

East Newark Public School

Science Curriculum

Grade 1



Science Grade 1

EAST NEWARK PUBLIC SCHOOL

Course Description

The East Newark Public School first grade science program is designed to introduce and develop a foundation in science through five major units of study. These units are: Patterns of Change in the Sky, Characteristics of Living Things, Mimicking Organisms to Solve Problems, Light and Sound, and Communicating with Light and Sound.

The performance expectations in first grade help students formulate answers to questions such as: “What is weather? What are seasons? How does the sky seem to change? What are living and nonliving things? Where do plants and animals live? What do animals need? Why do plants grow? What do plants need? What can we observe about objects? How can matter change? How do engineers work? What are solids, liquids, and gases?

Students are expected to develop understanding of the relationship between sound and vibrating materials as well as between the availability of light and ability to see objects. The idea that light travels from place to place can be understood by students at this level through determining the effect of placing objects made with different materials in the path of a beam of light. Students are also expected to develop understanding of how plants and animals use their external parts to help them survive, grow, and meet their needs as well as how behaviors of parents and offspring help the offspring survive. The understanding is developed that young plants and animals are like, but not exactly the same as, their parents. Students are able to observe, describe, and predict some patterns of the movement of objects in the sky. The crosscutting concepts of patterns; cause and effect; structure and function; and influence of engineering, technology, and science on society and the natural world are called out as organizing concepts for these disciplinary core ideas. In the first grade performance expectations, students are expected to demonstrate grade-appropriate proficiency in planning and carrying out investigations, analyzing and interpreting data, constructing explanations and designing solutions, and obtaining, evaluating, and communicating information. Students are expected to use these practices to demonstrate understanding of the core ideas. (Next Generation Science Standards).

Course Resources

1. Science Fusion Teacher Edition
2. Science Fusion Student Edition
3. Inquiry Flipchart
4. www.thinkcentral.com
5. Digital Lessons
6. Virtual Lab
7. SMARTboard

Pacing Guide

Unit #	Unit Title	Standards	Resources
1	Patterns of Change in the Sky	1-ESS1-1 1-ESS1-2	Science Fusion
2	Characteristics of Living Things	1-LS3-1 1-LS1-2	Science Fusion
3	Mimicking Organisms to Solve Problems	1-LS1-1 K-2-ETS1-2	Science Fusion
4	Light and Sound	1-PS4-2 1-PS4-3 1-PS4-1	Science Fusion
5	Communicating with Light and Sound	1-PS4-4 K-2-ETS1-1 K-2-ETS1-2	Science Fusion

Unit 1: Patterns of Change in the Sky

Timeframe	September - October
Overview	In this unit of study, students observe, describe, and predict some patterns in the movement of objects in the sky. The crosscutting concept of patterns is called out as an organizing concept for the disciplinary core ideas. Students are expected to demonstrate grade-appropriate proficiency in planning and carrying out investigations and analyzing and interpreting data. Students are also expected to use these practices to demonstrate understanding of the core ideas.
Resources	<ul style="list-style-type: none"> ● Science Fusion Teacher Edition <ol style="list-style-type: none"> 1. Chapter 1: Lessons 1, 3, and 5 2. Chapter 7: Lessons 1, and 3 3. Chapter 8: Lessons 1, 2, and 3 ● Science Fusion Student Edition <ol style="list-style-type: none"> 1. Chapter 1: Lessons 1, 3, and 5 2. Chapter 7: Lessons 1, and 3 3. Chapter 8: Lessons 1, 2, and 3 ● Inquiry Flipchart ● www.thinkcentral.com ● Digital Lessons ● Virtual Lab ● SMARTboard
Essential Questions	<ul style="list-style-type: none"> ● What are senses and other tools? ● What are inquiry skills? ● How do scientists work? ● What is weather? ● What are seasons? ● What can we see in the sky? ● How does the sky seem to change? ● How does the sun seem to move?
Essential Learning Outcomes	<ul style="list-style-type: none"> ● Students will identify the five senses. ● Students will name what scientists do. ● Students will name three different kinds of weather. ● Students will describe the changes that happen from one season to the next. ● Students will name three different objects you can see in the sky. Tell whether you see each one in the nighttime sky, daytime sky, or both. ● Students will demonstrate with their hand how the sun seems to move.

<p>Technology Infusion</p>	<ul style="list-style-type: none"> ● 8.1.2.A.1 Identify the basic features of a digital device and explain its purpose. ● 8.1.2.A.2 Create a document using a word processing application. ● 8.1.2.A.3 Compare the common uses of at least two different digital applications and identify the advantages and disadvantages of using each. ● 8.1.2.A.4 Demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games, museums).
<p>Standards</p>	<ul style="list-style-type: none"> ● 1-ESS1-1 Use observations of the sun, moon, and stars to describe patterns that can be predicted. ● 1-ESS1-2 Make observations at different times of year to relate the amount of daylight to the time of year.
<p>Integrated Accommodations and Modifications</p>	<ul style="list-style-type: none"> ● Special Education Students <ul style="list-style-type: none"> ● Provide students with multiple choices for how they can represent their understandings (e.g. multisensory techniques-auditory/visual aids; pictures, illustrations, graphs, charts, data tables, multimedia, modeling). ● Extended time for revisions or opportunity to identify and develop areas of personal interest ● Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community. ● English Language Learners <ul style="list-style-type: none"> ● Invite students to explore different points of view on a topic of study and compare ● Integrated and small-group support ● Provide visuals of vocabulary/language ● Provide students with multiple literacy strategies ● Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences) ● 504 Students <ul style="list-style-type: none"> ● Provide students with multiple choices for how they can represent their understandings (e.g. multisensory techniques-auditory/visual aids; pictures, illustrations, graphs, charts, data tables, multimedia, modeling). ● Extended time for revisions or opportunity to identify and develop areas of personal interest ● Encourage creative expression and thinking by allowing students to choose how to approach a problem or assignment

	<ul style="list-style-type: none"> ● Gifted & Talented Students <ul style="list-style-type: none"> ● Encourage students to explore concepts in depth and encourage independent studies or investigations ● Modeling or independent student led research
Assessments	<ul style="list-style-type: none"> ● Sum it up/Brain Check (Student Edition-end of each lesson) ● Unit Review ● Unit Quizzes ● Unit Test ● Performance Assessment
Integration of 21st Century Learning Skills	<ul style="list-style-type: none"> ● 9.2.4.A.1 Identify reasons why people work, different types of work, and how work can help a person achieve personal and professional goals. ● 9.2.4.A.2 Identify various life roles and civic and work-related activities in the school, home, and community. ● 9.2.4.A.3 Investigate both traditional and nontraditional careers and relate information to personal likes and dislikes. ● 9.2.4.A.4 Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success. ● CRP1. Act as a responsible and contributing citizen and employee. ● CRP2. Apply appropriate academic and technical skills. ● CRP4. Communicate clearly and effectively and with reason. ● 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. ● CRP9. Model integrity, ethical leadership and effective management. ● CRP10. Plan education and career paths aligned to personal goals. ● CRP11: Use technology to enhance productivity.
Career Education	<p>The 12 Career Ready Practices: These practices outline the skills that all individuals need to have to truly be adaptable, reflective, and proactive in life and careers. These are researched practices that are essential to career readiness. This unit addresses standard 9.2 (Career Awareness, Exploration, and Preparation) as it outlines the importance of being knowledgeable about one's interests and talents, and being well informed about postsecondary and career options, career planning, and career requirements.</p>

Interdisciplinary Connections

- The science curriculum includes unifying themes such as systems, changes, and models. These themes combine with connected skills such as using measurement and representations. These themes and skills, along with the shared processes of observing and predicting, provide teachers with a myriad of opportunities for making meaningful curricular connections across disciplines.
- For example, investigations of local issues can engage students in thinking about science and social science concepts and help develop their understanding of probability and data analysis, which are parts of the mathematics standards. Learning, understanding, and using scientific vocabulary allows to students to attach their ideas to content specific words and phrases. Students must understand appropriate levels of scientific terminology to be able to meet the lesson objectives. In addition, teachers may use journals, night writes, lab reports, and outlines to provide students with opportunities to write in the science classroom.

Unit 2: Characteristics of Living Things

Timeframe	November - December
Overview	In this unit of study, students develop an understanding of how plants and animals use their external parts to help them survive, grow, and meet their needs, as well as how the behaviors of parents and offspring help offspring survive. The understanding that young plants and animals are like, but not exactly the same as, their parents is developed. The crosscutting concept of patterns is called out as an organizing concept for the disciplinary core ideas. Students are expected to demonstrate grade-appropriate proficiency in obtaining, evaluating, and communicating information and constructing explanations. Students are also expected to use these practices to demonstrate understanding of the core ideas.
Resources	<ul style="list-style-type: none"> ● Science Fusion Teacher Edition <ol style="list-style-type: none"> 1. Chapter 3: Lesson 1, and 3 2. Chapter 5: Lesson 1, and 2 ● Science Fusion Student Edition <ol style="list-style-type: none"> 1. Chapter 3: Lesson 1, and 3 2. Chapter 5: Lesson 1, and 2 ● Inquiry Flipchart ● www.thinkcentral.com ● Digital Lessons ● Virtual Lab ● SMARTboard
Essential Questions	<ul style="list-style-type: none"> ● What are living and nonliving things? ● How are animals different? ● Where do plants and animals live? ● What is a terrarium?
Essential Learning Outcomes	<ul style="list-style-type: none"> ● Students will name two living things and two nonliving things. ● Students name two animals and tell how they are different. ● Students will name where plants and animals live. ● Students will identify what is a terrarium.
Technology Infusion	<ul style="list-style-type: none"> ● 8.1.2.A.1 Identify the basic features of a digital device and explain its purpose. ● 8.1.2.A.2 Create a document using a word processing application. ● 8.1.2.A.3 Compare the common uses of at least two different digital applications and identify the advantages and disadvantages of using each. ● 8.1.2.A.4 Demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games, museums).

<p>Standards</p>	<ul style="list-style-type: none"> ● 1-LS3-1 Analyze and interpret data to provide evidence that plants and animals have traits inherited from parents and that variation of these traits exists in a group of similar organisms. ● 1-LS1-2 Read texts and use media to determine patterns in behavior of parents and offspring that help offspring survive.
<p>Integrated Accommodations and Modifications</p>	<ul style="list-style-type: none"> ● Special Education Students <ul style="list-style-type: none"> ● Provide students with multiple choices for how they can represent their understandings (e.g. multisensory techniques-auditory/visual aids; pictures, illustrations, graphs, charts, data tables, multimedia, modeling). ● Extended time for revisions or opportunity to identify and develop areas of personal interest ● Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community. ● English Language Learners <ul style="list-style-type: none"> ● Invite students to explore different points of view on a topic of study and compare ● Integrated and small-group support ● Provide visuals of vocabulary/language ● Provide students with multiple literacy strategies ● Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences) ● 504 Students <ul style="list-style-type: none"> ● Provide students with multiple choices for how they can represent their understandings (e.g. multisensory techniques-auditory/visual aids; pictures, illustrations, graphs, charts, data tables, multimedia, modeling). ● Extended time for revisions or opportunity to identify and develop areas of personal interest ● Encourage creative expression and thinking by allowing students to choose how to approach a problem or assignment ● Gifted & Talented Students <ul style="list-style-type: none"> ● Encourage students to explore concepts in depth and encourage independent studies or investigations ● Modeling or independent student led research
<p>Assessments</p>	<ul style="list-style-type: none"> ● Sum it up/Brain Check (Student Edition-end of each lesson)

	<ul style="list-style-type: none"> ● Unit Review ● Unit Quizzes ● Unit Test ● Performance Assessment
Integration of 21st Century Learning Skills	<ul style="list-style-type: none"> ● 9.2.4.A.1 Identify reasons why people work, different types of work, and how work can help a person achieve personal and professional goals. ● 9.2.4.A.2 Identify various life roles and civic and work-related activities in the school, home, and community. ● 9.2.4.A.3 Investigate both traditional and nontraditional careers and relate information to personal likes and dislikes. ● 9.2.4.A.4 Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success. ● CRP1. Act as a responsible and contributing citizen and employee. ● CRP2. Apply appropriate academic and technical skills. ● CRP4. Communicate clearly and effectively and with reason. ● 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. ● CRP9. Model integrity, ethical leadership and effective management. ● CRP10. Plan education and career paths aligned to personal goals. ● CRP11: Use technology to enhance productivity.
Career Education	<p>The 12 Career Ready Practices: These practices outline the skills that all individuals need to have to truly be adaptable, reflective, and proactive in life and careers. These are researched practices that are essential to career readiness. This unit addresses standard 9.2 (Career Awareness, Exploration, and Preparation) as it outlines the importance of being knowledgeable about one's interests and talents, and being well informed about postsecondary and career options, career planning, and career requirements.</p>
Interdisciplinary Connections	<ul style="list-style-type: none"> ● The science curriculum includes unifying themes such as systems, changes, and models. These themes combine with connected skills such as using measurement and representations. These themes and skills, along with the shared processes of observing and predicting, provide teachers with a

	<p>myriad of opportunities for making meaningful curricular connections across disciplines.</p> <ul style="list-style-type: none"> • For example, investigations of local issues can engage students in thinking about science and social science concepts and help develop their understanding of probability and data analysis, which are parts of the mathematics standards. Learning, understanding, and using scientific vocabulary allows to students to attach their ideas to content specific words and phrases. Students must understand appropriate levels of scientific terminology to be able to meet the lesson objectives. In addition, teachers may use journals, night writes, lab reports, and outlines to provide students with opportunities to write in the science classroom.
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Unit 3: Mimicking Organisms to Solve Problems

Timeframe	January - February
Overview	<p>In this unit of study, students develop an understanding of how plants and animals use their parts to help them survive, grow, and meet their needs. Students also need opportunities to develop possible solutions. As students develop possible solutions, one challenge will be to keep them from immediately implementing the first solution they think of and to instead think through the problem carefully before acting. Having students sketch their ideas or make a physical model is a good way to engage them in shaping their ideas to meet the requirements of the problem. The crosscutting concept of structure and function is called out as an organizing concept for the disciplinary core ideas. Students are expected to demonstrate grade-appropriate proficiency in constructing explanations, designing solutions, and in developing and using models. Students are expected to use these practices to demonstrate understanding of the core ideas.</p>
Resources	<ul style="list-style-type: none"> • Science Fusion Teacher Edition <ol style="list-style-type: none"> 1. Chapter 3: Lesson 2, and 4 2. Chapter 4: All lessons • Science Fusion Student Edition <ol style="list-style-type: none"> 1. Chapter 3: Lesson 2, and 4 2. Chapter 4: All lessons • Inquiry Flipchart • www.thinkcentral.com • Digital Lessons • Virtual Lab

	<ul style="list-style-type: none"> ● SMARTboard
Essential Questions	<ul style="list-style-type: none"> ● What do animals need? ● How can we group animals? ● What do plants need? ● Why do plants grow? ● What are some parts of plants? ● How are plants different? ● How can we compare leaves?
Essential Learning Outcomes	<ul style="list-style-type: none"> ● Students will tell about three things you need to live. ● Students will explain one way to group three animals together. ● Students will name at least three basic needs of plants. ● Students will demonstrate how you would plant and take care of a bean seed so that it would grow well. ● Students will sketch a plant and name its parts. ● Students will explain how two plants you know are different. ● Students will choose two different leaves shown in this unit. Tell how they are alike and different.
Technology Infusion	<ul style="list-style-type: none"> ● 8.1.2.A.1 Identify the basic features of a digital device and explain its purpose. ● 8.1.2.A.2 Create a document using a word processing application. ● 8.1.2.A.3 Compare the common uses of at least two different digital applications and identify the advantages and disadvantages of using each. ● 8.1.2.A.4 Demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games, museums).
Standards	<ul style="list-style-type: none"> ● 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. ● 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.
Integrated Accommodations and Modifications	<ul style="list-style-type: none"> ● Special Education Students <ul style="list-style-type: none"> ● Provide students with multiple choices for how they can represent their understandings (e.g. multisensory techniques-auditory/visual aids; pictures, illustrations, graphs, charts, data tables, multimedia, modeling). ● Extended time for revisions or opportunity to identify and develop areas of personal interest ● Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community.

	<ul style="list-style-type: none"> ● English Language Learners <ul style="list-style-type: none"> ● Invite students to explore different points of view on a topic of study and compare ● Integrated and small-group support ● Provide visuals of vocabulary/language ● Provide students with multiple literacy strategies ● Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences) ● 504 Students <ul style="list-style-type: none"> ● Provide students with multiple choices for how they can represent their understandings (e.g. multisensory techniques-auditory/visual aids; pictures, illustrations, graphs, charts, data tables, multimedia, modeling). ● Extended time for revisions or opportunity to identify and develop areas of personal interest ● Encourage creative expression and thinking by allowing students to choose how to approach a problem or assignment ● Gifted & Talented Students <ul style="list-style-type: none"> ● Encourage students to explore concepts in depth and encourage independent studies or investigations ● Modeling or independent student led research
<p style="text-align: center;">Assessments</p>	<ul style="list-style-type: none"> ● Sum it up/Brain Check (Student Edition-end of each lesson) ● Unit Review ● Unit Quizzes ● Unit Test ● Performance Assessment
<p style="text-align: center;">Integration of 21st Century Learning Skills</p>	<ul style="list-style-type: none"> ● 9.2.4.A.1 Identify reasons why people work, different types of work, and how work can help a person achieve personal and professional goals. ● 9.2.4.A.2 Identify various life roles and civic and work-related activities in the school, home, and community. ● 9.2.4.A.3 Investigate both traditional and nontraditional careers and relate information to personal likes and dislikes. ● 9.2.4.A.4 Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success. ● CRP1. Act as a responsible and contributing citizen and employee.

	<ul style="list-style-type: none"> ● CRP2. Apply appropriate academic and technical skills. ● CRP4. Communicate clearly and effectively and with reason. ● 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. ● CRP9. Model integrity, ethical leadership and effective management. ● CRP10. Plan education and career paths aligned to personal goals. ● CRP11: Use technology to enhance productivity.
<p>Career Education</p>	<p>The 12 Career Ready Practices: These practices outline the skills that all individuals need to have to truly be adaptable, reflective, and proactive in life and careers. These are researched practices that are essential to career readiness. This unit addresses standard 9.2 (Career Awareness, Exploration, and Preparation) as it outlines the importance of being knowledgeable about one's interests and talents, and being well informed about postsecondary and career options, career planning, and career requirements.</p>
<p>Interdisciplinary Connections</p>	<ul style="list-style-type: none"> ● The science curriculum includes unifying themes such as systems, changes, and models. These themes combine with connected skills such as using measurement and representations. These themes and skills, along with the shared processes of observing and predicting, provide teachers with a myriad of opportunities for making meaningful curricular connections across disciplines. ● For example, investigations of local issues can engage students in thinking about science and social science concepts and help develop their understanding of probability and data analysis, which are parts of the mathematics standards. Learning, understanding, and using scientific vocabulary allows to students to attach their ideas to content specific words and phrases. Students must understand appropriate levels of scientific terminology to be able to meet the lesson objectives. In addition, teachers may use journals, night writes, lab reports, and outlines to provide students with opportunities to write in the science classroom.

Unit 4: Light and Sound

Timeframe	March - April
Overview	<p>In this unit of study, students develop an understanding of the relationship between sound and vibrating materials as well as between the availability of light and the ability to see objects. The idea that light travels from place to place can be understood by students at this level by placing objects made with different materials in the path of a beam of light and determining the effect of the different materials. The crosscutting concept of cause and effect is called out as an organizing concept for the disciplinary core ideas. Students are expected to demonstrate grade-appropriate proficiency in planning and carrying out investigations, constructing explanations, and designing solutions. Students are also expected to use these practices to demonstrate understanding of the core ideas.</p>
Resources	<ul style="list-style-type: none">● Science Fusion Teacher Edition<ol style="list-style-type: none">1. Chapter 9: Lesson 1, and 42. Chapter 10: All lessons● Science Fusion Student Edition<ol style="list-style-type: none">1. Chapter 9: Lesson 1, and 42. Chapter 10: All lessons● Inquiry Flipchart● www.thinkcentral.com● Digital Lessons● Virtual Lab● SMARTboard
Essential Questions	<ul style="list-style-type: none">● What can we observe about objects?● How can matter change?● How do objects move?● How can we change the way objects move?● How can we change motion?● What is sound?● How do we make sound?
Essential Learning Outcomes	<ul style="list-style-type: none">● Students will pick an object. Name three things you observe about it.● Students will explain the difference between dissolve and separate.● Students will use things from the classroom and demonstrate different ways objects move.● Students will name at least two ways that you could change the way a ball moves.● Students will demonstrate how you can change motion.● Students will explain what sound is.

	<ul style="list-style-type: none"> ● Students will make a sound using their hand. Explain how they made it.
Technology Infusion	<ul style="list-style-type: none"> ● 8.1.2.A.1 Identify the basic features of a digital device and explain its purpose. ● 8.1.2.A.2 Create a document using a word processing application. ● 8.1.2.A.3 Compare the common uses of at least two different digital applications and identify the advantages and disadvantages of using each. ● 8.1.2.A.4 Demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games, museums).
Standards	<ul style="list-style-type: none"> ● 1-PS4-2 Make observations to construct an evidence-based account that objects in darkness can be seen only when illuminated. ● 1-PS4-3 Plan and conduct investigations to determine the effect of placing objects made with different materials in the path of a beam of light. ● 1-PS4-1 Plan and conduct investigations to provide evidence that vibrating materials can make sound and that sound can make materials vibrate.
Integrated Accommodations and Modifications	<ul style="list-style-type: none"> ● Special Education Students <ul style="list-style-type: none"> ● Provide students with multiple choices for how they can represent their understandings (e.g. multisensory techniques-auditory/visual aids; pictures, illustrations, graphs, charts, data tables, multimedia, modeling). ● Extended time for revisions or opportunity to identify and develop areas of personal interest ● Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community. ● English Language Learners <ul style="list-style-type: none"> ● Invite students to explore different points of view on a topic of study and compare ● Integrated and small-group support ● Provide visuals of vocabulary/language ● Provide students with multiple literacy strategies ● Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences) ● 504 Students

	<ul style="list-style-type: none"> ● Provide students with multiple choices for how they can represent their understandings (e.g. multisensory techniques-auditory/visual aids; pictures, illustrations, graphs, charts, data tables, multimedia, modeling). ● Extended time for revisions or opportunity to identify and develop areas of personal interest ● Encourage creative expression and thinking by allowing students to choose how to approach a problem or assignment ● Gifted & Talented Students <ul style="list-style-type: none"> ● Encourage students to explore concepts in depth and encourage independent studies or investigations ● Modeling or independent student led research
<p style="text-align: center;">Assessments</p>	<ul style="list-style-type: none"> ● Sum it up/Brain Check (Student Edition-end of each lesson) ● Unit Review ● Unit Quizzes ● Unit Test ● Performance Assessment
<p style="text-align: center;">Integration of 21st Century Learning Skills</p>	<ul style="list-style-type: none"> ● 9.2.4.A.1 Identify reasons why people work, different types of work, and how work can help a person achieve personal and professional goals. ● 9.2.4.A.2 Identify various life roles and civic and work-related activities in the school, home, and community. ● 9.2.4.A.3 Investigate both traditional and nontraditional careers and relate information to personal likes and dislikes. ● 9.2.4.A.4 Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success. ● CRP1. Act as a responsible and contributing citizen and employee. ● CRP2. Apply appropriate academic and technical skills. ● CRP4. Communicate clearly and effectively and with reason. ● 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. ● CRP9. Model integrity, ethical leadership and effective management. ● CRP10. Plan education and career paths aligned to personal goals. ● CRP11: Use technology to enhance productivity.

Career Education	<p>The 12 Career Ready Practices: These practices outline the skills that all individuals need to have to truly be adaptable, reflective, and proactive in life and careers. These are researched practices that are essential to career readiness. This unit addresses standard 9.2 (Career Awareness, Exploration, and Preparation) as it outlines the importance of being knowledgeable about one's interests and talents, and being well informed about postsecondary and career options, career planning, and career requirements.</p>
Interdisciplinary Connections	<ul style="list-style-type: none">• The science curriculum includes unifying themes such as systems, changes, and models. These themes combine with connected skills such as using measurement and representations. These themes and skills, along with the shared processes of observing and predicting, provide teachers with a myriad of opportunities for making meaningful curricular connections across disciplines.• For example, investigations of local issues can engage students in thinking about science and social science concepts and help develop their understanding of probability and data analysis, which are parts of the mathematics standards. Learning, understanding, and using scientific vocabulary allows to students to attach their ideas to content specific words and phrases. Students must understand appropriate levels of scientific terminology to be able to meet the lesson objectives. In addition, teachers may use journals, night writes, lab reports, and outlines to provide students with opportunities to write in the science classroom.

Unit 5: Communicating with Light and Sound

Timeframe	May - June
Overview	In this unit of study, students continue to develop their understanding of the relationship between sound and vibrating materials as well as between the availability of light and the ability to see objects. Students apply their knowledge of light and sound to engage in engineering design to solve a simple problem involving communication with light and sound. The crosscutting concepts of structure and function and influence of engineering, technology, and science on society and the natural world are called out as organizing concepts for the disciplinary core ideas. Students are expected to demonstrate grade-appropriate proficiency in constructing explanations and designing solutions, asking questions and defining problems, and developing and using models. Students are also expected to use these practices to demonstrate understanding of the core ideas.
Resources	<ul style="list-style-type: none"> ● Science Fusion Teacher Edition <ol style="list-style-type: none"> 1. Chapter 2: Lesson 1, and 2 2. Chapter 9: Lesson 2, 3, and 5 ● Science Fusion Student Edition <ol style="list-style-type: none"> 1. Chapter 2: Lesson 1, and 2 2. Chapter 9: Lesson 2, 3, and 5 ● Inquiry Flipchart ● www.thinkcentral.com ● Digital Lessons ● Virtual Lab ● SMARTboard
Essential Questions	<ul style="list-style-type: none"> ● How do engineers work? ● How can we solve a problem? ● What are solids, liquids, and gases? ● How can we measure temperature? ● What dissolves in water?
Essential Learning Outcomes	<ul style="list-style-type: none"> ● Students will describe how engineers work. ● Students will give an example of a problem and how we can work to solve it. ● Students will describe kinds of matter and give examples of each. ● Students will show with their hand what happens to the liquid inside a thermometer as the temperature gets warmer. ● Students will explain what happens to salt when you mix it into water. Name other things that will dissolve in water.

<p>Technology Infusion</p>	<ul style="list-style-type: none"> ● 8.1.2.A.1 Identify the basic features of a digital device and explain its purpose. ● 8.1.2.A.2 Create a document using a word processing application. ● 8.1.2.A.3 Compare the common uses of at least two different digital applications and identify the advantages and disadvantages of using each. ● 8.1.2.A.4 Demonstrate developmentally appropriate navigation skills in virtual environments (i.e. games, museums).
<p>Standards</p>	<ul style="list-style-type: none"> ● 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. ● K-2-ETS1-1 Ask questions, make observations, and gather information about a situation people want to change to define a simple problem that can be solved through the development of a new or improved object or tool. ● 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.
<p>Integrated Accommodations and Modifications</p>	<ul style="list-style-type: none"> ● Special Education Students <ul style="list-style-type: none"> ● Provide students with multiple choices for how they can represent their understandings (e.g. multisensory techniques-auditory/visual aids; pictures, illustrations, graphs, charts, data tables, multimedia, modeling). ● Extended time for revisions or opportunity to identify and develop areas of personal interest ● Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community. ● English Language Learners <ul style="list-style-type: none"> ● Invite students to explore different points of view on a topic of study and compare ● Integrated and small-group support ● Provide visuals of vocabulary/language ● Provide students with multiple literacy strategies ● Provide multiple grouping opportunities for students to share their ideas and to encourage work among various backgrounds and cultures (e.g. multiple representation and multimodal experiences) ● 504 Students <ul style="list-style-type: none"> ● Provide students with multiple choices for how they can represent their understandings (e.g. multisensory

	<p>techniques-auditory/visual aids; pictures, illustrations, graphs, charts, data tables, multimedia, modeling).</p> <ul style="list-style-type: none"> ● Extended time for revisions or opportunity to identify and develop areas of personal interest ● Encourage creative expression and thinking by allowing students to choose how to approach a problem or assignment <ul style="list-style-type: none"> ● Gifted & Talented Students <ul style="list-style-type: none"> ● Encourage students to explore concepts in depth and encourage independent studies or investigations ● Modeling or independent student led research
<p style="text-align: center;">Assessments</p>	<ul style="list-style-type: none"> ● Sum it up/Brain Check (Student Edition-end of each lesson) ● Unit Review ● Unit Quizzes ● Unit Test ● Performance Assessment
<p style="text-align: center;">Integration of 21st Century Learning Skills</p>	<ul style="list-style-type: none"> ● 9.2.4.A.1 Identify reasons why people work, different types of work, and how work can help a person achieve personal and professional goals. ● 9.2.4.A.2 Identify various life roles and civic and work-related activities in the school, home, and community. ● 9.2.4.A.3 Investigate both traditional and nontraditional careers and relate information to personal likes and dislikes. ● 9.2.4.A.4 Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success. ● CRP1. Act as a responsible and contributing citizen and employee. ● CRP2. Apply appropriate academic and technical skills. ● CRP4. Communicate clearly and effectively and with reason. ● 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. ● CRP9. Model integrity, ethical leadership and effective management. ● CRP10. Plan education and career paths aligned to personal goals. ● CRP11: Use technology to enhance productivity.

Career Education	<p>The 12 Career Ready Practices: These practices outline the skills that all individuals need to have to truly be adaptable, reflective, and proactive in life and careers. These are researched practices that are essential to career readiness. This unit addresses standard 9.2 (Career Awareness, Exploration, and Preparation) as it outlines the importance of being knowledgeable about one's interests and talents, and being well informed about postsecondary and career options, career planning, and career requirements.</p>
Interdisciplinary Connections	<ul style="list-style-type: none">• The science curriculum includes unifying themes such as systems, changes, and models. These themes combine with connected skills such as using measurement and representations. These themes and skills, along with the shared processes of observing and predicting, provide teachers with a myriad of opportunities for making meaningful curricular connections across disciplines.• For example, investigations of local issues can engage students in thinking about science and social science concepts and help develop their understanding of probability and data analysis, which are parts of the mathematics standards. Learning, understanding, and using scientific vocabulary allows to students to attach their ideas to content specific words and phrases. Students must understand appropriate levels of scientific terminology to be able to meet the lesson objectives. In addition, teachers may use journals, night writes, lab reports, and outlines to provide students with opportunities to write in the science classroom.