e.g., heart, stomach, bone, lung, brain, skin, ears, appendages) function to support survival, growth, and behavior.  **L.3.1.3** Obtain and communicate examples of physical features or behaviors of vertebrates and invertebrates and how these characteristics help them survive in particular environments, (e.g., animals hibernate, migrate, or estivate to stay alive when food is scarce, or temperatures are not favorable).  **L.3.1.2** Examine evidence to communicate information that the internal and external structures of plant (e.g., thorns, leaves, stems, roots, or colored petals) function to support survival, growth, behavior, and reproduction. | **EMBEDDED SCIENCE and ENGINEERING PRACTICES**   * Ask Question and Define Problems * Obtain, Evaluate, and Communicate Information   **EMBEDDED CROSSCUTTING CONCEPTS**   * Patterns * Cause and Effect *(Mechanism and Explanation)* * Structure and Function | Growth  Behavior  Invertebrate  Vertebrate  Survival  Reproduction  Environment  Animal  Plant  External Structure  Internal Structure |
| **REPRODUCTION and HEREDITY:**  **Inheritance and Traits**  **REAL-WORLD CONNECTIONS and PHENOMENA**   * Study reproduction practices in the sea horse. * Examine the “Virgin Birth” effect in various species of snakes. * Research the reproductive practices of the Amazon Molly Fish. | **L.3.2 Students will demonstrate an understanding that through reproduction, the survival and physical features of plants and animals are inherited traits from parent organisms but can also be influenced by the environment.**  **L.3.2.1** Identify traits and describe how traits are passed from parent organism(s) to offspring in plants and animals.  **L.3.2.2** Describe and provide examples of plant and animal offspring from a single parent organism (e.g., bamboo, fern, or starfish) as being an exact replica with identical traits as the parent organism.  **L.3.2.3** Describe and provide examples of offspring from two parent organisms as containing a combination of inherited traits from both parent organisms. | **EMBEDDED SCIENCE and ENGINEERING PRACTICES**   * Ask Question and Define Problems * Develop and Use Models * Analyze and Interpret Data * Plan and Conduct Investigations * Engage in Scientific Argument from Evidence * Obtain, Evaluate, and Communicate Information   **EMBEDDED CROSSCUTTING CONCEPTS**   * Patterns * Cause and Effect *(Mechanism and Explanation)* * Stability and Change * Energy and Matter: Cycles | Animals  Environment  Heredity  Identical  Inherit  Offspring  Physical Features  Plants  Replica  Reproduction  Traits |
| **ADAPTATION and DIVERSITY**  **Adapting to Environments**  **REAL-WORLD CONNECTIONS and PHENOMENA**   * Examine how animals are adapting to global climate changes. * Explore the pros and cons of man-made habitats on various species. | **L.3.4 Students will demonstrate an understanding of how adaptations allow animals to satisfy life needs and respond both physically and behaviorally to their environment.**  **L.3.4.1** Obtain data from informational text to explain how changes in habitats (both those that occur naturally and those caused by organisms) can be beneficial or harmful to the organisms that live there.  **L.3.4.2** Ask questions to predict how natural or man-made changes in a habitat cause plants and animals to respond in different ways, including hibernating, migrating, responding to light, death, or extinction (e.g., sea turtles, the dodo bird, or nocturnal species). | **EMBEDDED SCIENCE and ENGINEERING PRACTICES**   * Ask Question and Define Problems * Analyze and Interpret Data * Plan and Conduct Investigations * Engage in Scientific Argument from Evidence * Obtain, Evaluate, and Communicate Information   **EMBEDDED CROSSCUTTING CONCEPTS**   * Patterns * Cause and Effect *(Mechanism and Explanation)* * Energy and Matter *(Flows, Cycles, Conservation)* * Structure and Function * Stability and Change | Adaptation  Behavior  Beneficial  Characteristics  Fossil Fuel  Environment  Extinction  Habitat  Needs  Organism  Population  Species  Survival |
| **ADAPTATION and DIVERSITY**  **Species Diversity**  **REAL-WORLD CONNECTIONS and PHENOMENA**   * Examine how fossils are being used to study early environments. * Explore what it means to be the “runt” of the litter in various species of animals. | **L.3.4 Students will demonstrate an understanding of how adaptations allow animals to satisfy life needs and respond both physically and behaviorally to their environment.**  **L.3.4.3** Analyze and interpret data to explain how variations in characteristics among organisms of the same species may provide advantages in surviving, finding mates, and reproducing (e.g., plants with larger thorns being less likely to be eaten by predators or animals with better camouflage colorations being more likely to survive and bear offspring).  **L.3.4.5** Construct scientific argument using evidence from fossils of plants and animals that lived long ago to infer the characteristics of early environments (e.g., marine fossils on dry land, tropical plant fossils in arctic areas, or fossils of extinct organisms in any environment).  **L.3.4.4** Define and improve a solution to a problem created by environmental changes and any resulting impacts on the types of density and distribution of plant and animal populations living in the environment (e.g., replanting sea oats in coastal areas or developing or preserving wildlife corridors and green belts). Use an engineering design process to define the problem, design, construct, evaluate, and improve the environment. \* **ALL SEPs and CCCs applicable.** | **EMBEDDED SCIENCE and ENGINEERING PRACTICES**   * Ask Question and Define Problems * Develop and Use Models * Analyze and Interpret Data * Engage in Scientific Argument from Evidence * Obtain, Evaluate, and Communicate Information   **EMBEDDED CROSSCUTTING CONCEPTS**   * Patterns * Cause and Effect *(Mechanism and Explanation)* * Structure and Function * Stability and Change | Adaptation  Behavior  Beneficial  Change  Characteristics  Fossil Fuel  Environment  Extinction  Habitat  Needs  Organism  Population  Species  Survival |

| **TERM 2** | | | |
| --- | --- | --- | --- |
| **UNIT OF STUDY**  (REAL-WORLD CONNECTIONS and PHENOMENA)  **q** | **MS CCR STANDARDS q** | **SCIENCE AND ENGINEERING PRACTICES  SCIENCE CROSSCUTTING CONCEPTS**  **q** | **VOCABULARY TERMS** CORE ACADEMIC  **q** |
| **EARTH’S STRUCTURE and HISTORY:**  **Rocks and Fossils**  **REAL-WORLD CONNECTIONS and PHENOMENA**   * Explore and discuss the uses of sedimentary rock in various industries such as oil and gas, construction, and agriculture. * Discuss the use of metamorphic rocks in the home improvement industry and commercial real estate. | **E.3.7A Students will demonstrate an understanding of the various processes involved in the rock cycle, superposition of rock layers, and fossil formation.**  **E.3.7A.1** Plan and conduct controlled scientific investigations to identify the processes involved in forming the three major types of rock, and investigate common techniques used to identify them.  **E.3.7A.2** Develop and use models to demonstrate the processes involved in the development of various rock formations, including superposition, and how those formations can fracture and move over time.  **E.3.7A.3** Ask questions to generate testable hypotheses regarding the formation and location of fossil types, including their presence in some sedimentary rock. | **EMBEDDED SCIENCE and ENGINEERING PRACTICES**   * Ask Question and Define Problems * Develop and Use Models * Analyze and Interpret Data * Plan and Conduct Investigations   **EMBEDDED CROSSCUTTING CONCEPTS**   * Patterns * Cause and Effect *(Mechanism and Explanation)* * Systems and System Models * Energy and Matter *(Flows, Cycles, Conservation)* * Stability and Change | Fossil  Igneous Rock  Metamorphic Rock  Rock  Rock Cycle  Rock Formations  Sedimentary Rock  Superposition |
| **EARTH’S STRUCTURE and HISTORY:**  **Earth’s Processes: Composition and Landforms**  **REAL-WORLD CONNECTIONS and PHENOMENA**   * Study activity in the Earth’s Ring of Fire and discuss global impacts. * Research and discuss the occurrences and impacts of earthquakes in Mississippi. | **E.3.7B Students will demonstrate an understanding of the composition of Earth and the processes which change Earth’s landforms.**  **E.3.7B.1** Obtain and evaluate scientific information (e.g. using technology) to describe the four major layers of Earth and the varying compositions of each layer.  **E.3.7B.2** Develop and use models to describe the characteristics of Earth's continental landforms and classify landforms as volcanoes, mountains, valleys, canyons, planes, and islands. | **EMBEDDED SCIENCE and ENGINEERING PRACTICES**   * Ask Question and Define Problems * Develop and Use Models * Engage in Scientific Argument from Evidence * Obtain, Evaluate, and Communicate Information   **EMBEDDED CROSSCUTTING CONCEPTS**   * Patterns * Cause and Effect *(Mechanism and Explanation)* * Systems and System Models * Energy and Matter *(Flows, Cycles, Conservation)* * Stability and Change | Canyon  Characteristics  Crust  Earth  Inner Core  Island  Landform  Mantle  Outer Core  Plane  Valley |
| **EARTH’S STRUCTURE and HISTORY:**  **Earth’s Processes: Features and Changes**  **REAL-WORLD CONNECTIONS and PHENOMENA**   * Using various media, observe the effects of massive erosion in various coastal areas. * Discuss how landforms change after a massive volcanic eruption. Use various media to observe this process. | **E.3.7B Students will demonstrate an understanding of the composition of Earth and the processes which change Earth’s landforms.**  **E.3.7B.3** Develop and use models of weathering, erosion, and deposition processes which explain the appearance of various Earth features (e.g., the Grand Canyon, Arches National Park in Utah, Plymouth Bluff in Columbus, or Red Bluff in Marion County, Mississippi).  **E.3.7B.4** Comparatively evaluate constructive (e.g., deposition, volcano) and destructive (e.g., weathering, erosion, earthquake) processes of the Earth. | **EMBEDDED SCIENCE and ENGINEERING PRACTICES**   * Ask Question and Define Problems * Develop and Use Models * Engage in Scientific Argument from Evidence * Obtain, Evaluate, and Communicate Information   **EMBEDDED CROSSCUTTING CONCEPTS**   * Patterns * Cause and Effect *(Mechanism and Explanation)* * Systems and System Models * Energy and Matter *(Flows, Cycles, Conservation)* * Stability and Change | Characteristics  Constructive Process  Deposition  Destructive Process  Earth  Earthquake  Erosion  Feature  Weathering |

| **TERM 3** | | | |
| --- | --- | --- | --- |
| **UNIT OF STUDY**  (REAL-WORLD CONNECTIONS and PHENOMENA)  **q** | **MS CCR STANDARDS q** | **SCIENCE AND ENGINEERING PRACTICES  SCIENCE CROSSCUTTING CONCEPTS**  **q** | **VOCABULARY TERMS** CORE ACADEMIC  **q** |
| **EARTH’S STRUCTURE and HISTORY:**  **Earth’s Systems**  **REAL-WORLD CONNECTIONS and PHENOMENA**   * Review historical graphics showing changes in the MS coastline due to movements in water. * Research the impact of saltwater in the MS river. | **E.3.9 Students will demonstrate an understanding of how the Earth’s systems (i.e., geosphere, hydrosphere, atmosphere, and biosphere) interact in multiple ways to affect Earth's surface materials and processes.**  **E.3.9.1** Develop models to communicate the characteristics of the Earth's major systems, including the geosphere, hydrosphere, atmosphere, and biosphere (e.g., digital models, illustrations, flip books, diagrams, charts, tables).  **E.3.9.2** Construct explanations of how different landforms and surface features result from the location and movement of water on Earth’s surface (e.g., watersheds, drainage basins, deltas, or rivers).  **E.3.9.3** Use graphical representations to communicate the distribution of freshwater and saltwater on Earth (e.g., oceans, lakes, rivers, glaciers, groundwater, or polar ice caps). | **EMBEDDED SCIENCE and ENGINEERING PRACTICES**   * Ask Question and Define Problems * Develop and Use Models * Analyze and Interpret Data * Construct Explanations and Design Solutions * Obtain, Evaluate, and Communicate Information   **EMBEDDED CROSSCUTTING CONCEPTS**   * Patterns * Cause and Effect *(Mechanism and Explanation)* * Stability and Change | Atmosphere  Biosphere  Delta  Earth  Earth’s Surface  Fresh Water  Geosphere  Glacier  Hydrosphere  Lake  Ocean  River  Saltwater |
| **EARTH’S RESOURCES:**  **Natural Resources**  **REAL-WORLD CONNECTIONS and PHENOMENA**   * Examine and discuss how the use of windmills have impacted the way humans generate power. * Research homes built on the expansive soil “Yazoo Clay” in Mississippi and the resulting problems/conditions. | **E.3.10 Students will demonstrate an understanding that all materials, energy, and fuels that humans use are derived from natural sources.**  **E.3.10.1** Identify some of Earth's resources that are used in everyday life such as water, wind, soil, forests, oil, natural gas, and minerals and classify as renewable or nonrenewable.  **E.3.10.2** Obtain and communicate information to exemplify how humans attain, use, and protect renewable and nonrenewable Earth resources. | **EMBEDDED SCIENCE and ENGINEERING PRACTICES**   * Ask Question and Define Problems * Analyze and Interpret Data * Obtain, Evaluate, and Communicate Information   **EMBEDDED CROSSCUTTING CONCEPTS**   * Patterns * Cause and Effect *(Mechanism and Explanation)* * Stability and Change | Environment  Energy  Material  Fuel  Renewable Resources  Natural Gas  Earth  Nonrenewable Resource  Needs  Mineral  Wind  Resource  Oil  Water |
| **EARTH’S RESOURCES:**  **Natural Resources**  **REAL-WORLD CONNECTIONS and PHENOMENA**   * Research how solar power is now being used with law enforcement agencies to help control speeding in communities. * Examine how deficiencies in sulfur have impacted agriculture in the state of Mississippi. | **E.3.10 Students will demonstrate an understanding that all materials, energy, and fuels that humans use are derived from natural sources.**  **E.3.10.3** Use maps and historical information to identify natural resources in the state connecting (a) how resources are used for human needs and (b) how the use of those resources impacts the environment**.**  **E.3.10.4** Design a process for cleaning a polluted environment (e.g., simulating an oil spill in the ocean or a flood in a city and creating a solution for containment and/or cleanup). Use an engineering design process to define the problem, design, construct, evaluate, and improve the environment. \* **All SEPs and CCCs are applicable.** | **EMBEDDED SCIENCE and ENGINEERING PRACTICES**   * Ask Question and Define Problems * Develop and Use Models * Analyze and Interpret Data   **EMBEDDED CROSSCUTTING CONCEPTS**   * Patterns * Cause and Effect *(Mechanism and Explanation)* * Energy and Matter *(Flows, Cycles, Conservation)* * Stability and Change | Environment  Energy  Material  Fuel  Renewable Resources  Natural Gas  Earth  Nonrenewable Resource  Needs  Mineral  Wind  Resource  Oil  Water |

| **TERM 4** | | | |
| --- | --- | --- | --- |
| **UNIT OF STUDY**  (REAL-WORLD CONNECTIONS and PHENOMENA)  **q** | **MS CCR STANDARDS q** | **SCIENCE AND ENGINEERING PRACTICES  SCIENCE CROSSCUTTING CONCEPTS**  **q** | **VOCABULARY TERMS** CORE ACADEMIC  **q** |
| **ORGANIZATION AND CHEMICAL INTERACTIONS:**  **States of Matter**  **REAL-WORLD CONNECTIONS and PHENOMENA**   * Explore condensation on various objects and offer scientific explanations. * Explore why onions tend to cause a crying effect when cut and possible ways to prevent this phenomenon. * Research and discuss aerogels, lowest density solids. | **P.3.5 Students will demonstrate an understanding of the physical properties of matter to explain why matter can change states between a solid, liquid, or gas dependent upon the addition or removal of heat.**  **P.3.5.1** Plan and conduct scientific investigations to determine how changes in heat (i.e., an increase or decrease) change matter from one state to another (e.g., melting, freezing, condensing, boiling, or evaporating).  **P.3.5.2** Develop and use models to communicate the concept that matter is made of particles too small to be seen that move freely around in space (e.g., inflation and shape of a balloon, wind blowing leaves, or dust suspended in the air).  **P.3.5.3** Plan and conduct investigations that determine how particles speed up or slow down with the addition or removal of heat. | **EMBEDDED SCIENCE and ENGINEERING PRACTICES**   * Ask Question and Define Problems * Develop and Use Models * Plan and Conduct Investigations   **EMBEDDED CROSSCUTTING CONCEPTS**   * Cause and Effect *(Mechanism and Explanation)* * Scale, Proportion, and Quantity * Systems and System Models * Energy and Matter *(Flows, Cycles, Conservation)* * Stability and Change | Boiling Point  Change of State  Condensation  Freeze  Gas  Heat  Liquid  Matter  Melt  Particle  Property  Solid  States of Matter |
| **MOTIONS, FORCES, AND ENERGY:**  **Forces**  **REAL-WORLD CONNECTIONS and PHENOMENA**   * Discuss the exit and re-entry of a space craft through the earth’s atmosphere and forces involved. * Observe the purpose and use of magnets in technology such as Apple Air pod cases. | **P.3.6 Students will demonstrate an understanding of magnets and the effects of pushes, pulls, and friction on the motion of objects.**  **P.3.6.1** Compare and contrast the effects of different strengths and directions of forces on the motion of an object (e.g., gravity, polarity, attraction, repulsion, or strength).  **P.3.6.2** Plan an experiment to investigate the relationship between a force applied to an object (e.g., friction, gravity) and resulting motion of the object.  **P.3.6.3** Research and communicate information to explain how magnets are used in everyday life.  **P.3.6.4** Define and solve a simple design problem by applying scientific ideas about magnets (e.g., can opener, door latches, paperclip holders, finding studs in walls, magnetized paint). Use an engineering design process to define the problem, design, construct, evaluate, and improve the  magnet. \* **All SEPs and CCCs are applicable.** | **EMBEDDED SCIENCE and ENGINEERING PRACTICES**   * Ask Question and Define Problems * Develop and Use Models * Plan and Conduct Investigations * Obtain, Evaluate, and Communicate Information   **EMBEDDED CROSSCUTTING CONCEPTS**   * Patterns * Cause and Effect *(Mechanism and Explanation)* * Energy and Matter *(Flows, Cycles, Conservation)* * Structure and Function * Stability and Change | Attraction  Compare  Contrast  Direction  Force  Friction  Gravity  Magnet  Pull  Push  Repulsion  Research  Strength |

1. https://tntp.org/assets/documents/TNTP\_The-Opportunity-Myth\_Web.pdf [↑](#footnote-ref-2)