FREEHOLD BOROUGH SCHOOL DISTRICT
280 Park Avenue
Freehold, NJ 07728
Monmouth County

Office of Curriculum & Instruction

Science

Grade: 5

Board of Education Adoption Date: August 22, 2017

Freehold Borough Board of Education

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District Mission

We will inspire the creativity and imagination of all students and empower them as knowledgeable, skillful, and confident learners who flourish and contribute willingly in a changing world.

Core Beliefs

We believe that:

- All people have inherent worth.
- Life-long learning is basic to the survival and advancement of society.
- The primary influence on the individual's development is the family in all its forms.
- Valuing diversity is essential to individual growth and the advancement of society.
- All individuals have strengths and human potential has no known limits.
- Democracy thrives when individuals accept responsibility for their choices.
- Being trustworthy builds trust.
- Creativity and imagination are essential for society to flourish.
- A safe environment is essential for the well-being of the individual and for society to flourish

Philosophy

The philosophy for our curriculum is developed with a democratic system of beliefs and values. Believing that our students deserve the best education, our curriculum is aligned to the New Jersey Student Learning standards and current statewide assessments. Our scope and sequence is vertically and horizontally aligned. The progression of objectives embraces decades of rigorous research, conducted both independently and at the university level, and acknowledges that children develop differently and that learning experiences and strategies for performance are differentiated. Our borough is a diverse community, rich in tradition and spirit. Knowledge is a fusion balancing authentic experience and content, which language arts literacy skills are integrated with other content areas. Our curriculum contains common expectations that are rigorous and student centered, and teachers, who are most proximal to the children, will use this document as an instrument to ensure student success.

To ensure that our children are successful and receive the best education, this curriculum document, our staff will continuously collaborate on this living document. We will develop purposeful and effective formative and summative assessments which measure growth of our curriculum and inform our instruction. Finally, we will continuously seek to grow professionally through professional development, which is aligned to statewide regulations, but specifically geared to benefit our curriculum, school, and children.

General Curriculum & Instruction Objectives

- Teachers will employ lessons that are aligned to our curriculum and framed utilizing current research-based methods and techniques that focus on student achievement
- Our lessons will be structured according to statewide and district standards and our teachers will have flexibility to ensure that lessons meet the needs of all learners
- Units and lessons will be differentiated
- Curriculum is focused on student success and balances developmental theory and psychometric standards
- Democratically developed benchmarks and assessments will be utilized to gauge student and curricular growth. Assessment will be multidimensional and developed according to student need.

Science - Grade 5

Curriculum Pacing Guide

Physical Science	Unit Description	Timeline
Unit 1 – Structure, Properties, and Interactions of Matter	In this unit of study, students describe that matter is made of particles too small to be seen by developing a model. The crosscutting concept of scale, proportion, and quantity is called out as an organizing concept for these disciplinary core ideas. Students demonstrate grade-appropriate proficiency in developing and using models, planning and carrying out investigations, and use these practices to demonstrate understanding of the core ideas.	10 weeks

Life Science	Unit Description	Timeline
Unit 1 – Matter and Energy in Organisms and Ecosystems	In this unit of study, students develop an understanding of the idea that plants get the materials they need for growth chiefly from air and water. Using models, students can describe the movement of matter among plants, animals, decomposers, and the environment, and they can explain that energy in animals' food was once energy from the sun.	10 weeks

Earth & Space	Unit Description	Timeline
Unit 1 – Earth Surface Processes	In this unit of study, Students are introduced to global climate change, including weather and climate. They will understand some of the forces behind climate change-carbon cycle and greenhouse effect and how human activities can both negatively and positively impact Earth's climate. Students learn about the difference between weather and climate, collect weather data over time, and compare the data to climate data for their area. Students learn the basic scientific phenomena related to climate change, including the carbon cycle. They will gain an understanding of how the carbon cycle is linked to the greenhouse effect and its relation to climate change. The students will investigate and identify sources of electricity in their community and learn how much energy typical appliances and electronics use.	10 weeks
Unit 2 – Space Systems: Stars and the Solar System	In this unit of study, students are able to describe ways in which the geosphere, biosphere, hydrosphere, and atmosphere interact. Students develop an understanding of patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.	10 weeks

Grade 5 Curriculum Map

Physical Science	Unit Name:	Unit 1: Structure, Properties, and Interactions of Matter	Timeline:	10 weeks

Standards		
DCI	*Cross Cutting*	*Engineering Practices*
5-PS1-1 5-PS1-1 5-PS1-3 5-PS1-4	Scales, Proportions, and Quantity; Patterns; Energy and Matter	● Asking Questions and Defining Problems in grades 3–5 builds on grades K–2 experiences and progresses to specifying qualitative relationships. Ask questions that can be investigated and predict reasonable outcomes based on patterns such as cause and effect relationships. ● Planning and Carrying Out Investigations to answer questions or test solutions to problems in 3–5 builds on K– 2 experiences and progresses to include investigations that control variables and provide evidence to support explanations or design solutions. Make observations to produce data to serve as the basis for evidence for an explanation of a phenomenon or test a design solution. ● Constructing explanations and designing solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems. Use evidence (e.g., measurements, observations, patterns) to construct an explanation. ● Apply scientific ideas to solve design problems.

District Desired Results

Unit Overview

In this unit of study, students describe that matter is made of particles too small to be seen by developing a model. The crosscutting concept of scale, proportion, and quantity is called out as an organizing concept for these disciplinary core ideas. Students demonstrate grade-appropriate proficiency in developing and using models, planning and carrying out investigations, and use these practices to demonstrate understanding of the core ideas.

Enduring Understanding

- People use all of their senses to detect matter.
- Even when matter seems to vanish, it is still conserved.
- The amount (weight) of matter is conserved when it changes form even when it seems to vanish (such as dissolving, mixing, melting and freezing).
- Matter can change state when external forces are applied.
- Matter has different properties that can be observed and tested.

Essential Questions

- How do we learn about objects that are too small to be seen?
- How does matter behave?
- How can we classify matter?

Content	Skills – Standards Aligned and Critical Thinking
● Introduce weight and the instruments we use to measure it ● Matter is the substance of all the material in the Universe ● Everything in the universe is comprised of matter- three principal states of matter are solids, liquids, gases ● Properties of matter (measurable and not quantitative) ● Properties of matter (physical/chemical changes)	● Predict whether an object is heavier or lighter than an informal standard unit ● compare weights of objects ● use standard metric objects on a double weigh ● define matter ● demonstrate that air is made up of invisible particles that have weight and take up space ● describe the characteristics of the three states of matter ● plan and carry out an investigation to test whether water in its three states has the same amount of "stuff" (mass) ● describe materials as opaque, translucent, transparent ● Assess the capacity of various materials that can conduct heat, and electricity ● model basic building blocks of matter ● describe physical and chemical changes of matter
Vocabulary/Key Terms ● Refer to pages 61-63 of Knowing Science teacher manual	Modifications: Support and Enrichment **Special Education Students:** (These are just suggested ideas to modify instruction. All modifications and accommodations should be specific to each individual child's IEP) reduce/revise assignments & assessments as per IEP; provide individual & small group help; notes, and study guides; provide background knowledge. **English Language Learners:** use consistent, simplified language; provide bilingual partner when appropriate; provide cooperative learning opportunities; use modeling; use visual aids & manipulatives. **Students at Risk of Failure**: Provide less distracting seating if possible, frequent check-ins by teacher, study guides, notes, etc. **Gifted Students:** provide additional enrichment activity involving demonstrating knowledge, deeper research to answer a higher level question, or complimentary assignment.

Teacher Learning Plan

Weekly Learning Plan/Diary Map

Week 1 & 2 1.1 Weighty Measures
Week 3 & 4 1.2 Matter is Made up of Small Particles
Week 5 & 6 1.3 States of Matter
Week 7 & 8 1.4 Properties of Matter
Week 9 & 10 1.5 Can Matter Change?

Assessment Plan

Assessments to Measure Student's Understanding

Formal

- End of the unit assessment
- quizzes- content and vocabulary
- rubrics
- students science notebooks
- student designed models
- Investigations

Informal

- Teacher Observation

- Exit tickets
- activity sheets from Knowing Science (could be used as formal assessment too)
- graphic organizers

Instructional Resources
Teacher Resources ● Core Program: Knowing Science – Physical Science Unit1: Structure, Properties, and Interactions of Matter ● Supplemental Program: Mystery Science, Brainpop, Scott Foresman, study jams ● Additional and Alternative Materials and Resources: ● https://www.ngssphenomena.com/ ● http://www.mccracken.kyschools.us/Downloads/5th%20Grade%20Structures%20and%20Properties%20of%20Matter.pdf ● http://ngss.nsta.org/DisplayStandard.aspx?view=topic&id=19 ● https://www.livebinders.com/play/play?id=1179154

Interdisciplinary Connections	21st Century Life and Careers	Technology Standards
● Reading: SL.5.1 ● Writing: W.5.1; W.5.2	● CRP1. Act as a responsible and contributing citizen and employee. ● CRP2. Apply appropriate academic and technical skills. ● CRP3. Attend to personal health and financial well-being. ● CRP4. Communicate clearly and effectively and with reason. Planning, Saving, and Investing ● CRP5. Consider the environmental, social and economic impacts of decisions. ● CRP6. Demonstrate creativity and innovation. ● CRP7. Employ valid and reliable research strategies. ● CRP8. Utilize critical thinking to make sense of problems and persevere in solving them. ● CRP 9. Model integrity, ethical leadership and effective management. ● CRP10. Plan education and career paths aligned to personal goals. ● CRP11. Use technology to enhance productivity. ● CRP12. Work productively in teams while using cultural global competence.	8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge 8.2 All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.

Life Science	Unit Name:	Unit 1: Matter and Energy in Organisms and Ecosystems	Timeline:	8-10 weeks

Standards		
DCI	*Cross Cutting*	*Engineering Practices*
5-LS-1 5-LS-2	Pattern; Cause and Effect, System and System; Models, Scales, Proportions, and Quantity; Stability and Change; Energy and Matter	● Asking Questions and Defining Problems in grades 3–5 builds on grades K–2 experiences and progresses to specifying qualitative relationships. Ask questions that can be investigated and predict reasonable outcomes based on patterns such as cause and effect relationships. ● Planning and Carrying Out Investigations to answer questions or test solutions to problems in 3–5 builds on K– 2 experiences and progresses to include investigations that control variables and provide evidence to support explanations or design solutions. Make observations to produce data to serve as the basis for evidence for an explanation of a phenomenon or test a design solution. ● Constructing explanations and designing solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems. Use evidence (e.g., measurements, observations, patterns) to construct an explanation. ● Apply scientific ideas to solve design problems.

District Desired Results	
Unit Overview In this unit of study, students develop an understanding of the idea that plants get the materials they need for growth chiefly from air and water. Using models, students can describe the movement of matter among plants, animals, decomposers, and the environment, and they can explain that energy in animals' food was once energy from the sun.	
Enduring Understanding ● All food chains begin with the sun, and energy moves from one organism to another in a food chain. ● The oxygen content and availability of sunlight help determine the nature of Essential Questions: ● 12 living things on land and in the water. ● Living and nonliving things are different, interact	Essential Questions ● How is life dependent on the sun? ● How does matter affect the dynamics of life on Earth? ● How do animals and plants get energy?

and have specific roles in the environment. ● Ecosystems vary and change over time.	
Content ● All living things have basic needs for survival, nutrients (food) water, air, shelter, air and space and climate ● Organisms are interdependent for the energy they need through food chains and webs ● essential connection between plants and animals for energy and survival	Skills – Standards Aligned and Critical Thinking ● explain how the members of the food chain and web are connected to or depended upon ● differentiate the roles of herbivore, carnivore ● develop a model of a food web that correctly shows the relationship between sun, producers, consumers and decomposers ● model an understanding the transfer of energy within food webs ● describe adaptations specific of owls that help obtain food ● model steps in the process of owl pellet formation ● dissect, organize, of several owl pellets ● model the transfer of energy within food webs by constructing a web that shows the relationship of owls tertiary, secondary, primary consumers ● Model adaptations worms need to survive in a specific habitat on a large and small scale ● model the composting process ● construct and maintain a worm habitat
Vocabulary/Key Terms ● Refer to pages 101-104 of Knowing Science teacher manual	Modifications: Support and Enrichment **Special Education Students:** (These are just suggested ideas to modify instruction. All modifications and accommodations should be specific to each individual child's IEP) reduce/revise assignments & assessments as per IEP; provide individual & small group help; notes, and study guides; provide background knowledge. **English Language Learners:** use consistent, simplified language; provide bilingual partner when appropriate; provide cooperative learning opportunities; use modeling; use visual aids & manipulatives. **Students at Risk of Failure**: Provide less distracting seating if possible, frequent check-ins by teacher, study guides, notes, etc. **Gifted Students:** provide additional enrichment activity involving demonstrating knowledge, deeper research to answer a higher level question, or complimentary assignment.

Teacher Learning Plan
Weekly Learning Plan/Diary Map ● Week 1, 2 & 3 1.1 Food Webs and Energy ● Week 4, 5 & 6 1.2 Owl Pellets ● Week 7, 8 & 9 1.3 Wiggly Worms

Assessment Plan

Assessments to Measure Student's Understanding

Formal

- End of the unit assessment
- quizzes- content and vocabulary
- rubrics
- students science notebooks
- student designed models
- Investigations

Informal

- Teacher Observation
- Exit tickets
- activity sheets from Knowing Science (could be used as formal assessment too)
- graphic organizers

Instructional Resources

Teacher Resources

- Core Program: Knowing Science – Life Science Unit1: Matter and Energy in Organisms and Ecosystems
- Supplemental Program: Mystery Science, SCott Foresman, brainpop, Study Jam
- Additional and Alternative Materials and Resources:
  - http://scholarworks.gvsu.edu/cgi/viewcontent.cgi?article=1271&context=honorsprojects
  - https://betterlesson.com/next_gen_science
  - https://www.ngssphenomena.com/

Interdisciplinary Connections	21st Century Life and Careers	Technology Standards
Reading: RI.5.2; RI.5.3; RI.5.4; RI.5.5; RI.5.7; RI.5.8; RI.5.9 Writing: W.5.2; W.5.7; W.5.8; W.5.9	• CRP1. Act as a responsible and contributing citizen and employee. • CRP2. Apply appropriate academic and technical skills. • CRP3. Attend to personal health and financial well-being. • CRP4. Communicate clearly and effectively and with reason. Planning, Saving, and Investing • CRP5. Consider the environmental, social and economic impacts of decisions. • CRP6. Demonstrate creativity and innovation. • CRP7. Employ valid and reliable research strategies. • CRP8. Utilize critical thinking to make sense of problems and persevere in solving them. • CRP 9. Model integrity, ethical leadership and effective management. • CRP10. Plan education and career paths aligned to personal goals.	8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge 8.2 All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.

	● CRP11. Use technology to enhance productivity. ● CRP12. Work productively in teams while using cultural global competence.	

Earth and Space Science	Unit Name:	Unit 1: Earth Surface Processes	Timeline:	8 weeks

Standards		
DCI	*Cross Cutting*	*Engineering Practices*
● E-SS2-1 ● E-SS2-2	● Pattern; Cause and Effect, System and System; Models, Scales, Proportions, and Quantity; Stability and Change; Energy and Matter	● Asking Questions and Defining Problems in grades 3–5 builds on grades K–2 experiences and progresses to specifying qualitative relationships. Ask questions that can be investigated and predict reasonable outcomes based on patterns such as cause and effect relationships. ● Planning and Carrying Out Investigations to answer questions or test solutions to problems in 3–5 builds on K– 2 experiences and progresses to include investigations that control variables and provide evidence to support explanations or design solutions. Make observations to produce data to serve as the basis for evidence for an explanation of a phenomenon or test a design solution. ● Constructing explanations and designing solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems. Use evidence (e.g., measurements, observations, patterns) to construct an explanation. ● Apply scientific ideas to solve design problems.

District Desired Results

Unit Overview

In this unit of study, Students are introduced to global climate change, including weather and climate. They will understand some of the forces behind climate change-carbon cycle and greenhouse effect and how human activities can both negatively and positively impact Earth's climate. Students learn about the difference between weather and climate, collect weather data over time, and compare the data to climate data for their area. Students learn the basic scientific phenomena related to climate change, including the carbon cycle. They will gain an understanding of how the carbon cycle is linked to the greenhouse effect and its relation to climate change. The students will investigate and identify sources of electricity in their community and learn how much energy typical appliances and electronics use.

Enduring Understanding	Essential Questions
● The Earth and Earth materials, as we know them today, have developed over long periods of time, through constant change process. ● Understand the ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.	● How do systems interact to affect Earth's surface material and process? ● How much water can be found on different places on Earth? ● How much of that water is usable for the survival of land based ecosystems?
Content ● Basic understanding of systems and boundaries ● Earth's major systems (geosphere, hydrosphere, atmosphere, biosphere ● worldwide importance of the hydrosphere among Earth's systems and their interactions ● Human activities in agriculture, industry, and everyday life have major effects on Earth's systems ● Since all systems are connected, changes in one system can have profound effects in others ● review Earth's natural resources, the effects that humans have on them, and how communities are taking measures to help protect Earth's resources and systems	Skills – Standards Aligned and Critical Thinking ● Describe aspects of the environment that change on a daily, weekly, monthly, and yearly basis. ● Record weather observations such as precipitation, temperature, or cloud cover. ● Describe the area's climate and identify factors that contribute to it and have changed it over time. ● Understand what global climate change is and how it affects our lives. ● Learn how carbon is stored, and how it is moved and redistributed around the earth system via the carbon cycle. ● Learn about greenhouse gases and begin to consider what events are causing an increase in the amount of greenhouse gases in the atmosphere. ● Identify sources of electricity used in the community (e.g., hydroelectric, fossil fuels, solar, nuclear). ● Identify ways to reduce their school's carbon footprint and design and conduct a carbon-reduction action project.
Vocabulary/Key Terms ● Refer to pages 221-227 of Knowing Science teacher manual	Modifications: Support and Enrichment **Special Education Students:** (These are just suggested ideas to modify instruction. All modifications and accommodations should be specific to each individual child's IEP) reduce/revise assignments & assessments as per IEP; provide individual & small group help; notes, and study guides; provide background knowledge. **English Language Learners:** use consistent, simplified language; provide bilingual partner when appropriate; provide cooperative learning opportunities; use modeling; use visual aids & manipulatives. **Students at Risk of Failure**: Provide less distracting seating if possible, frequent check-ins by teacher, study guides, notes, etc. **Gifted Students:** provide additional enrichment activity involving demonstrating knowledge, deeper research to answer a higher level question, or complimentary assignment.

Teacher Learning Plan
Weekly Learning Plan/Diary Map ● Week 1 & 2 1.1 What is a System? ● Week 3 & 4 1.2 Earth's Systems ● Week 5 & 6 1.3 The Hydrosphere ● Week 7 & 8 1.4 Kids as Curators ● Week 9 & 10 1.5 Human Impact on Earth's Systems

Assessment Plan

Assessments to Measure Student's Understanding

Formal

- End of the unit assessment
- quizzes- content and vocabulary
- rubrics
- students science notebooks
- student designed models
- Investigations

Informal

- Teacher Observation
- Exit tickets
- activity sheets from Knowing Science (could be used as formal assessment too)
- graphic organizers

Instructional Resources

Teacher Resources

- Core Program: Knowing Science – Earth and Space Science Unit 1: Earth Surface Processes
- Supplemental Program: Scott Foresman, Brainpop, Mystery Science, Study Jams
- Additional and Alternative Materials and Resources:Discoveryeducation.com

Interdisciplinary Connections	21st Century Life and Careers	Technology Standards
Writing: W5.2 W5.4 W5.5 W5.6 W5.7 W5.9 W5.10 Reading: RI 5.1 RI.5.2 RI 5.3 RI5.7 RI 5.9 Speaking and Listening: SL 5.1 SL5.2	• CRP1. Act as a responsible and contributing citizen and employee. • CRP2. Apply appropriate academic and technical skills. • CRP3. Attend to personal health and financial well-being. • CRP4. Communicate clearly and effectively and with reason. Planning, Saving, and Investing • CRP5. Consider the environmental, social and economic impacts of decisions. • CRP6. Demonstrate creativity and innovation. • CRP7. Employ valid and reliable research strategies. • CRP8. Utilize critical thinking to make sense of problems and persevere in solving them. • CRP 9. Model integrity, ethical leadership and effective management. • CRP10. Plan education and career paths aligned to personal goals. • CRP11. Use technology to enhance productivity. • CRP12. Work productively in teams while using cultural global competence.	8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge 8.2 All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.

Earth and Space Science	Unit Name:	Unit 2: Space Systems: Stars and the Solar System	Timeline:	8 weeks

Standards		
DCI	*Cross Cutting*	*Engineering Practices*
5-ESS1-1 5-ESS1-2 5-PS2-1	● Pattern; Cause and Effect, System and System; Models, Scales, Proportions, and Quantity; Stability and Change; Energy and Matter	● Asking Questions and Defining Problems in grades 3–5 builds on grades K–2 experiences and progresses to specifying qualitative relationships. Ask questions that can be investigated and predict reasonable outcomes based on patterns such as cause and effect relationships. ● Planning and Carrying Out Investigations to answer questions or test solutions to problems in 3–5 builds on K– 2 experiences and progresses to include investigations that control variables and provide evidence to support explanations or design solutions. Make observations to produce data to serve as the basis for evidence for an explanation of a phenomenon or test a design solution. ● Constructing explanations and designing solutions in 3–5 builds on K–2 experiences and progresses to the use of evidence in constructing explanations that specify variables that describe and predict phenomena and in designing multiple solutions to design problems. Use evidence (e.g., measurements, observations, patterns) to construct an explanation. ● Apply scientific ideas to solve design problems.

District Desired Results

Unit Overview

In this unit of study, students are able to describe ways in which the geosphere, biosphere, hydrosphere, and atmosphere interact. Students develop an understanding of patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.

Enduring Understanding	Essential Questions
● The composition of a star the terms magnitude, lightyear, galaxy the stages of the life cycle of stars our stars (the Sun) importance to the solar system/planet ● The term rotation and how a rotating planet influences	● Demonstrate magnitude by using models with various brightnesses and distances. ● Analyze images of stars in various forms ● Make a timeline (in any presentation format) of the

day and night ● The term revolution and how movement around the sun in one year causes seasons ● Seasonal patterns of shadows (length; direction) as influenced by the sun ● Constellations can only be seen in certain seasons depending upon location on Earth (northern hemisphere, southern hemisphere, equator, or poles) ● The term gravity and its influence as a force on Earth the term mass and force	history of star gazing and the tools/technology used. ● Make models using any objects to demonstrate comprehension of rotation and revolution (coins, globes,, people, etc. ● Observe, draw and track shadows over time, and record data regarding changes in length and directions ● Explain how shadows can be used to tell the time of day (sun dial) ● Use cardinal directions (orienteering) to describe shadow direction. ● Identify the cause of the sun's apparent motion in the sky. ● Conduct investigations of gravity's effect on various objects (i.e. dropping objects with varied masses from a height; manipulating cars, etc. on inclined planes)
Content ● Study of space systems by exploring gravity as it relates to objects on Earth falling down ● Exploration of our sun a star that shares characteristics with other stars ● A star's magnitude includes its distance, size and temperature all of which affect its appearance from earth ● the orbits of the Earth around the sun and the moon around Earth, together with Earth's rotation, result in observable patterns ● Introduce the concept that the sun is similar to many other stars in the universe	Skills – Standards Aligned and Critical Thinking ● model and understanding of gravity pre and post lessons ● plan and carry out a series of experiments to address misconceptions about gravity ● Describe the characteristics of our sun as a star that is similar to other stars ● Explain why our sun appears to be large in size than other stars ● Associate the color of start with their relative temperature and brightness ● explain the connections between day and night, seasonal patterns, and Earth's rotation and revolution ● Use newspapers, digital sources and actual observations to gather and record data about sunrise, sunset, shadows and moon phases ● Creatodels to understand length of shadows in daily seasonal patterns ● Create and use a model to understand the appearance of the moon from the Earth and space ● Explain the role that constellation patterns have in navigational passage time ● Explain lightyear as a measure of distance ● Develop a model that illustrates that stars range greatly in their distance from EArth ● Use evidence that the appearance of brightness of stars depend on their relative distance from an observer
Vocabulary/Key Terms ● Refer to pages 221-227 of Knowing Science teacher manual	Modifications: Support and Enrichment ● **Special Education Students:** (These are just suggested ideas to modify instruction. All modifications and accommodations should be specific to each individual child's IEP) reduce/revise assignments & assessments as per IEP; provide individual & small group help; notes, and study guides; provide background knowledge. ● **English Language Learners:** use consistent, simplified language; provide bilingual partner when appropriate; provide cooperative learning opportunities; use modeling; use visual aids &

	manipulatives. ● **Students at Risk of Failure**: Provide less distracting seating if possible, frequent check-ins by teacher, study guides, notes, etc. ● **Gifted Students:** provide additional enrichment activity involving demonstrating knowledge, deeper research to answer a higher level question, or complimentary assignment.

Teacher Learning Plan

Weekly Learning Plan/Diary Map

- Week 1 & 2 2.1 Which Way is Down?
- Week 3 & 4 2.2 Our Sun, the Star!
- Week 5 & 6 2.3 Predictable Patterns
- Week 7 & 8 2.4 How Far Away Are the Sun and Other Stars?

Assessment Plan

Assessments to Measure Student's Understanding

Formal

- End of the unit assessment
- quizzes- content and vocabulary
- rubrics
- students science notebooks
- student designed models
- Investigations

Informal

- Teacher Observation
- Exit tickets
- activity sheets from Knowing Science (could be used as formal assessment too)
- graphic organizers

Instructional Resources

Teacher Resources

- Core Program: Knowing Science – Earth and Space Science Unit 2: Space Systems: Stars and the Solar System
- Supplemental Program: Mystery Science, Study Jams, Scott Foresman
- Additional and Alternative Materials and Resources: Discovereducation.com ,NewsELA.com

Interdisciplinary Connections	21st Century Life and Careers	Technology Standards
● W.5.2; W.5.4; W.5.7; W.5.8 ● SL.5.1; SL.5.2 ● RI.5.1; RI.5.2; RI.5.3; RI.5.4; RI.5.5; RI.5.7; RI.5.9	● CRP1. Act as a responsible and contributing citizen and employee. ● CRP2. Apply appropriate academic and technical skills. ● CRP3. Attend to personal health and financial well-being. ● CRP4. Communicate clearly and effectively and with reason. Planning, Saving, and Investing ● CRP5. Consider the environmental, social and economic impacts of decisions. ● CRP6. Demonstrate creativity and innovation. ● CRP7. Employ valid and reliable	8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge 8.2 All students will develop an understanding of the nature and impact of technology, engineering, technological design, computational thinking and the designed world as they relate to the individual, global society, and the environment.

	research strategies. ● CRP8. Utilize critical thinking to make sense of problems and persevere in solving them. ● CRP 9. Model integrity, ethical leadership and effective management. ● CRP10. Plan education and career paths aligned to personal goals. ● CRP11. Use technology to enhance productivity. ● CRP12. Work productively in teams while using cultural global competence.	