



Township of Ocean Schools

Assistant Superintendent
Office of Teaching and Learning

SPARTAN MISSION:

Meeting the needs of all students with a proud tradition of academic excellence.

DEPARTMENT : Science

COURSE : Grade 1

Curriculum Development Timeline

School: Township of Ocean Elementary Schools

Course: Science, Grade 1

Department: Science

Board Approval	Supervisor	Notes
February 2009	Jessica Shaw	Born Date
June 2011	Christine Picerno	Revisions
August 2017	Christine Picerno	Revisions
March 2019	Christine Picerno	Review
August 2021	Rich Steckhahn	Alignment to Standards & Revisions
August 2022	Patrick Sullivan	Incorporate State Mandates
August 2024	Patrick Sullivan	Updated to include New State Mandates

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Township of Ocean Pacing Guide			
Week	Marking Period 1	Week	Marking Period 3
1	Waves: Light and Sound	21	Structure, Function and Information Processing (Characteristics of Living Things)
2	Waves: Light and Sound	22	Structure, Function and Information Processing (Characteristics of Living Things)
3	Waves: Light and Sound	23	Structure, Function and Information Processing (Characteristics of Living Things)
4	Waves: Light and Sound	24	Structure, Function and Information Processing (Characteristics of Living Things)
5	Waves: Light and Sound	25	Structure, Function and Information Processing (Characteristics of Living Things)
6	Waves: Light and Sound	26	Structure, Function and Information Processing (Characteristics of Living Things)
7	Waves: Light and Sound	27	Structure, Function and Information Processing (Characteristics of Living Things)
8	Waves: Light and Sound	28	Space Systems: Patterns and Cycles
9	Waves: Light and Sound	29	Space Systems: Patterns and Cycles
10	Waves: Light and Sound	30	Space Systems: Patterns and Cycles
Week	Marking Period 2	Week	Marking Period 4
11	Waves: Light and Sound	31	Space Systems: Patterns and Cycles
12	Waves: Light and Sound	32	Space Systems: Patterns and Cycles
13	Waves: Light and Sound	33	Space Systems: Patterns and Cycles
14	Structure, Function and Information Processing (Characteristics of Living Things)	34	Space Systems: Patterns and Cycles
15	Structure, Function and Information Processing (Characteristics of Living Things)	35	Space Systems: Patterns and Cycles
16	Structure, Function and Information Processing (Characteristics of Living Things)	36	Space Systems: Patterns and Cycles
17	Structure, Function and Information Processing (Characteristics of Living Things)	37	Space Systems: Patterns and Cycles
18	Structure, Function and Information Processing (Characteristics of Living Things)	38	Space Systems: Patterns and Cycles

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19	Structure, Function and Information Processing (Characteristics of Living Things)	39	Space Systems: Patterns and Cycles
20	Structure, Function and Information Processing (Characteristics of Living Things)	40	Space Systems: Patterns and Cycles

Climate Change: Space Systems:Patterns and Cycles (NJSL-S: K-2-ETS1-1)

Core Instructional & Supplemental Materials including various levels of Texts

Mystery Science Lessons, Wonders Reading Program, Brain Pop, Pebble Go, PBS Kids, Interactive Games/Demonstrations, and various trade books related to unit topics. See all titles below in Lesson Activities.

Time Frame	13 weeks
Topic	
Waves: Light and Sound	
Alignment to Standards	
1-PS4-1 - Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate. <i>[Clarification Statement: Examples of vibrating materials that make sound could include tuning forks and plucking a stretched string. Examples of how sound can make matter vibrate could include holding a piece of paper near a speaker making sound and holding an object near a vibrating tuning fork.]</i>	
1-PS4-2 - Make observations to construct an evidence-based account that objects can be seen only when illuminated. <i>[Clarification Statement: Examples of observations could include those made in a completely dark room, a pinhole box, and a video of a cave explorer with a flashlight. Illumination could be from an external light source or by an object giving off its own light.]</i>	
1-PS4-3 - Plan and conduct an investigation to determine the effect of placing objects made with different materials in the path of a beam of light. <i>[Clarification Statement: Examples of materials could include those that are transparent (such as clear plastic), translucent (such as wax paper), opaque (such as cardboard), and reflective (such as a mirror). The idea that light travels from place to place is developed through experiences with light sources, mirrors, and shadows, but no attempt is made to discuss the speed of light.] [Assessment Boundary: Assessment does not include the speed of light.]</i>	
1-PS4-4 - Use tools and materials to design and build a device that uses light or sound to solve the problem of communicating over a distance. <i>[Clarification Statement: Examples of devices could include a light source to send signals, paper cup and string "telephones," and a pattern of drum beats.] [Assessment Boundary: Assessment does not include technological details for how communication devices work.]</i>	
K-2-ETS1-2 - Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.	
Learning Objectives and Activities	

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Students will understand that...

- Sound can make matter vibrate, and vibrating matter can make sound.
- Objects can be seen if light is available to illuminate them or if they give off their own light.
- People use a variety of devices to communicate (send and receive information) over long distances.
- An object can be seen when light reflected from its surface enters the eye.
- Mirrors can be used to redirect a light beam.
- Light travels from place to place.
- Some materials allow light to pass through them and others block all light.

Activities

Mystery Science

- [Lights and Sounds](#)

Generation Genius

- [Introduction to Sound](#)
- [Introduction to Light](#)
- [Communication Over Distances](#)

Wonders Unit 5, Week 4

- Weekly Concept - Sounds All Around
- Essential Question - "What Sounds can you hear? How are they made?"

Literature Connections

- "Theodoric's Rainbow" by Stephen P. Kramer
- "Nothing Sticks Like A Shadow" by Ann Tompert
- "Shadow" by Carolyn B. Otto
- "My Five Senses" by Alike
- "The Listening Walk" by Paul Showers
- "All About Sound" by Lisa Trumbauer
- "Fireflies" by Julie Brinckloe

Epic Books

- [What Are Sound Waves?](#)
- [What Are Light Waves?](#)
- [How Does Sound Change?](#)
- [What Are Shadows and Reflections?](#)

Brainpopjr. Videos

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COURSE : Grade 1

- [Light](#)
- [Sound](#)
- [Vibrations](#)

Pebblego Videos

- [Physical Science](#)-Light, Sound

STEAM Lessons

- [STEM and sound-Day 1](#)
- [STEM and sound-Day 2](#)
- [STEM and light-Day 1](#)
- [STEM and light-Day 2](#)
- [Communicating with Light and Sound: Fire!](#)

Video Resources

- [Sound for first graders](#)
- [What is Sound?](#)
- [Sound Waves and Vibrations](#)
- [What is Light Energy?](#)
- [Sound Light Travels in Waves](#)
- [EdPuzzle - Sounds of Science](#)
- [EdPuzzle - The Science of Light](#)

Research Investigations

- [Kiddle](#)
- [Wonderopolis](#)

Prepared Lessons

- [Light and Sound](#)
- [BetterLesson.com-Waves and Their Application in Technologies](#)
- [Va-Va Vibrations](#)

Online Interactive Activities

- [Science Kids.com](#)
- [Scholastic Light Virtual Lab](#)
- [Scholastic Sound Virtual Lab](#)

Hands On Activities

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- [BrainPOP-shadow puppets](#)
- [BrainPOP-sound](#)
- [BetterLesson.com-Good,Good,Good Vibrations-tissue box guitar](#)

Assessments

Formative

- Online Energy Quiz
- BrainPOP-quiz about light
- BrainPOP-draw about light
- BrainPOP-write about light
- BrainPOP-draw about sound
- BrainPOP-write about sound
- BrainPOP-quiz about sound

Benchmark

- Engineering Design Process Rubric Assessment 2

Alternative STEM Assessments

- [STEM and sound-Day 1](#)
- [STEM and sound-Day 2](#)
- [STEM and light-Day 1](#)
- [STEM and light-Day 2](#)
- [Communicating with Light and Sound: Fire!](#)

Interdisciplinary Connections

NJSLS: ELA

- **W.WR.1.5** With prompting and support, generate questions through shared research about a topic and determine possible sources to obtain information on that topic. (1-PS4-1), (1-PS4-2), (1-PS4-3), (1-PS4- 4)
- **W.SE.1.6** With guidance and support from adults, gather information from multiple sources to answer a question or write about a topic. (1-PS4-1), (1-PS4-2), (1-PS4-3)

NJSLS: Math

- **1.M.A.1** Order three objects by length; compare the lengths of two objects indirectly by using a third object. (1-PS4-4)
- **1.M.A.2** Express the length of an object as a whole number of length units, by layering multiple copies of a shorter object (the length unit) end to end; understand

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that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. (1-PS4-4)

NJSLS: Computer Science and Design Thinking

- **8.1.2.NI.2:** Describe how the Internet enables individuals to connect with others worldwide.

Career Readiness, Life Literacies, and Key Skills

- **9.1.2.CAP.1:** Make a list of different types of jobs and describe the skills associated with each job.

Technology Integration

- **9.4.2.CI.2:** Demonstrate originality and inventiveness in work.
- **9.4.2.CT.2:** Identify possible approaches and resources to execute a plan.
- **9.4.2.CT.3:** Use a variety of types of thinking to solve problems (e.g., inductive, deductive).

Career Education

- **CRP 8.** SW utilize critical thinking to make sense of problems and persevere in solving them while completed their hands-on STEM projects.
- **CRP 11.** SW use technology to enhance productivity by accessing EdPuzzle, Science Kids.com, [Scholastic Light Virtual Lab](#) and [Scholastic Sound Virtual Lab](#)

Time Frame	14 weeks
Topic	
Structure, Function and Information Processing (Characteristics of Living Things)	
Alignment to Standards	
1-LS1-1 - Use materials to design a solution to a human problem by mimicking how plants and/or animals use their external parts to help them survive, grow, and meet their needs. <i>[Clarification Statement: Examples of human problems that can be solved by mimicking plant or animal solutions could include designing clothing or equipment to protect bicyclists by mimicking turtle shells, acorn shells, and animal scales; stabilizing structures by mimicking animal tails and roots on plants; keeping out intruders by mimicking thorns on branches and animal quills; and, detecting intruders by mimicking eyes and ears.]</i>	
1-LS1-2 - Read texts and use media to determine patterns in behavior of parents and	

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offspring that help offspring survive. *[Clarification Statement: Examples of patterns of behaviors could include the signals that offspring make (such as crying, cheeping, and other vocalizations s) and the responses of the parents (such as feeding, comforting, and protecting the offspring).]*

1-LS3-1 - Make observations to construct an evidence-based account that young plants and animals are like, but not exactly like, their parents. *[Clarification Statement: Examples of patterns could include features plants or animals share. Examples of observations could include leaves from the same kind of plant are the same shape but can differ in size; and, a particular breed of dog looks like its parents but is not exactly the same.] [Assessment Boundary: Assessment does not include inheritance or animals that undergo metamorphosis or hybrids.]*

K-2-ETS1-2 - Develop a simple sketch, drawing, or physical model to illustrate how the shape of an object helps it function as needed to solve a given problem.

K-2-ETS1-3 - Analyze data from tests of two objects designed to solve the same problem to compare the strengths and weaknesses of how each performs.

Learning Objectives and Activities

Students will understand that...

- All organisms have external parts. Different animals use their body parts in different ways to see, hear, grasp objects, protect themselves, move from place to place, and seek, find and take in food, water and air. Plants also have different parts (roots, stems, leaves, flowers, fruits) that help them grow.
- Adult plants and animals can have young. In many animal families, parents and the offspring themselves engage in behaviors that help the offspring to survive.
- Animals have body parts that capture and convey different kinds of information needed for growth and survival. Animals respond to these inputs with behaviors that help them survive. Plants also respond to some external inputs.
- Young animals are very much, but not exactly, like their parents. Individuals of the same kind of plant or animal are recognizable as similar but can also vary in many ways.
- Scientists look for patterns and order when making observations about the world.

Activities

Mystery Science

- [Animal Superpowers](#)

Generation Genius

- [Inspired by Nature \(Biomimicry\)](#)
- [Animals Help Their Babies Survive](#)
- [Introduction to Traits](#)

Wonders Unit 3 Week 2

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- Weekly Concept- Watch It Grow
- Essential Question-How do plants change as they grow?

Wonders Unit 4, Week 1

- Weekly Concept - Animal Features
- Essential Question - "How do animals' bodies help them?"

Wonders Unit 4, Week 2

- Weekly Concept - Animals Together
- Essential Question - "How do animals help each other?"

Wonders Unit 4, Week 3

- Weekly Concept - In the Wild
- Essential Question - "How do animals survive in nature?"

Literature Connections

- [National Geographic](#) - "5 Strange Ways Animal Mothers Carry Their Babies"
- "Are You My Mother?" P.D Eastman

Epic Books

- [Classifying Animals](#)
- [Animal Adaptations](#)
- [Animal Adaptations](#)
- [Animal Legs](#)
- [Plants are Living Things](#)
- [Plant Life Cycles](#)

Brainpopjr. Videos

- [Classifying Animals](#)
- [Animal Habitats](#)
- [Parts of a Plant](#)
- [Plant Life Cycle](#)

Pebblego Videos

- [Living or Nonliving Things](#)
- [Animal Adaptations](#)
- [Animal heredity/offspring](#)
- [Animal Classification, Behavior, Habitat](#)
- [Plant Classification, Parts, Habitats](#)

STEAM Lessons

- [STEM, Plants, and Biomimicry Day 1](#)

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COURSE : Grade 1

- [STEM, Plants, and Biomimicry Day 2](#)
- [Engineering Solutions - Design a Better Claw](#)
- [STEM Lab: Designing a Feeder](#)
- [STEM Lab: Building and Evaluating a Feeder](#)

Research Investigations

- [Kiddle](#)
- [Wonderopolis](#)
- [How do animals protect their babies research project](#)
- [Animal Research Project - Student Packet](#)
- [Animal Research Project - Teacher Instructions](#)

Prepared Lessons

- [BetterLesson.com - From Molecules to Organisms & Heredity](#)

Online Interactive Activities

- [ScienceKids.com](#)

Hands On Activities

- [Investigating Seeds](#)

Assessments

Formative

- Organisms Online Quizzes
- Plants Online Quizzes
- Habitats Online Quiz
- BrainPOP-draw about plant parts
- BrainPOP-plant life cycle quiz

Summative

- [Animal Research Project - Student Packet](#)

Benchmark

- Engineering Design Process Rubric Assessment 3

Alternative STEM Assessments

- [STEM, Plants, and Biomimicry Day 1](#)
- [STEM, Plants, and Biomimicry Day 2](#)
- [Engineering Solutions - Design a Better Claw](#)

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- [STEM Lab: Designing a Feeder](#)
- [STEM Lab: Building and Evaluating a Feeder](#)

Interdisciplinary Connections

NJSLS: ELA

- **RI.CR.1.11.1** Ask and answer questions about key details in an informational text (e.g., who, what, where, when, why.) (1-LS1-2),(1-LS3-1)
- **W.WR.1.5** With prompting and support, generate questions through shared research about a topic and determine possible sources to obtain information on that topic. (1-PS4-1), (1-PS4-2), (1-PS4-3), (1-PS4- 4)
- **W.SE.1.6** With guidance and support from adults, gather information from multiple sources to answer a question or write about a topic. (1-LS3-1)

NJSLS: Math

- **1.M.A.1** - Order three objects by length; compare the lengths of two objects indirectly by using a third object. (1-LS3-1)
- **1.OA.A.1** - Use Addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g. by using objects, drawing, and equations with a symbol for the unknown number to represent the problem.

NJSLS: Computer Science and Design Thinking

- **8.1.2.CS.1:** Select and operate computing devices that perform a variety of tasks accurately and quickly based on user needs and preferences.
- **8.1.2.NI.1:** Model and describe how individuals use computers to connect to other individuals, places, information, and ideas through a network.
- **8.1.2.DA.2:** Store, copy, search, retrieve, modify, and delete data using a computing device.

Career Readiness, Life Literacies, and Key Skills

Technology Integration

- **9.4.2.DC.1:** Explain differences between ownership and sharing of information.
- **9.4.2.DC.2:** Explain the importance of respecting digital content of others.
- **9.4.2.IML.1:** Identify a simple search term to find information in a search engine or digital resource.
- **9.4.2.TL.2:** Create a document using a word processing application.
- **9.4.2.TL.6:** Illustrate and communicate ideas and stories using multiple digital tools.

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- **9.4.2.TL.7:** Describe the benefits of collaborating with others to complete digital tasks or develop digital artifacts.

Career Education

- **CRP 4.** SW communicate clearly and effectively and with reason.
- **CRP 8.** SW utilize critical thinking to make sense of problems and persevere in solving them when completing the following activities: Designing a Better Claw and a Bird Feeder.
- **CRP 11.** SW use technology to enhance productivity by accessing the following online resources: [Living or Nonliving Things](#), [Animal Adaptations](#), [Animal heredity/offspring](#), [Animal Classification](#), [Behavior](#), [Habitat](#), and [Plant Classification](#), [Parts](#), [Habitats](#)

Time Frame	13 weeks
Topic	
Space Systems: Patterns and Cycles	
Alignment to Standards	
1-ESS1-1 - Use observations of the sun, moon, and stars to describe patterns that can be Predicted. <i>[Clarification Statement: Examples of patterns could include that the sun and moon appear to rise in one part of the sky, move across the sky, and set; and stars other than our sun are visible at night but not during the day.] [Assessment Boundary: Assessment of star patterns is limited to stars being seen at night and not during the day.]</i>	
1-ESS1-2 - Make observations at different times of year to relate the amount of daylight to the time of year. <i>[Clarification Statement: Emphasis is on relative comparisons of the amount of daylight in the winter to the amount in the spring or fall.] [Assessment Boundary: Assessment is limited to relative amounts of daylight, not quantifying the hours or time of daylight.]</i>	
K-2-ETS1-1- Ask questions, make observations, and gather information about a situation people want to change (e.g., climate change) to define a simple problem that can be solved through the development of a new or improved object or tool.	
Learning Objectives and Activities	
Students will understand that... ● Patterns in the motion of the sun, moon, and stars in the sky can be observed, described, and predicted. ● Seasonal patterns of sunrise and sunset can be observed, described, and predicted.	

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- The sun and moon appear to rise in one part of the sky, move across the sky, and set.
- The shape of the moon appears to change over a period of time in a predictable pattern.
- Stars, other than our sun, are visible at night but not during the day.
- The role of the Earth's atmosphere with climate change.

Activities

Mystery Science

- [Spinning Sky](#)

Generation Genius

- [Patterns in the Sky](#)
- [Four Seasons and Day Length](#)

NASA Climate Kids

[Atmosphere](#)

Wonders Unit 5, Week 2

- [Weekly Concept](#) - Up in the Sky
- [Essential Question](#) - "What can you see in the sky?"

Literature Connections

- "The Moon Book" by Gail Gibbons
- "If You Decide to go to the Moon" by Faith McNulty
- "The Moon" by Melanie Chrismer
- "The Moon" by Melvin & Gilda Berger
- "Sun, Moon, and Stars" by Stephanie Turnbull
- "Blast Into Space" by Roger Priddy
- Discover Kids Readers: Space
- "Curious George Discovers the Sun" by R.A Rey
- "The Sun" by Seymour Simon
- *The Sun is My Favorite Star* by Frank Asch
- *Sun Up, Sun Down: The Story of Day and Night* by Jacqui Bailey
- *What Makes Day and Night?* by Franklyn M. Branley
- *The Sun: Our Nearest Star* by Franklyn M. Branley
- *Why the Sun and Moon Live in the Sky* by Elphinstone Dayrell
- *The Sun is Always Shining Somewhere* by Allan Fowler
- *Sun Up, Sun Down* by Gail Gibbons

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Epic Books

- [The Sun](#)

Brainpopjr. Videos

- [The Moon](#)
- [The Sun](#)
- [The Earth](#)

Pebblego Videos

- [The Sun](#)
- [The Moon](#)
- [The Earth Rotation](#)

Video Resources

- [Phases of the Moon](#)

Prepared Lessons

- [BetterLesson.com - Earth's Place in the Universe](#)
- [BetterLesson.com-Moon Phases](#)
- [BetterLesson.com-Observing the Sun](#)
 - [Part 2 Analyzing the Sun's Data](#)

STEAM Activities

- [STEM Challenge - Sundial Engineering Design](#)
- [Make a Sundial](#)

Online Interactive Activities

- [Sciencekids.com](#)

Research Investigations:

- [Kiddle](#)
- [Wonderopolis](#)

Assessments

Formative

- BrainPOP-Quiz - About Sun
- BrainPOP-Quiz - About the Moon
- Solar System Online Quiz

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- Pre assessment on space systems

Summative

- BrainPOP-Draw About It-the sun
- BrainPOP-Write About It-the sun
- BrainPOP-Draw About It-Phases of Moon
- BrainPop-Write About It-the Moon
- Post assessment on space systems
- Moon Investigation Conclusions Assessment

Benchmark

- Engineering Design Process Rubric Assessment 1

Alternative STEM Assessments:

- [STEM Challenge - Sundial Engineering Design](#)
- [Make a Sundial from a Plate](#)
- [Make a Sundial](#)

Interdisciplinary Connections

NJSLS: ELA

- **W.WR.1.5** With prompting and support, generate questions through shared research about a topic and determine possible sources to obtain information on that topic. (1-PS4-1), (1-PS4-2), (1-PS4-3), (1-PS4- 4)
- **W.SE.1.6** With guidance and support from adults, gather information from multiple sources to answer a question or write about a topic. (1-ESS1-1), (1-ESS1-2)

NJSLS: Math

- **1.DL.A.1** Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another. (1-ESS1-2)
- **1.OA.A.2** Solve word problems that call for the addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.

NJSLS: Computer Science and Design Thinking

- **8.1.2.DA.3:** Identify and describe patterns in data visualizations.
- **8.1.2.DA.4:** Make predictions based on data using charts or graphs.

Career Readiness, Life Literacies, and Key Skills

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Technology Integration

- **9.4.2.CI.1:** Demonstrate openness to new ideas and perspectives.
- **9.4.2.IML.3:** Use a variety of sources including multimedia sources to find information about topics such as climate change, with guidance and support from adults

Career Education

- **CRP 4.** SW communicate clearly and effectively and with reason while working collaboratively with partners on STEM activities.
- **CRP 6.** SW demonstrate creativity and innovation while accessing Sciencekids.com and House of Shadows.

Modifications (ELL, Special Education, At Risk Students, Gifted & Talented, & 504 Plans)

ELL:

- Work toward longer passages as skills in English increase
- Use visuals
- Introduce key vocabulary before lesson
- Teacher models reading aloud daily
- Provide peer tutoring
- Use of Bilingual Dictionary
- Guided notes and/or scaffold outline for written assignments
- Provide students with English Learner leveled readers.

Supports for Students With IEPs:

- Allow extra time to complete assignments or tests
- Guided notes and/or scaffold outline for written assignments
- Work in a small group
- Allow answers to be given orally or dictated
- Use large print books, Braille, or books on CD (digital text)
- Follow all IEP modifications

At-Risk Students:

- Guided notes and/or scaffold outline for written assignments
- Introduce key vocabulary before lesson
- Work in a small group

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- Lesson taught again using a differentiated approach
- Allow answers to be given orally or dictated
- Use visuals / Anchor Charts
- Leveled texts according to ability

Gifted and Talented:

- Create an enhanced set of introductory activities (e.g. advance organizers, concept maps, concept puzzles)
- Provide options, alternatives and choices to differentiate and broaden the curriculum
- Organize and offer flexible small group learning activities
- Provide whole group enrichment explorations
- Teach cognitive and methodological skills
- Use center, stations, or contracts
- Organize integrated problem-solving simulations
- Propose interest-based extension activities
- Expose students to beyond level texts.

Supports for Students With 504 Plans:

- Follow all the 504 plan modifications
- Text to speech/audio recorded selections
- Amplification system as needed
- Leveled texts according to ability
- Fine motor skill stations embedded in rotation as needed
- Modified or constrained spelling word lists
- Provide anchor charts with high frequency words and phonemic patterns

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