



SPRINGFIELD PUBLIC SCHOOLS
ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21ST CENTURY GLOBAL SKILLS

Springfield Public Schools
Springfield, New Jersey 07081

Science
Grade 5

Curriculum Guide

2021

This curriculum may be modified through varying materials, techniques, and strategies as per an individual student's IEP.

Springfield Board of Education
Approved July 19, 2021



Springfield Public Schools Springfield, New Jersey

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Superintendent of Schools**

**Erica Scudero
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Introduction

This template is the product of an initiative led by the New Jersey Department of Education, Office of Academic Standards, in partnership with the New Jersey Association for Supervision and Curriculum Development (NJASCD) and the New Jersey Principals and Supervisors Association (NJPSA). The project was undertaken with the assistance of New Jersey content area supervisors, curriculum coordinators, and teachers during spring-summer 2009. The goal of the project was to design exemplar unit plans and accompanying lesson plans aligned with the New Jersey Student Learning Standards that may be used by districts as models for the development of local curricula.

The Unit Overview Template, which follows, is a tool that can help districts define one unit plan of several that comprise a specific course in the curriculum for any content area. It is designed, once completed, to summarize the content and objectives for the unit, outline lessons and assessments that support the unit, and provide links to documents that facilitate delivery of the unit, such as student materials, background information, resources, and performance rubrics. To see how the units fit together in the design of a course, see the Curriculum Design Template included at the end of this document.

Seven content area Unit Overviews were created as part of the project to serve as exemplar unit plans that are aligned with the New Jersey Student Learning Standards and that assist in achieving the goal of engaging students, fostering achievement, and cultivating 21st century global skills. The units stress the integration of 21st century themes and skills, global perspectives, technology, and cross-curricular connections.

We encourage districts to use the exemplars in conjunction with the curriculum development tools and templates that emanated from this project as models for teaching and learning based on the New Jersey Student Learning Standards.

EXTRACT OF THE MINUTES OF A MEETING OF
THE BOARD OF EDUCATION OF
THE TOWNSHIP OF SPRINGFIELD
COUNTY OF UNION, NEW JERSEY
AS RECORDED IN THE OFFICIAL MINUTE BOOK

The Board of Education of the Township of Springfield, in the County of Union, New Jersey, convened in Regular Session on July 19, 2021 at 7:10 PM.

The following members of the Board of Education were present:

Present: Mr. Anthony Delia, Mr. Marc Miller, Mr. Hector Munoz, Mrs. Meredith Murphy, Mrs. Kristy Rubin, Mrs. Paula Saha, Mr. Scott Silverstein, Mrs. Hilary Turnbull, Mrs. Laura Gamarekian

The following resolution was offered by Mrs. Saha, seconded by Mr. Munoz and adopted by the Board of Education by the Roll Call vote as indicated.

TITLE: REVISED CURRICULUM

RESOLVED :

At the recommendation of the Superintendent, to approve the following revised curriculum –

- | | | |
|---------------------------------|---|-------------------|
| • Kindergarten Science | - | Elementary School |
| • Grade 1 Science | - | Elementary School |
| • Grade 2 Science | - | Elementary School |
| • Grade 3 Science | - | Elementary School |
| • Grade 4 Science | - | Elementary School |
| • Grade 5 Science | - | Elementary School |
| • Grade 6 Science | - | Middle School |
| • Grade 7 Science | - | Middle School |
| • Grade 8 Science | - | Middle School |
| • Grade 8 Automation & Robotics | - | Middle School. |
| • | | |

ROLL CALL:

Yeas: Unanimous by all Members present.

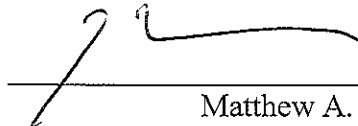
MOTION CARRIED

STATE OF NEW JERSEY)

)
COUNTY OF UNION)

I, Matthew A. Clarke, Business Administrator/Board Secretary of the Township of Springfield in the County of Union, State of New Jersey, hereby, certify that the foregoing extract from the minutes of the meeting of the Board of Education of said District duly called and held on July 19, 2021 has been compared by me with the original minutes as officially recorded in my Office in the Minute Book of said Township of Springfield Board of Education and is a true, complete copy thereof and of the whole of said original minutes so far as the same relates to the subject matter referred to on said extract. In witness, I have hereunto set my hand and affixed the corporate seal of said Board of Education this 20th day of July 2021.

SEAL



Matthew A. Clarke
Business Administrator/Board Secretary



Unit Overview Template

Content Area:	Science	Grade Level:	5	Unit Title:	Spaceship Earth
Unit Summary: Students will work through the engineering design process and use technology to create experiments. Students will understand the different components of the solar system, including the planets, celestial objects, and orbits. Students will understand the effects of microgravity and how they can develop an experiment to test the effects of microgravity on a planet or animal system.					
Primary Interdisciplinary Connections: ELA					
<u>21st Century Themes</u> X Creativity and Innovation X Critical Thinking and Problem Solving ☐ ICT Literacy ☐ Information Literacy X Life and Career Skills X Communication and Collaboration ☐ Media Literacy					
Unit Rationale:	Experimental design is a key component to becoming engaged in scientific study.				
Career Readiness (Standard 9):					
9.2.5.CAP.4: Explain the reasons why some jobs and careers require specific training, skills, and certification (e.g., life guards, child care, medicine, education) and examples of these requirements.					
9.4.2.CI.1: Gather information about an issue, such as climate change, and collaboratively brainstorm ways to solve the problem (e.g., K-2-ETS1-1, 6.3.2.GeoGI.2).					
9.4.2.CT.2: Identify possible approaches and resources to execute a plan (e.g., 1.2.2.CR1b, 8.2.2.ED.3).					
9.4.2.CT.3: Use a variety of types of thinking to solve problems (e.g., inductive, deductive).					

Learning Targets

Standards:	5-ETS1; 5-PS2; MA.MD; LA.RI; LA.W
Content Statements:	Engineering Design; Motion and Stability: Forces and Interactions
CPI#:	Cumulative Progress Indicator (CPI):
3-5-ETS1-1	Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.
3-5-ETS1-2	Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.
3-5-ETS1-3	Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.
5-PS2-1	Support argument that gravitational force exerted by Earth on objects is directed down.
MA.5.5.MD.A.1	Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.
MA.5.5.MD.B	Represent and interpret data.
LA.5.RI.5.4	Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a grade 5 topic or subject area.



LA.5.RI.5.3	Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text.
LA.5.W.5.7	Conduct short research projects that use several sources to build knowledge through investigation of different perspectives of a topic.
Art 1.3.P.D.2	Create two and three-dimensional works of art while exploring color, line, shape, form, texture, and space.
8.1.5.DA.4	Organize and present climate change data visually to highlight relationships or support a claim.
8.2.5.ITH.1	Explain how societal needs and wants influence the development and function of a product and a system.
8.2.5.NT.1	Troubleshoot a product that has stopped working and brainstorm ideas to correct the problem.
8.2.5.ETW.4	Explain the impact that resources, such as energy and materials used to develop technology, have on the environment.
8.2.5.ETW.5	Identify the impact of a specific technology on the environment and determine what can be done to increase positive effects and to reduce any negative effects, such as climate change.

Science and Engineering Practices:

Asking Questions and Defining Problems

Asking questions and defining problems in 3–5 builds on K–2 experiences and progresses to specifying qualitative relationships.

- Define a simple design problem that can be solved through the development of an object, tool, process, or system and includes several criteria for success and constraints on materials, time, or cost. (3-5-ETS1-1)

Planning and Carrying Out Investigations

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.

- Plan and conduct an investigation collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials considered. (3-5-ETS1-3)

Constructing Explanations and Designing Solutions

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.

- Generate and compare multiple solutions to a problem based on how well they meet the criteria and constraints of the design problem. (3-5-ETS1-2)

Engaging in Argument from Evidence



Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s).

- Support an argument with evidence, data, or a model. (5-PS2- 1)

Disciplinary Core Ideas (DCIs):

ETS1.A: Defining and Delimiting Engineering Problems

- Possible solutions to a problem are limited by available materials and resources (constraints). The success of a designed solution is determined by considering the desired features of a solution (criteria). Different proposals for solutions can be compared on the basis of how well each one meets the specified criteria for success or how well each takes the constraints into account. (3-5-ETS1-1)

ETS1.B: Developing Possible Solutions

- Research on a problem, such as climate change, should be carried out before beginning to design a solution. Testing a solution involves investigating how well it performs under a range of likely conditions. (3-5-ETS1-2)
- At whatever stage, communicating with peers about proposed solutions is an important part of the design process, and shared ideas can lead to improved designs. (3-5-ETS1-2)
- Tests are often designed to identify failure points or difficulties, which suggest the elements of the design that need to be improved. (3-5- ETS1-3)

ETS1.C: Optimizing the Design Solution

- Different solutions need to be tested in order to determine which of them best solves the problem, given the criteria and the constraints. (3-5-ETS1-3)

PS2.B: Types of Interactions

- The gravitational force of Earth acting on an object near Earth’s surface pulls that object toward the planet’s center. (5-PS2-1)

Crosscutting Concepts:

Influence of Engineering, Technology, and Science on Society and the Natural World

- People’s needs and wants change over time, as do their demands for new and improved technologies. (3-5-ETS1-1)
- Engineers improve existing technologies or develop new ones to increase their benefits, decrease known risks, and meet societal demands. (3-5-ETS1-2)

Cause and Effect

- Cause and effect relationships are routinely identified and used to explain change. (5-PS2-1)

Unit Essential Questions:

- What is microgravity and the effect of freefall in outer space?
- What objects are part of the solar system?



- How can I create my own experiment?

Unit Enduring Understandings:

- Earth is part of a solar system, which is made up of many different objects orbiting the sun.
- Technology is all around us. Engineers apply their knowledge of science to design solutions to practical problems.

Unit Learning Targets:

Students will....

- Understanding effects of microgravity.
- Identify major components and characteristics of the solar system.

Evidence of Learning

Summative Assessment: Unit 12 Science Fusion Assessment

Equipment Needed: -Laptop, ipad, powerpoint template, poster boards

Teacher Resources: Science Fusion, Teacher made websites

Formative Assessments:

- Exit Slips
- Digital Lesson
- Work Plan Collection
- Brain Check Page
- Sum It up Page
- Apply Concepts Page
- Unit Review pages
- Completed active reading boxes



Lesson Plans

Lesson	Time Frame
Lesson 1- Weightlessness	40-60 minutes/3 days
Lesson 2 What Objects Are Part of the Solar System?	40-60 minutes/3 days
Lesson 3 Experiment Design	40-60 minutes/30 days

Teacher Notes: See examples on Dropbox

Curriculum Development Resources/Technology Resources:

Click the links below to access additional resources used to design this unit:

<https://www-k6.thinkcentral.com>

<https://www.definedlearning.com>

<https://www.nextgenscience.org>

<https://mysteryscience.com/>



Lesson Plan 1 Template

Content Area: Science Lesson Title: Weightlessness Time Frame: 40 minutes/ 2 days

Lesson Components

21st Century Themes

☒ Global Awareness ☐ Financial, Economic, Business and Entrepreneurial Literacy
☒ Civic Literacy ☐ Health Literacy

21st Century Skills

☐ Creativity and Innovation ☒ Critical Thinking and Problem Solving ☐ Information Literacy
☒ Life and Career Skills ☒ Communication and Collaboration ☐ Media Literacy ☐ ICT Literacy

Interdisciplinary Connections: ELA; Math; Art

Integration of Technology: PowerPoint, *TED Talks*, EdPuzzle Video, Optional Excel or Google Sheets Graph, Unit's investigation materials

Equipment Needed: Projector, Computers, iPads

Goals/Objectives	Learning Activities/ Instructional Strategies	Formative Assessment Tasks
Students will: - Explain how microgravity affects astronauts in space. - Explain the difference between the misconception of astronauts floating versus falling. - Understand that gravity is a force that keeps planets in orbit around the sun and governs the rest of the motion in the solar system. - Understand the shuttle and astronaut are falling towards the Earth in orbit at the same rate.	Lesson Sequence 1. Introduce floating vs. falling 2. Watch <i>TED Talk</i> video hook/introduction 3. Introduce experiment and group roles 4. Experiment lab sheet- experiment, record data, analyze, form a conclusion 5. Graph data 6. Share/ communicate results and conclusions with class	- Lab sheet collection - Excel graph - Oral presentation/ written conclusion of results - Worksheet questions - Persistence card check in as an exit card
Differentiation: Leveled questioning, strategic grouping, differentiated assigned group roles, extension/enrichment activities		
Resources Provided: - Unit 12 Science Fusion Lessons - Ted Talk Edpuzzle - Lab Sheets - Experiment Page - Student Science Notebook		



Lesson Plan 2 Template

Content Area: Science Lesson Title: What Objects Are Part of the Solar System? Time Frame: 40-60 minutes/ 3 days

Lesson Components

21st Century Themes

☒ Global Awareness ☐ Financial, Economic, Business and Entrepreneurial Literacy
☐ Civic Literacy ☐ Health Literacy

21st Century Skills

☒ Creativity and Innovation ☒ Critical Thinking and Problem Solving ☒ Information Literacy
☒ Life and Career Skills ☒ Communication and Collaboration ☐ Media Literacy ☐ ICT Literacy

Interdisciplinary Connections: ELA, Art

Integration of Technology:

Laptops, iPads, Science Fusion Website, Defined Learning, Mystery Science, Teacher Websites with supplemental links

Equipment Needed: Laptops, iPads, Projector, Unit's investigation materials

Goals/Objectives	Learning Activities/ Instructional Strategies	Formative Assessment Tasks
Students will: - Identify the major components of the solar system. - Describe the major characteristics of the planets of the solar system. - Compare and contrast the inner and outer planets. - Describe some of the smaller objects that orbit the sun, such as asteroids, meteoroids, comets, and dwarf planets.	Lesson Sequence - Discuss Essential Question, Introduce KWL, Hook - Student Edition pages 539-556 <i>Mini Lesson/Enrichment Option</i> Inquiry Flipchart page 58- Make a Scale Model - Inquiry Flipchart page 59- How Do We Observe Objects in the Solar System? & Lab Sheet pages 559-560 - Digital Lesson- Online resource	- Sum it Up page 552 - Brain Check page 553 - Applying Concepts page 554-556 - Active Reading questions pages 539-556 - Digital Lesson - Independent Inquiries - Inquiry Lab Sheets 559-560
Differentiation: Leveled Question- T.E pages 541, 542, 547, 549, 551 Writing Connection- Create a play & Write a Narrative Math- Solve a Problem		
Resources Provided: - Science Fusion Textbook - Mystery Science - Think Central Website		



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- Defined Learning
- Inquiry Flip Charts
- Flipchart Investigative Supplies
- Student Science notebook



Lesson Plan 3 Template

Content Area: Science Lesson Title: Experiment Design Time Frame: 40-60 minutes/30 days

Lesson Components

21st Century Themes

☒ Global Awareness ☒ Financial, Economic, Business and Entrepreneurial Literacy
☒ Civic Literacy ☐ Health Literacy

21st Century Skills

☒ Creativity and Innovation ☒ Critical Thinking and Problem Solving ☒ Information Literacy
☒ Life and Career Skills ☒ Communication and Collaboration ☐ Media Literacy ☐ ICT Literacy

Interdisciplinary Connections: ELA, Math

Integration of Technology: Computers, iPads, Microsoft Word, PowerPoint

Equipment Needed: Computers, iPads, Projector

Goals/Objectives	Learning Activities/ Instructional Strategies	Formative Assessment Tasks
Students will: • Create a proposal for an experiment that tests gravity. • Identify controls & variables. • Research background information and summarize the proposal. • Create hypotheses and predictions. • Identify materials needed. • Create instructions for repeating the experiment.	Lesson Sequence 1. Decide on topic 2. Preliminary Research Report 3. Preliminary Proposal 4. Prediction based on Hypothesis 5. Description of Testable Hypothesis 6. Materials and Instructions 7. Run the experiments	• Lab write-up
Differentiation: Strategic grouping, differentiated topics, sentence starters/ pre-created templates, PowerPoints and examples		
Resources Provided: • https://www-k6.thinkcentral.com • https://www.definedlearning.com • https://www.nextgenscience.org • Science Fusion Textbook and Student Science Notebook • Think Central Website • Defined Learning • Inquiry Flip Charts • Flipchart Investigative Supplies		



Lesson Reflection

Reflect on the lesson you have developed and rate the degree to which the lesson ***Strongly***, ***Moderately*** or ***Weakly*** meets the criteria below.

Lesson Activities	Strongly	Moderately	Weakly
Are challenging Strongly and require higher order thinking and problem solving skills	X		
Allow for student choice		X	
Provide scaffolding for acquiring targeted knowledge/skills		X	
Integrate global perspectives	X		
Integrate 21st century skills	X		
Provide opportunities for interdisciplinary connection and transfer of knowledge and skills	X		
Foster student use of technology as a tool to develop critical thinking, creativity and innovation skills	X		
Are varied to address different student learning styles and preferences		X	
Are differentiated based on student needs		X	
Are student-centered with teacher acting as a facilitator and co-learner during the teaching and learning process	X		
Provide means for students to demonstrate knowledge and skills and progress in meeting learning goals and objectives	X		
Provide opportunities for student reflection and self- assessment	X		
Provide data to inform and adjust instruction to better meet the varying needs of learners		X	

Curriculum Design Template

Content Area: Science	Grade Level: 5	Unit Title: Spaceship Earth
Created: 2021	Board Approved on:	



Unit Overview Template

Content Area:	Science	Grade Level:	5	Unit Title:	Matter
Unit Summary: This unit helps students develop the concepts of “substances” and “chemical reactions.” Students see that chemical reactions enable us to make new material by transforming the ones we have. The results of these reactions are interesting and sometimes profoundly unusual.					
Primary Interdisciplinary Connections: Engineering					
21st Century Themes ☐ Creativity and Innovation ☒ Critical Thinking and Problem Solving ☐ ICT Literacy ☐ Information Literacy ☒ Life and Career Skills ☒ Communication and Collaboration ☐ Media Literacy					
Unit Rationale:	The performance expectations in fifth grade help students formulate answers to questions such as: When matter changes, does its weight change? Can new substances be created by combining other substances? Students are able to describe that matter is made of particles too small to be seen through the development of a model.				
Career Readiness (Standard 9): 9.2.5.CAP.4: Explain the reasons why some jobs and careers require specific training, skills, and certification (e.g., life guards, child care, medicine, education) and examples of these requirements. 9.4.2.CI.1: Gather information about an issue, such as climate change, and collaboratively brainstorm ways to solve the problem (e.g., K-2-ETS1-1, 6.3.2.GeoGI.2). 9.4.2.CT.2: Identify possible approaches and resources to execute a plan (e.g., 1.2.2.CR1b, 8.2.2.ED.3). 9.4.2.CT.3: Use a variety of types of thinking to solve problems (e.g., inductive, deductive).					

Learning Targets

Standards:	5-PS1; MA.MD; LA.W
Content Statements:	Matter and its Interactions
CPI#:	Cumulative Progress Indicator (CPI):
5-PS1-1	Develop a model to describe that matter is made of particles too small to be seen.
5-PS1-2	Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved.
5-PS1-3	Make observations and measurements to identify materials based on their properties.
5-PS1-4	Conduct an investigation to determine whether the mixing of two or more substances results in new substances.
9.2.5.CAP.4	Explain the reasons why some jobs and careers require specific training, skills, and certification (e.g., life guards, child care, medicine, education) and examples of these requirements.
9.4.2.CI.1	Gather information about an issue, such as climate change, and collaboratively brainstorm ways to solve the problem (e.g., K-2-ETS1-1, 6.3.2.GeoGI.2).



LA.5.RI.5.3	Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text.
LA.5.RI.5.7	Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.
MA.5.5.MD.A.1	Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.
LA.5.W.5.2	Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

Science and Engineering Practices:

Developing and Using Models

Modeling in 3–5 builds on K–2 experiences and progresses to building and revising simple models and using models to represent events and design solutions.

- Develop a model to describe phenomena. (5-PS1-1)

Planning and Carrying Out Investigations

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.

- Conduct an investigation collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials considered. (5-PS1-4)
- Make observations and measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon. (5-PS1-3)

Using Mathematics and Computational Thinking

Mathematical and computational thinking in 3–5 builds on K–2 experiences and progresses to extending quantitative measurements to a variety of physical properties and using computation and mathematics to analyze data and compare alternative design solutions.

- Measure and graph quantities such as weight to address scientific and engineering questions and problems. (5-PS1-2)

Disciplinary Core Ideas (DCIs):

PS1.A: Structure and Properties of Matter

- Matter of any type can be subdivided into particles that are too small to see, but even then the matter still exists and can be detected by other means. A model showing that gases are made from matter particles that are too small to see and are moving freely around in space can explain many observations, including the inflation and shape of a balloon and the effects of air on larger particles or objects. (5-PS1-1)
- The amount (weight) of matter is conserved when it changes form, even in transitions in which it seems to vanish. (5-PS1-2)



- Measurements of a variety of properties can be used to identify materials. (Boundary: At this grade level, mass and weight are not distinguished, and no attempt is made to define the unseen particles or explain the atomic-scale mechanism of evaporation and condensation.) (5-PS1-3)

PS1.B: Chemical Reactions

- When two or more different substances are mixed, a new substance with different properties may be formed. (5-PS1-4)
- No matter what reaction or change in properties occurs, the total weight of the substances does not change. (Boundary: Mass and weight are not distinguished at this grade level.) (5-PS1-2)

Crosscutting Concepts:

Cause and Effect

- Cause and effect relationships are routinely identified, tested, and used to explain change. (5-PS1-4)

Scale, Proportion, and Quantity

- Natural objects exist from the very small to the immensely large. (5-PS1-1)
- Standard units are used to measure and describe physical quantities such as weight, time, temperature, and volume. (5-PS1-2), (5-PS1-3)

Connections to Nature of Science

Scientific Knowledge Assumes an Order and Consistency in Natural Systems

- Science assumes consistent patterns in natural systems. (5-PS1-2)

Unit Essential Questions:

- What is the particulate nature of matter?
- What are the results when matter changes?
- How can we identify matter?
- Can new substances be created?

Unit Enduring Understandings:

- Matter of any type can be subdivided into particles that are too small to see, but even then the matter still exists and can be detected by other means. A model showing that gases are made from matter particles that are too small to see and are moving freely around in space can explain many observations, including the inflation and shape of a balloon and the effects of air on larger particles or objects.
- The amount (weight) of matter is conserved when it changes form, even in transitions in which it seems to vanish. No matter what reaction or change in properties occurs, the total weight of the substances does not change.
- Measurements of a variety of properties can be used to identify materials.
- When two or more different substances are mixed, a new substance with different properties may be formed.



Unit Learning Targets:

Students will....

- Consider the variety of scale within natural objects.
- Understand that particles are extremely small compared to other natural objects.
- Explore that substances undergo change.
- Understand that matter is conserved when it changes.
- Consider the cause and effect relationship when combining chemicals to produce reactions.
- Consider that combining two chemicals may result in a change in the substance.
- Consider that chemicals may form new substances when combined.



Evidence of Learning

Summative Assessment: Matter Songs, Web of Life assessments, Science Fusion Brain Checks, Mini-Projects.

Equipment Needed:

- Classroom digital devices with video editing and presentation applications;
- Classroom digital resources: websites and resource mgmt (ie: oncourse teacher websites, Clever) Defined Learning, and supplemental websites to support development and reteaching of concepts.
- General classroom materials such as but not limited to: scissors, rulers, meter sticks, hand lenses, etc.
- Consumable materials as described in the Science Fusion Program: such as but not limited to printouts, vinegar, baking soda/powder, black beans, purple cabbage, pickle juice, ketchup, yogurt, mayonnaise, milk, lemonade, dish soap, glue, borax, pennies, small containers, steel nails, straws, paper plates and cups, plastic utensils, plastic wrap, ziploc bags, toothpicks, paper towels, coffee filters, newspaper, construction paper, etc.

Teacher Resources: Science Fusion, Defined Learning, NewsELA, Mystery Science, Supplemental Printed or digital resources such as Bill Nye Videos or royalty-free karaoke songs

Formative Assessments:

- Web of Life Unit Assessment
- Defined Learning Projects
- Science Fusion Assessments



Lesson Plans

Lesson	Time Frame
Lesson 1 Inky Mixtures	5 - 40 minute periods
Lesson 2 Matter Songs	5 - 40 minute periods
Lesson 3 Chemical Change - Acid Test	2 - 40 minute periods

Teacher Notes: Inky Mixtures and Acid Test require lab prep

Curriculum Development Resources/Technology Resources:

Click the links below to access additional resources used to design this unit:

<https://www-k6.thinkcentral.com>

<https://www.definedlearning.com>

<https://www.nextgenscience.org>

<https://mysteryscience.com/>



Lesson Plan 1 Template

Content Area: Science Lesson Title: Mixtures and Solutions - Inky Mixture Time Frame: 5 - 40 minute periods

Lesson Components

21st Century Themes

☒ Global Awareness ☐ Financial, Economic, Business and Entrepreneurial Literacy
☐ Civic Literacy ☐ Health Literacy

21st Century Skills

☐ Creativity and Innovation ☒ Critical Thinking and Problem Solving ☒ Information Literacy
☐ Life and Career Skills ☒ Communication and Collaboration ☐ Media Literacy ☐ ICT Literacy

Interdisciplinary Connections: ELA, Math

Integration of Technology: Classroom digital devices such as iPads and computers

Equipment Needed: laptops, iPads, projector system

Goals/Objectives	Learning Activities/ Instructional Strategies	Formative Assessment Tasks
- Conduct an experiment to determine whether the mixing of two or more substances results in new substances. - Compare and contrast mixtures and solutions. - Determine ways that mixtures can be separated. - Classify substances based on whether they dissolve in water. - Relate the properties of mixtures with the proportions of starting material.	Lesson Sequence - Inky Mixture - directed inquiry using Science Fusion flipchart - Independent Inquiry - Does it Dissolve - Engage Your Brain - Unit 4, lesson 4 - What Are Mixtures and Solutions? - U4L4	- Written analysis of results to lab - Active Reading Responses - Sum it Up - Brain Check
Differentiation: Scaffolding of readings, mixed ability level groups, assignment of achievable tasks.		
Resources Provided: - Science Fusion Textbook - Think Central Website - Inquiry Flip Charts		



Lesson Plan 2 Template

Content Area: Science Lesson Title: Matter Songs Time Frame: 5 - 40 minute periods

Lesson Components

21st Century Themes

- ☒ Global Awareness ☐ Financial, Economic, Business and Entrepreneurial Literacy
☐ Civic Literacy ☐ Health Literacy

21st Century Skills

- ☒ Creativity and Innovation ☐ Critical Thinking and Problem Solving ☒ Information Literacy
☐ Life and Career Skills ☒ Communication and Collaboration ☒ Media Literacy ☐ ICT Literacy

Interdisciplinary Connections: Connected Reading Street leveled reader stories, connected Raz-Kids stories

Integration of Technology: ELA

Equipment Needed: laptops, iPads, projector system, microphones.

Goals/Objectives	Learning Activities/ Instructional Strategies	Formative Assessment Tasks
Students will: - Relate the states of matter to temperature and the arrangement and movement of particles. - Compare solids, liquids and gases based on their properties.	Lesson Sequence - Video introduction - Matter Songs - in small groups create matter songs - Review checklist of requirements - Clean final copy of lyrics of at least 10 lines - Terms and topics were incorporated into the song as well as main ideas - Tune to which it is performed is familiar or appealing to all generations	- Presentation of Matter Songs - Rubric scoring including cooperative work
Differentiation: Scaffolding of readings, mixed ability level groups, assignment of achievable tasks.		
Resources Provided: - royalty-free karaoke songs (from various teacher approved websites, such as https://www.youtube.com/user/singkingkaraoke) http://www.rcampus.com/rubricshowc.cfm?code=XX5XW32&sp=yes - Funky snowman song https://www.youtube.com/watch?v=jkZk5qN3xf0		



Lesson Plan 3 Template

Content Area: Science Lesson Title: Chemical Changes - Acid Test Time Frame: 2 - 40 minute periods

Lesson Components

21st Century Themes

☒ Global Awareness ☐ Financial, Economic, Business and Entrepreneurial Literacy
☐ Civic Literacy ☐ Health Literacy

21st Century Skills

☐ Creativity and Innovation ☒ Critical Thinking and Problem Solving ☐ Information Literacy
☐ Life and Career Skills ☒ Communication and Collaboration ☐ Media Literacy ☐ ICT Literacy

Interdisciplinary Connections: ELA

Integration of Technology: Classroom digital devices with video editing

Equipment Needed: laptops, projector system, prep for “Acid Test” activity, testing supplies, mixing sheet, results sheet

Goals/Objectives	Learning Activities/ Instructional Strategies	Formative Assessment Tasks
Students will: - Conduct an investigation collaboratively to produce data to serve as the basis for evidence, using fair tests in which variables are controlled and the number of trials considered. - Observe cause and effect relationships and use them to explain change.	Lesson Sequence - Introduction through video resources - Lab set-up; Testing Supplies; Acid Reaction Supplies - In pairs, duct lab using mixing sheet - Record results and answer observation questions on Results sheet - Lab assessment	End of Lab Assessment
Differentiation: Scaffolding of readings, mixed ability level groups, assignment of achievable tasks.		
Resources Provided: - Lab sheets - NewsELA - Supplemental printed or digital resources - Science Fusion textbooks - Science Fusion website		



Lesson Reflection

Reflect on the lesson you have developed and rate the degree to which the lesson ***Strongly, Moderately*** or ***Weakly*** meets the criteria below.

Lesson Activities	Strongly	Moderately	Weakly
Are challenging Strongly and require higher order thinking and problem solving skills	X		
Allow for student choice	X		
Provide scaffolding for acquiring targeted knowledge/skills	X		
Integrate global perspectives		X	
Integrate 21st century skills	X		
Provide opportunities for interdisciplinary connection and transfer of knowledge and skills		X	
Foster student use of technology as a tool to develop critical thinking, creativity and innovation skills	X		
Are varied to address different student learning styles and preferences	X		
Are differentiated based on student needs	X		
Are student-centered with teacher acting as a facilitator and co-learner during the teaching and learning process	X		
Provide means for students to demonstrate knowledge and skills and progress in meeting learning goals and objectives		X	
Provide opportunities for student reflection and self- assessment		X	
Provide data to inform and adjust instruction to better meet the varying needs of learners		X	

Curriculum Design Template

Content Area: Science	Grade Level: 5	Unit Title: Matter
Created: 2021	Board Approved on:	



Unit Overview Template

Content Area:	Science	Grade Level:	5	Unit Title:	Watery Planet -Earth's Systems
Unit Summary: Earth's surface is constantly changing and it's resources are essential to life and must be conserved. The oceans are complex systems that interact with Earth's land, air, and organisms.					
Primary Interdisciplinary Connections: ELA					
<u>21st Century Themes</u> X Creativity and Innovation X Critical Thinking and Problem Solving ☐ ICT Literacy X Information Literacy X Life and Career Skills X Communication and Collaboration ☐ Media Literacy					
Unit Rationale:	Through instruction the students will start investigating and analyzing information to gain a deeper understanding of the constantly changing earth's surface and the need to conserve Earth's natural resources as well as Earth's oceans and biosphere.				
Career Readiness (Standard 9): 9.2.5.CAP.4: Explain the reasons why some jobs and careers require specific training, skills, and certification (e.g., life guards, child care, medicine, education) and examples of these requirements. 9.4.2.CI.1: Gather information about an issue, such as climate change, and collaboratively brainstorm ways to solve the problem (e.g., K-2-ETS1-1, 6.3.2.GeoGI.2). 9.4.2.CT.2: Identify possible approaches and resources to execute a plan (e.g., 1.2.2.CR1b, 8.2.2.ED.3). 9.4.2.CT.3: Use a variety of types of thinking to solve problems (e.g., inductive, deductive).					

Learning Targets

Standard:	5-ESS1; 5-ESS2; 5-ESS3
Content Statements:	Earth's Place in the Universe; Earth's Systems; Earth and Human Activity
CPI#:	Cumulative Progress Indicator (CPI):
5-ESS1-1	Support an argument that differences in the apparent brightness of the sun compared to other stars is due to their relative distances from Earth.
5-ESS1-2	Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.
5-ESS2-1	Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.
5-ESS2-2	Describe and graph the amounts of salt water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.



5-ESS3-1	Obtain and combine information about ways individual communities use science ideas to protect the Earth’s resources, environment, and address climate change issues.
LA.5.RL.5.4	Determine the meaning of words and phrases as they are used in a text, including figurative language such as metaphors and similes.
LA.5.RL.5.7	Analyze how visual and multimedia elements contribute to the meaning, tone, or beauty of a text (e.g., graphic novel, multimedia presentation of fiction, folktale, myth, poem).
LA.5.RL.5.9	Compare, contrast and reflect on (e.g. practical knowledge, historical/cultural context, and background knowledge) the treatment of similar themes and topics (e.g., opposition of good and evil) and patterns of events (e.g., the quest) in stories, myths, and traditional literature from different cultures.
LA.5.W.5.1. B	Provide logically ordered reasons that are supported by facts and details from text(s), quote directly from text when appropriate.
MA.5.5.G.A. 2	Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.
Art 1.3.P.D.2	Create two and three-dimensional works of art while exploring color, line, shape, form, texture, and space.

Science and Engineering Practices:

Analyzing and Interpreting Data

Analyzing data in 3–5 builds on K–2 experiences and progresses to introducing quantitative approaches to collecting data and conducting multiple trials of qualitative observations. When possible and feasible, digital tools should be used.

- Represent data in graphical displays (bar graphs, pictographs and/or pie charts) to reveal patterns that indicate relationships. (5- ESS1-2)

Engaging in Argument from Evidence

Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s).

- Support an argument with evidence, data, or a model. (5- ESS1-1)

Developing and Using Models

Modeling in 3 - 5 builds on K - 2 experiences and progresses to building and revising simple models and using models to represent events and design solutions.

- Develop a model using an example to describe a scientific principle. (5-ESS2-1)

Using Mathematics and Computational Thinking

Mathematical and computational thinking in 3 - 5 builds on K - 2 experiences and progresses to extending quantitative measurements to a variety of physical properties and using computation and mathematics to analyze data and compare alternative design solutions.

- Describe and graph quantities such as area and volume to address scientific questions. (5-ESS2-2)



Obtaining, Evaluating, and Communicating Information

Obtaining, evaluating, and communicating information in 3–5 builds on K–2 experiences and progresses to evaluating the merit and accuracy of ideas and methods.

- Obtain and combine information from books and/or other reliable media to explain phenomena or solutions to a design problem. (5- ESS3-1)

Disciplinary Core Ideas (DCIs):

ESS1.A: The Universe and its Stars

- The sun is a star that appears larger and brighter than other stars because it is closer. Stars range greatly in their distance from Earth. (5-ESS1-1)

ESS1.B: Earth and the Solar System

- The orbits of Earth around the sun and of the moon around Earth, together with the rotation of Earth about an axis between its North and South poles, cause observable patterns. These include day and night; daily changes in the length and direction of shadows; and different positions of the sun, moon, and stars at different times of the day, month, and year. (5- ESS1-2)

ESS2.A: Earth Materials and Systems

- Earth's major systems are the geosphere (solid and molten rock, soil, and sediments), the hydrosphere (water and ice), the atmosphere (air), and the biosphere (living things, including humans). These systems interact in multiple ways to affect Earth's surface materials and processes. The ocean supports a variety of ecosystems and organisms, shapes landforms, and influences climate. Winds and clouds in the atmosphere interact with the landforms to determine patterns of weather. (5-ESS2-1)

ESS2.C: The Roles of Water in Earth's Surface Processes

- Nearly all of Earth's available water is in the ocean. Most fresh water is in glaciers or underground; only a tiny fraction is in streams, lakes, wetlands, and the atmosphere. (5-ESS2-2)

ESS3.C: Human Impacts on Earth Systems

- Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth's resources and environments. (5-ESS3-1)

Crosscutting Concepts:

Patterns

- Similarities and differences in patterns can be used to sort, classify, communicate and analyze simple rates of change for natural phenomena. (5-ESS1-2)

Scale, Proportion, and Quantity

- Natural objects exist from the very small to the immensely large. (5- ESS1-1)



- Standard units are used to measure and describe physical quantities such as weight and volume. (5- ESS2-2)

Systems and System Models

- A system can be described in terms of its components and their interactions. (5-ESS2-1), (5-ESS3-1)

Connections to Nature of Science

Science Addresses Questions About the Natural and Material World

- Science findings are limited to questions that can be answered with empirical evidence. (5-ESS3- 1)

Unit Essential Questions:

- How Do People Use Resources?
- How Do Weathering and Erosion Shape Earth's Surface?
- How Does Ocean Water Move?

Unit Enduring Understandings:

- Understand the difference between renewable and non renewable resources.
- Explain fossil fuels and imports and exports.
- Understand land, air and water pollution.
- Understand how to conserve resources and lessen the effects of pollution.
- Understand the difference between erosion, weathering and deposition.
- Understand the different changes in land caused by erosion, weathering and deposition.
- Understand how water affects land.
- Understand how people can protect land from erosion, weathering and deposition.
- Understand the layers of the Earth.
- Understand the concept of Pangea and plate tectonics move in three different ways to form and change land and cause different landforms and reactions.
- Understand how water differs in different parts of the ocean.
- Understand how ocean waves form and identify what causes currents and tides.
- Recognize different ocean ecosystems and how the environment affects ocean ecosystems.
- Understand the layers of the atmosphere.

Unit Learning Targets:

Students will....

- Explain what a resource is.
- Identify some of the resources found in the United States.
- Describe air, water and land pollution.
- Explain what is weathering and how it can change rock.
- Explain how erosion and deposition change Earth's surface.
- Describe how landforms can change over time.
- Contrast physical weathering and erosion.
- Describe what is below Earth's surface?
- Explain how the movement of Earth's crust can change Earth's surface.



- Describe the different parts of the ocean.
- Describe how ocean waves form and what causes currents and tides.
- Explain how ocean waves and currents shape the shore.
- Recognize the layers of the atmosphere.



Evidence of Learning

Summative Assessment: Environmental Public Service Announcement, Natural Disasters Unit 7 and Unit 8 Assessments

Equipment Needed: -Laptop, iPad, popsicle sticks, tape, index cards, straws, pipe cleaners, toothpicks, paper clips

Teacher Resources: Science Fusion, Defined Learning, Mystery Science, teacher made websites, teacher created PBL

Formative Assessments:

- Exit Slips
- Digital Lesson
- Work Plan Collection
- Brain Check Page
- Sum It up Page
- Apply Concepts Page
- Unit Review Pages
- Completed Active Reading Boxes



Lesson Plans

Lesson	Time Frame
Lesson 1 How do People Use Resources?	40-60 minutes/3 days
Lesson 2 How do Weathering and Erosion Shape Earth's Surface?	40-60 minutes/3 days
Lesson 3 How Does Ocean Water Move?	40-60 minutes/3 days
Teacher Notes: Gather resources and materials for various work plans. Link Defined Learning to teacher created website. Distribute username and passwords for Science Fusion website.	
Curriculum Development Resources/Technology Resources: www.brainpop.com www.definedlearning.com www.edpuzzle.com www-k6.thinkcentral.com Science Fusion text https://mysteryscience.com/	



Lesson Plan 1 Template

Content Area: Science Lesson Title: How Do People Use Resources? Time Frame: 40-60 minutes/ 3 days

Lesson Components

21st Century Themes

☒ Global Awareness ☐ Financial, Economic, Business and Entrepreneurial Literacy
☐ Civic Literacy ☐ Health Literacy

21st Century Skills

☒ Creativity and Innovation ☒ Critical Thinking and Problem Solving ☐ Information Literacy
☒ Life and Career Skills ☒ Communication and Collaboration ☐ Media Literacy ☐ ICT Literacy

Interdisciplinary Connections: ELA, Math and Art

Integration of Technology: Laptops, iPads, Science Fusion Website, Defined Learning, Teacher Websites with supplemental links

Equipment Needed: Laptops, iPads, Projector, Unit's Investigation materials

Goals/Objectives	Learning Activities/ Instructional Strategies	Formative Assessment Tasks
Students will: • Explain what a resource is. • Identify some of the resources found in the U.S. • Describe air, water and land pollution. • Develop and propose solutions to an environmental issue.	Lesson Sequence 1. Discuss Essential Question, Introduce KWL, and hook 2. Introduce Environmental PSA (Public Service Announcement) PBL- show sample real life PSA's and explain how environmental issues need equal voice to inform the public. 3. Students research assigned environmental issues using Science Fusion and supplemental research. Students will take class polls, create graphs, and make an iMovie PSA to demonstrate knowledge and proposed solution to the issue. 4. Student Edition pages 329-340 5. Inquiry Flipchart page 35 - Catch That Dirt/ What's in Your Water &/OR Inquiry Flipchart page 36 Solve It: Separating Waste Materials 6. Digital Lesson- Online resource 7. Present and evaluate PSA's	• Sum it Up page 338 • Brain Check page 339 • Applying Concepts page 340 • Active Reading questions pages 329-340 • Digital Lesson • Independent Inquiries • Environmental PSA's



Differentiation:

Leveled Questions- T.E. - page 336

Writing Connection- Acrostic Poems- T.E. - page 337

Resources Provided:

- Science Fusion Textbook
- Think Central Website
- Defined Learning
- Inquiry Flip Charts
- Flipchart Investigative Supplies
- Student Science notebook



Lesson Plan 2 Template

Content Area: Science Lesson Title: How Do Weathering and Erosion Shape Earth's Surface? Time Frame: 60 minutes/3 days

Lesson Components

21st Century Themes

☒ Global Awareness ☐ Financial, Economic, Business and Entrepreneurial Literacy
☐ Civic Literacy ☐ Health Literacy

21st Century Skills

☒ Creativity and Innovation ☒ Critical Thinking and Problem Solving ☐ Information Literacy
☒ Life and Career Skills ☒ Communication and Collaboration ☐ Media Literacy ☐ ICT Literacy

Interdisciplinary Connections: ELA, Math, Art

Integration of Technology: Laptops, iPads, Science Fusion Website, Defined Learning, Mystery Science, Teacher Websites with supplemental links

Equipment Needed: Laptops, iPads, Projector, Unit's Investigation materials

Goals/Objectives	Learning Activities/ Instructional Strategies	Formative Assessment Tasks
Students will: - Explain what is weathering and how it can change a rock. - Explain how erosion and deposition change the earth's surface. - Describe how landforms can change over time. - Contrast physical weathering and erosion. - Distinguish physical weathering from chemical weathering.	Lesson Sequence - Discuss Essential Question, Introduce KWL, and Hook - Student Edition pages 365-382 <i>Mini Lesson Option:</i> Inquiry Flipchart page 39- Grooving with Glaciers / Which Will Weather Faster - Inquiry Flipchart Investigation page 41: How Does Water Change Earth's Surface? Experiment and Lab Sheet pages 385-386 - Digital Lesson- Online resource	- Sum it Up page 378 - Brain Check page 379 - Applying Concepts page 380-81 - Active Reading questions pages 365-382 - Digital Lesson - Independent Inquiries - Inquiry Lab Sheet pages 385-386
Differentiation: Leveled Questions- T.E. - page 371 Writing Connection- Write and Article- Comparing a Statue- T.E. - page 367		
Resources Provided: Science Fusion Textbook		



SPRINGFIELD PUBLIC SCHOOLS
ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21ST CENTURY GLOBAL SKILLS

- Think Central Website
- Defined Learning
- Inquiry Flip Charts
- Flipchart Investigative Supplies
- Student Science notebook
- Mystery Science worksheets



Lesson Plan 3 Template

Content Area: Science Lesson Title: How Does Ocean Water Move? Time Frame: 60 minutes/ 3 days

Lesson Components

21st Century Themes

☒ Global Awareness ☐ Financial, Economic, Business and Entrepreneurial Literacy
☐ Civic Literacy ☐ Health Literacy

21st Century Skills

☒ Creativity and Innovation ☒ Critical Thinking and Problem Solving ☐ Information Literacy
☒ Life and Career Skills ☒ Communication and Collaboration ☐ Media Literacy ☐ ICT Literacy

Interdisciplinary Connections: ELA and Math

Integration of Technology: Laptops, iPads, Science Fusion Website, Defined Learning, Teacher Websites with supplemental links

Equipment Needed: Laptops, iPads, Projector, Unit's Investigation materials

Goals/Objectives	Learning Activities/ Instructional Strategies	Formative Assessment Tasks
Students will: - Describe the different parts of the ocean. - Describe how ocean waves form and what causes currents and tides. - Explain how ocean waves and currents shape the shore.	Lesson Sequence - Discuss Essential Question and Introduce KWL & Hook - Student Edition pages 505-513 <i>Mini Lesson Option:</i> Inquiry Flipchart page 55: Modeling Waves and Currents &/or Build a Jetty - Lesson 3 Inquiry- Whole Group Lab- Modeling Ocean Water 517-518 Inquiry Flipchart page 56 - Digital Lesson & Experiments- Online resources	- Sum it Up page 514 - Brain Check page 515 - Applying Concepts page 516 - Active Reading questions pages 505-513 - Digital Lesson - Independent Inquiries - Inquiry Flipchart Lab Report pages 517- 518
Differentiation: Leveled Questions- T.E. - page 506, 509 Writing Connection- Poem- Moon, Shore, Tides imagery- T.E. - page 511 OR Write a Ship's Journal T.E. page 516A Differentiated Inquiry- T.E- Page 517A		
Resources Provided: - Science Fusion Textbook - Think Central Website		



SPRINGFIELD PUBLIC SCHOOLS
ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21ST CENTURY GLOBAL SKILLS

- Defined Learning
- Inquiry Flip Charts
- Flipchart Investigative Supplies
- Student Science notebook



Lesson Reflection

Reflect on the lesson you have developed and rate the degree to which the lesson ***Strongly, Moderately*** or ***Weakly*** meets the criteria below.

Lesson Activities	Strongly	Moderately	Weakly
Are challenging Strongly and require higher order thinking and problem solving skills	X		
Allow for student choice	X		
Provide scaffolding for acquiring targeted knowledge/skills	X		
Integrate global perspectives	X		
Integrate 21st century skills	X		
Provide opportunities for interdisciplinary connection and transfer of knowledge and skills	X		
Foster student use of technology as a tool to develop critical thinking, creativity and innovation skills		X	
Are varied to address different student learning styles and preferences		X	
Are differentiated based on student needs		X	
Are student-centered with teacher acting as a facilitator and co-learner during the teaching and learning process	X		
Provide means for students to demonstrate knowledge and skills and progress in meeting learning goals and objectives	X		
Provide opportunities for student reflection and self- assessment	X		
Provide data to inform and adjust instruction to better meet the varying needs of learners	X		

Curriculum Design Template

Content Area: Science	Grade Level: 5	Unit Title: Watery Planet- Earth's Systems
Created: 2021	Board Approved on:	



Unit Overview Template

Content Area: Science **Grade Level:** 5 **Unit Title:** Web of Life - Ecosystems and Food Chain

Unit Summary: This unit on ecology helps students develop the idea that plants, animals and fungi form a system of interdependent parts, with each part dependent on the other parts for its material nourishment. The food materials and energy that our bodies use for growth ultimately come from plants. Plants in turn derive their materials from air, water, and soil and their energy from the sun. Thus in a very real way, our bodies come from the earth and the sun. And when we die, decomposers return our materials and energy to the earth, to be used again by future organisms. By the end of the unit, students will conclude that organic matter is cycling through the living world in which the whole of nature forms a great system-the ecosystem.

Primary Interdisciplinary Connections: ELA

21st Century Themes ☐ Creativity and Innovation ☒ Critical Thinking and Problem Solving ☐ ICT Literacy
☒ Information Literacy ☐ Life and Career Skills ☒ Communication and Collaboration ☐ Media Literacy

Unit Rationale: The performance expectations in fifth grade help students formulate answers to questions such as: How does matter cycle through ecosystems? Where does the energy in food come from and what is it used for?

Career Readiness (Standard 9):

- 9.2.5.CAP.4: Explain the reasons why some jobs and careers require specific training, skills, and certification (e.g., life guards, child care, medicine, education) and examples of these requirements.
 9.4.2.CI.1: Gather information about an issue, such as climate change, and collaboratively brainstorm ways to solve the problem (e.g., K-2-ETS1-1, 6.3.2.GeoGI.2).
 9.4.2.CT.2: Identify possible approaches and resources to execute a plan (e.g., 1.2.2.CR1b, 8.2.2.ED.3).
 9.4.2.CT.3: Use a variety of types of thinking to solve problems (e.g., inductive, deductive).

Learning Targets

Standards:	5-PS3; 5-LS1; 5-LS2
Content Statements:	Energy; From Molecules to Organisms: Structures and Processes; Ecosystems: Interactions, Energy, Dynamics
CPI#:	Cumulative Progress Indicator (CPI):
5-PS3-1	Use models to describe that energy in animals' food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.
5-LS1-1	Support an argument that plants get the materials they need for growth chiefly from air and water.
5-LS2-1	Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.
LA.5.W.5.1.B	Provide logically ordered reasons that are supported by facts and details from text(s), quote directly from text when appropriate.



LA.5.RI.5.3	Explain the relationships or interactions between two or more individuals, events, ideas, or concepts in a historical, scientific, or technical text based on specific information in the text.
LA.5.RI.5.7	Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently.
MA.5.5.OA.B	Analyze patterns and relationships.

Science and Engineering Practices:

Developing and Using Models

Modeling in 3–5 builds on K–2 experiences and progresses to building and revising simple models and using models to represent events and design solutions.

- Use models to describe phenomena. (5-PS3-1)

Engaging in Argument from Evidence

Engaging in argument from evidence in 3–5 builds on K–2 experiences and progresses to critiquing the scientific explanations or solutions proposed by peers by citing relevant evidence about the natural and designed world(s).

- Support an argument with evidence, data, or a model. (5-LS1- 1)

Developing and Using Models

Modeling in 3–5 builds on K–2 models and progresses to building and revising simple models and using models to represent events and design solutions.

- Develop a model to describe phenomena. (5-LS2-1)

Disciplinary Core Ideas (DCIs):

PS3.D: Energy in Chemical Processes and Everyday Life

- The energy released [from] food was once energy from the sun that was captured by plants in the chemical process that forms plant matter (from air and water). (5- PS3-1)

LS1.C: Organization for Matter and Energy Flow in Organisms

- Food provides animals with the materials they need for body repair and growth and the energy they need to maintain body warmth and for motion. (secondary to 5-PS3-1)

LS1.C: Organization for Matter and Energy Flow in Organisms

- Plants acquire their material for growth chiefly from air and water. (5-LS1-1)

LS2.A: Interdependent Relationships in Ecosystems

- The food of almost any kind of animal can be traced back to plants. Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants. Some organisms, such as fungi and bacteria, break down dead organisms (both plants or plants parts and animals) and therefore operate as “decomposers.” Decomposition eventually restores (recycles) some materials back to the soil. Organisms can survive only in environments in which their particular needs are met. A healthy ecosystem is one in which multiple species of different



types are each able to meet their needs in a relatively stable web of life. Newly introduced species can damage the balance of an ecosystem. (5-LS2- 1)

LS2.B: Cycles of Matter and Energy Transfer in Ecosystems

- Matter cycles between the air and soil and among plants, animals, and microbes as these organisms live and die. Organisms obtain gases, and water, from the environment, and release waste matter (gas, liquid, or solid) back into the environment. (5-LS2-1)

Crosscutting Concepts:

Energy and Matter

- Matter is transported into, out of, and within systems. (5-LS1-1)
- Energy can be transferred in various ways and between objects. (5-PS3-1)

Systems and System Models

- A system can be described in terms of its components and their interactions. (5-LS2-1)

Connections to Nature of Science

Science Models, Laws, Mechanisms, and Theories Explain Natural Phenomena

- Science explanations describe the mechanisms for natural events. (5- LS2-1)

Unit Essential Questions:

- What are the roles of organisms in ecosystems?
- How does energy move through ecosystems?
- What roles do decomposers play?
- What affects ecosystems?

Unit Enduring Understandings:

- Organisms are related in food webs in which some animals eat plants for food and other animals eat animals that eat plants.
- Plants acquire material for growth chiefly from air and water in which organisms obtain gases and water from the environment and release waste matter back into the environment.
- Some organisms break down dead organisms to operate as “decomposers” that restores materials back to the soil.
- A healthy ecosystem is one in which multiple species of different types are able to meet their needs in a relatively stable web of life. Introduction or elimination of species can damage the balance of an ecosystem.

Unit Learning Targets:

Students will....

- Identify elements of an ecosystem.
- Explain how organisms interact with living and nonliving things within their ecosystem.
- Describe how energy moves through an ecosystem.
- Understand food chains and food webs.
- Identify producers and consumers to explain how organisms obtain nutrients.



- Define and describe photosynthesis.
- Observe and describe the decomposition process.
- Explain why decomposers are important to an ecosystem.
- Describe the delicate balance of ecosystems to identify effects of humans on ecosystems.



Evidence of Learning

Summative Assessment:	Ecosystem news reports, Web of Life assessments, Science Fusion Brain Checks, Mini-Projects.
Equipment Needed:	-Classroom digital devices with video editing and presentation applications; -Classroom digital resources: websites and resource mgmt (ie: oncourse teacher websites, StudyWiz) Defined Learning, and supplemental websites to support development and reteaching of concepts. -General classroom materials such as and not limited to: scissors, rulers, meter sticks, hand lenses, etc. -Consumable materials as described in the Science Fusion Program: such as and not limited to printouts, balloons, plastic bags, labels, bread, fruit, paper plates and cups, construction paper, etc.
Teacher Resources:	Science Fusion, Defined Learning, NewsELA, Supplemental Printed or digital resources such as Bill Nye Videos or etc., Disney's <i>Chimpanzee</i>
Formative Assessments:	• Web of Life Unit Assessment • Defined Learning Projects



Lesson Plans

Lesson	Time Frame
Lesson 1 Ecosystems Confused	5-8 40 minute periods
Lesson 2 Food Chains and Webs	4-7 40 minute periods
Lesson 3 Wildlife Biologist: Bats	8-12 40 minute periods

Teacher Notes:

Gather resources and materials for various work plans.
Link Defined Learning to teacher created website.

Curriculum Development Resources/Technology Resources:

Click the links below to access additional resources used to design this unit:

<https://www-k6.thinkcentral.com>

<https://www.definedlearning.com>

<https://www.nextgenscience.org>

<https://mysteryscience.com/>



Lesson Plan 1 Template

Content Area: Science Lesson Title: Ecosystems Confused Time Frame: 5-8 40 minute periods

Lesson Components

21st Century Themes

- ☒ Global Awareness ☐ Financial, Economic, Business and Entrepreneurial Literacy
☐ Civic Literacy ☐ Health Literacy

21st Century Skills

- ☐ Creativity and Innovation ☒ Critical Thinking and Problem Solving ☐ Information Literacy
☐ Life and Career Skills ☒ Communication and Collaboration ☐ Media Literacy ☐ ICT Literacy

Interdisciplinary Connections: ELA

Integration of Technology: Classroom digital devices with video editing and presentation applications

Equipment Needed: laptops, iPads, projector system, microphones.

Goals/Objectives	Learning Activities/ Instructional Strategies	Formative Assessment Tasks
Students will: - Identify general ecosystems of the world. - Explain how organisms interact with living and nonliving things in their ecosystems. - Research ecosystems of the world using given websites. - Collaborate to create news reports. - Present and record final product.	Lesson Sequence: - Introduction through KWL and video resources. - Introduction of Webquest and research through demonstration of websites and mini-lesson on research. - Group research tasks. - News report creation and production through group collaboration and brainstorming/demonstrations of roles - Presentation of news reports scored using rubrics given. - Video: Disney's Chimpanzee	- Science Fusion Brain Check Unit 5.1 - News report video/imovie
Differentiation: Scaffolding of readings, mixed ability level groups, assignment of achievable tasks.		
Resources Provided: Video Resources:		



- View Bill Nye Biodiversity
<https://www.schooltube.com/video/8e1097409b914b60be69/Bill%20Nye%20Biodiversity>
- Idaho Ecosystems:
<https://nj.pbslearningmedia.org/resource/a4b542c8-8a13-4c43-998f-f38dd8066a28/idaho-ecosystems-science-trek/#.WrvQEZPwYoQ>
- *Ecosystems and Biomes*: <https://www.youtube.com/watch?v=1UjDTKb5TJM>
- Disney's Chimpanzee
- Webquest: <https://sites.google.com/site/5thgradeecosystemwebquest/task>
- Supplemental printed or digital resources
- Science Fusion textbook and website



Lesson Plan 2 Template

Content Area: Science Lesson Title: Food Chains and Webs Time Frame: 5-8 40 minute periods

Lesson Components

21st Century Themes

☒ Global Awareness ☐ Financial, Economic, Business and Entrepreneurial Literacy
☐ Civic Literacy ☐ Health Literacy

21st Century Skills

☐ Creativity and Innovation ☒ Critical Thinking and Problem Solving ☐ Information Literacy
☐ Life and Career Skills ☒ Communication and Collaboration ☐ Media Literacy ☐ ICT Literacy

Interdisciplinary Connections: ELA and Math

Integration of Technology: Digital devices with video editing and presentation applications

Equipment Needed: laptops, iPads, projector system, microphones.

Goals/Objectives	Learning Activities/ Instructional Strategies	Formative Assessment Tasks
Students will: - Construct models of different food chains and explain the relationship between predators and prey. - Argue using evidence and reasoning about which organisms can be linked together and in what order. - Observe, identify, and classify common organisms in a land ecosystem. - Compare role, size & diversity of organisms in an area. - Draw conclusions about how organisms interact in land ecosystems.	Lesson Sequence - Construct models of different food chains by linking cards representing different organisms to explain systems and energy/matter flow - Pair/small group Virtual Lab - What Makes Up a Land Ecosystem? - Group native garden design task - Research of Native Plants and Invasive Plants (Challenge) - Presentation of Native Plant Gardens -	- Science Fusion Virtual Lab Quiz Unit 5.2 - Native Plant Garden Design
Differentiation: Scaffolding of readings, mixed ability groups, assign achievable tasks.		
Resources Provided: - Science Fusion - NewsELA - Supplemental printed or digital resources		



Lesson Plan 3 Template

Content Area: Science Lesson Title: WildLife Biologist: Bats Time Frame: 6 -10 40 min. periods

Lesson Components

21st Century Themes

- ☒ Global Awareness ☐ Financial, Economic, Business and Entrepreneurial Literacy
☐ Civic Literacy ☐ Health Literacy

21st Century Skills

- ☒ Creativity and Innovation ☒ Critical Thinking and Problem Solving ☒ Information Literacy
☐ Life and Career Skills ☒ Communication and Collaboration ☐ Media Literacy ☐ ICT Literacy

Interdisciplinary Connections: ELA

Integration of Technology: Classroom digital devices with video editing and presentation applications

Equipment Needed: laptops, iPads, projector system, microphones

Goals/Objectives	Learning Activities/ Instructional Strategies	Formative Assessment Tasks
Students will: - Understand that living things depend on their habitat to meet their basic needs. - Persuade the community that people acting individually and/or in groups influence the environment .	Lesson Sequence 1. Introduce the role of a wildlife biologist and the benefits of bats in an ecosystem through career videos 2. Discuss the tasks and roles as presented through Defined Learning 3. Student groups conduct research 4. Students create and present findings to persuade their audiences	- Research on bats - Final persuasive products
Differentiation: Scaffolding of readings, mixed ability level groups, assignment of achievable tasks.		
Resources Provided: - Defined Learning - Science Fusion - NewsELA - Supplemental printed or digital resources		



Lesson Reflection

Reflect on the lesson you have developed and rate the degree to which the lesson ***Strongly, Moderately*** or ***Weakly*** meets the criteria below.

Lesson Activities	Strongly	Moderately	Weakly
Are challenging Strongly and require higher order thinking and problem solving skills		X	
Allow for student choice	X		
Provide scaffolding for acquiring targeted knowledge/skills		X	
Integrate global perspectives	X		
Integrate 21st century skills		X	
Provide opportunities for interdisciplinary connection and transfer of knowledge and skills	X		
Foster student use of technology as a tool to develop critical thinking, creativity and innovation skills		X	
Are varied to address different student learning styles and preferences	X		
Are differentiated based on student needs	X		
Are student-centered with teacher acting as a facilitator and co-learner during the teaching and learning process	X		
Provide means for students to demonstrate knowledge and skills and progress in meeting learning goals and objectives		X	
Provide opportunities for student reflection and self- assessment	X		
Provide data to inform and adjust instruction to better meet the varying needs of learners	X		

Curriculum Design Template

Content Area: Science	Grade Level: 5	Unit Title: Ecosystems
Created: 2021	Board Approved on:	



SPRINGFIELD PUBLIC SCHOOLS

**ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21ST CENTURY
GLOBAL SKILLS**

IEP AND 504 ACCOMMODATIONS AND MODIFICATIONS FOR EARLY CHILDHOOD AND ELEMENTARY SCHOOL STUDENTS:

Large print textbooks
Textbooks for at-home use
Additional time for assignments
Review of directions
Use of mnemonics
Have student restate information
Concrete examples
Adaptive writing utensils
Support auditory presentations with visuals
Use of a study carrel
Assistance in maintaining uncluttered space
Weekly home-school communication tools (notebook, daily log, phone calls or email messages)
Space for movement or breaks
Study sheets and teacher outlines
Extra visual and verbal cues and prompts
Math sheets with highlighted instructions
Graph paper to assist in organizing or lining up math problems
Use of computers and calculators
Books on tape
Graphic organizers
Quiet corner or room to calm down and relax when anxious
Preferential seating
Alteration of the classroom arrangement
Reduction of distractions
Answers to be dictated
Hands-on activities
Use of manipulatives
No penalty for spelling errors or sloppy handwriting
Follow a routine/schedule
Alternate quiet and active time
Teach time management skills
Rest breaks
Verbal and visual cues regarding directions and staying on task
Agenda book and checklists
Adjusted assignment timelines
Visual daily schedule



SPRINGFIELD PUBLIC SCHOOLS

**ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21ST CENTURY
GLOBAL SKILLS**

Varied reinforcement procedures
Immediate feedback
Work-in-progress check
Personalized examples

TESTING AND ASSESSMENT ACCOMMODATIONS AND MODIFICATIONS:

Answers to be dictated
Frequent rest breaks
Additional time
Oral testing
Untimed tests
Choice of test format (multiple-choice, essay, true-false)
Alternate ways to evaluate (projects or oral presentations instead of written tests)
Accept short answers
Open-book tests
Read test and directions to student
Provide study outline prior to tests
Highlight key directions
Test in alternative site
Use of calculator
Extra credit option
Preview test procedures
Simplified test wording; rephrased test questions and/or directions

GENERAL ACCOMMODATIONS AND MODIFICATIONS:

Use of alternative books or materials on the topic being studied
Computerized spell-check support
Word bank of choices for answers to test questions
Provision of calculator and/or number line for math tests
Reworded questions in simpler language
Projects instead of written reports
Highlighting important words or phrases in reading assignments
Modified workload or length of assignments/tests
Modified time demands
Modified grades based on IEP

BEHAVIOR ACCOMMODATIONS MODIFICATIONS:



SPRINGFIELD PUBLIC SCHOOLS

**ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21ST CENTURY
GLOBAL SKILLS**

Breaks between tasks
Cue expected behavior
Daily feedback to student
Have contingency plans
Use de-escalating strategies
Use positive reinforcement
Use proximity/touch control
Use peer supports and mentoring
Model expected behavior by adults
Have parent sign homework
Have parent sign behavior chart
Set and post class rules
Chart progress and maintain data



SPRINGFIELD PUBLIC SCHOOLS

ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21ST CENTURY
GLOBAL SKILLS

IEP AND 504 ACCOMODATIONS AND MODIFICATIONS FOR MIDDLE AND HIGH SCHOOL STUDENTS:

Large print textbooks
Textbooks for at-home use
Additional time for assignments
A locker with adapted lock
Review of directions
Review sessions
Use of mnemonics
Have student restate information
Provision of notes or outlines
Concrete examples
Adaptive writing utensils
Support auditory presentations with visuals
Weekly or bi-weekly home-school communication
Space for movement or breaks
Study sheets and teacher outlines
Extra visual and verbal cues and prompts
Lab and math sheets with highlighted instructions
Graph paper to assist in organizing or lining up math problems
Use of tape recorder for lectures
Use of Interactive notebook
Use of a scribe
Use of computers and calculators
Books on tape
Graphic organizers
Quiet corner or room to calm down and relax when anxious
Preferential seating
Alteration of the classroom arrangement
Reduction of distractions
Answers to be dictated
Hands-on activities
Ability to type all assignments
Follow a routine/schedule
Teach time management and organizational skills
Rest breaks
Verbal and visual cues regarding directions and staying on task
Agenda book and checklists
Daily check-in with case manager or special education teacher
Adjusted assignment timelines
Visual daily schedule



SPRINGFIELD PUBLIC SCHOOLS

**ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21ST CENTURY
GLOBAL SKILLS**

Varied reinforcement procedures
Immediate feedback
Work-in-progress check
Personalized examples

TESTING AND ASSESSMENT ACCOMMODATIONS AND MODIFICATIONS:

Answers to be dictated
Frequent rest breaks
Additional time
Oral testing
Choice of test format (multiple-choice, essay, true-false)
Alternate ways to evaluate (projects or oral presentations instead of written tests)
Accept short answers
Open-book or open-note tests
Read test and directions to student
Provide study guides prior to tests
Highlight key directions
Test in alternative site
Use of calculator
Extra credit option
Pace long-term projects
Preview test procedures
Simplified test wording; rephrased test questions and/or directions

GENERAL ACCOMMODATIONS AND MODIFICATIONS:

Allow outlining, instead of writing for an essay or major project
Use of alternative books or materials on the topic being studied
Computerized spell-check support
Word bank of choices for answers to test questions
Provision of calculator for math tests
Film or video supplements in place of reading text
Reworded questions in simpler language
Projects instead of written reports
Highlighting important words or phrases in reading assignments
Modified workload or length of assignments/tests
Modified time demands



SPRINGFIELD PUBLIC SCHOOLS

**ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21ST CENTURY
GLOBAL SKILLS**

Pass/no pass option

Modified grades based on IEP

BEHAVIOR ACCOMMODATIONS FOR STUDENTS:

- Breaks between tasks
- Cue expected behavior
- Daily feedback to student
- Have contingency plans
- Use de-escalating strategies
- Use positive reinforcement
- Use proximity/touch control
- Use peer supports and mentoring
- Model expected behavior by adults
- Have parent sign homework
- Set and post class rules
- Chart progress and maintain data



SPRINGFIELD PUBLIC SCHOOLS

ENGAGING STUDENTS • FOSTERING ACHIEVEMENT • CULTIVATING 21ST CENTURY
GLOBAL SKILLS

Accommodations and Modifications for ESL Students

- Give tests orally
- Give instructions/directions in writing and orally
- Assign a peer tutor, same language or English speaking
- Allow use of bilingual/translation dictionary
- Provide summaries of text or study guides of particular chapters
- Allow errors in speaking
- Allow errors in writing
- Accept writing in first language
- Highlight key vocabulary
- Reduce amount of work required
- Assess comprehension through demonstration or other alternative means (gestures, drawings)
- Rephrase questions, directions, and explanations
- Reduce multiple choices on assessments
- Provide study guides and/ or outlines
- Shorten reading assignments
- Allow extended time for test/project completion
- Use of audio books
- Use of graphic organizers
- Use reduced text, so that print is not dense
- Use visuals/pictures throughout lesson/unit/assignment
- Adapt homework to reflect language proficiency/home support
- Adapt homework to reflect home support
- Provide hands-on activities and explanations
- Allow extended time to answer questions, and permit drawing, as an explanation
- Use of translation dictionaries to locate words in the native language
- Use anecdotal records and portfolio of work as forms of assessment
- Use story retellings to assess comprehension

What Does the Gifted and Talented Experience Look Like? *Springfield Public Schools*

Mission Statement

The Gifted and Talented Program of the Springfield Public Schools aims to provide a meaningful and rigorous education that instills the value of lifelong learning and empowers all students to reach their full potential and become self-fulfilled creative leaders in accordance with the comprehensive standards of our state. We accomplish this by offering challenging, real-world experiences in a student-centered environment.

We recognize that students come from diverse socioeconomic, cultural, and ethnic backgrounds, and the mission of the gifted and talented program is to provide opportunities for students to explore their intellectual, creative, and artistic gifts and talents within the classroom and with beyond-the-classroom experiences. It is essential to provide diverse, appropriate, and ongoing learning experiences and environments that incorporate students' academic, psychological, and social needs. Our responsibility is to provide students with educational alternatives that teach, challenge, and expand their knowledge, while simultaneously stressing the development of independent and self-directed learners who continuously generate questions, analyze, synthesize, and evaluate information and ideas.

New Jersey Administrative Code 6A:8-3.1 defines students who are gifted and talented as those students who possess or demonstrate high levels of ability in one or more content areas when compared to their chronological peers in the local district and who require modification of their educational program if they are to achieve in accordance with their capabilities.

Goals:

To support our mission, we have established the following goals to guide our work:

- To infuse into the general education program a broad range of activities for high-level learning that will challenge all students to perform at advanced levels, and provide extended opportunities, resources, and support in particular areas where student interest or talent is demonstrated.
- To provide a continuum of gifted education services that will strengthen the total school program, offer enriching and challenging learning opportunities for all students, and provide specialized learning experiences
- To promote achievement of students' best potentials and increased ability.

Through a productive and collaborative relationship among the building principals, classroom teachers, and the Gifted and Talented teacher, our schools can create programming that will enhance the learning experience for every student and serve the unique and specialized needs of students currently demonstrating gifted behaviors.

Elements of the Schoolwide Enrichment Model, W.I.N (What I Need), differentiated instruction, advanced classes, or individual programs into a student's regular instruction program are integral to this overarching framework for gifted education in the Springfield School District.

Reference Board Policy and Regulation 2464 – Gifted and Talented Pupils (M)

Early Childhood Center **Edward V. Walton**

Schoolwide Virtual Enrichment

All first and second grade students have access to the [Gifted and Talented Virtual Classroom](#). This virtual classroom is a space for students to complete various challenges and enrichment opportunities at their own pace. Students can receive feedback and additional adaptable resources to meet their individual learning needs. The virtual classroom design expands accessibility to enrichment resources and allows students to choose learning activities according to their unique interests and abilities. The purpose of the activities is to encourage problem-solving, develop critical thinking

skills, and expand curiosity and imagination. Activities are aligned to the New Jersey Student Learning Standards.

Gifted and Talented Teacher as a Resource

The Gifted and Talented teacher serves as a resource to all teachers within Edward V. Walton School. Teachers seeking resources for their high-ability learners will receive additional support from the Gifted and Talented teacher in various ways. This support may include additional units of study, challenging resources, and student projects.

Elementary Schools **James Caldwell** **Thelma L. Sandmeier**

The goal is to engage small groups of students in intensive learning experiences through standards-based, rigorous, and relevant units of study that supplement, not supplant, the grade-level curriculum and support students' unique learning needs.

Enrichment Experience Grade 3

Beginning in third grade, the G&T teacher will cycle through all classrooms to work on problem-solving and enrichment tasks with students. Driven by assessment data, academic performance, student interest, and teacher observation, small groups of students will meet with the G&T teacher during W.I.N. (What I Need) periods throughout the week that the teacher is assigned to their classroom teacher. Groupings will be flexible and monitored to best meet each student's needs throughout the school year. Activities will include brain teasers, puzzles, strategic thinking, problem-solving, and STEM challenges.

Targeted Gifted and Talented Programing Grades 4-5

Students may become identified as Gifted and Talented in fourth grade. Students that are identified may receive support from the G&T Teacher for up to five periods (200 minutes) a week during W.I.N. (What I Need) periods. Identified students will meet to explore grade-level content while incorporating depth and complexity in a student-centered, problem-based environment. The Gifted and Talented Program aims to provide students with various advanced and challenging learning experiences across content areas to promote independent thinking skills, refine critical thinking and communication skills, cultivate joy in learning, and expand student interests through problem-solving. The instruction that students receive incorporates 21st Century Skills and advanced content that is challenging, hands-on, and relevant to the real world.

Strategies and Practices that Support Gifted and Talented Students

- Adjusted Pace of Lessons
- Inquiry-Based Instruction
- Higher-Order Thinking Activities
- Interest-Based Content
- Real World Problem Solving/Problem Based Learning
- Independent Study/Passion Projects
- Units of Study with Like-Minded Peers

Schoolwide Virtual Enrichment

All JCS and TLS students have access to grade level-specific [Gifted and Talented Virtual Classrooms](#). These virtual classrooms are a space for students to complete various challenges and enrichment opportunities at their own pace. Students are able to receive feedback and additional opportunities based on their needs. The virtual classrooms have expanded the accessibility of enrichment resources directly to the students and allows for students to choose opportunities according to their interests and abilities. The purpose of the activities is to encourage problem solving, develop critical thinking skills, and expand curiosity and imagination in conjunction with the New Jersey Student Learning Standards.

Gifted and Talented Teacher as a Resource

In addition to classroom support, the Gifted and Talented teacher also serves as a resource to all teachers in the building. Teachers that are seeking resources for their high ability learners will receive additional support from the Gifted and Talented teacher in various ways. This may include additional units of study, challenging resources, student projects, and meeting with the G&T teacher as needed.

Additional Enrichment Opportunities

Across all grade levels 3-5, as recommended by the classroom teacher, students exhibiting a need for additional enrichment may have the opportunity to meet with the G&T teacher as the schedule allows. Groupings will be flexible and monitored to best meet the students' needs throughout the school year. Activities will include, brain teasers, puzzles, strategic thinking activities, problem-solving challenges, and STEM challenges. Students engage in an extended process of asking questions, using resources, and developing answers that lead to thinking about what and how they are learning. Students are held accountable for how they work and use their time by demonstrating their learning through products or presentations.

Students self-select to participate in individual and/or group projects based on interest and commitment. The classroom teacher and/or the enrichment teacher will help guide

and monitor student exploration of chosen topics, facilitating their learning with resources and teaching of needed skills.

Secondary Schools
Florence M. Gaudineer Middle School
Jonathan Dayton High School

Grades 6-12: Access to specific content programs with higher levels of academic challenges (i.e. Pre-Algebra, Accelerated Communication Arts, and Advanced Placement Classes)

Dual Credit Courses provide students the opportunity to obtain high school credit, and college credit, simultaneously through partnerships with several institutions.

Project Lead the Way (PLTW) students become builders of technology by engaging in real world activities. Students are empowered as design thinkers collaborating on real world projects.

Gifted and Talented Identification Criteria

The Springfield Schools Gifted and Talented Program recognizes that students require differentiated learning experiences beyond the core curriculum being taught because of their advanced abilities in one or more content areas. These students may also have other cognitive qualities such as curiosity, creativity, motivation, leadership, and passion that require modifications to their academic experience.

Multiple Measures of Eligibility

Kindergarten through grade twelve identification process for gifted and talented students includes multiple measures. Multiple measures may include but are not limited to: achievement test scores; grades; student performance or products; intelligence testing; parent, student, and/or teacher recommendation; and other appropriate measures. The identification methodology is developmentally appropriate, non-discriminatory, and related to the programs and services offered by the Springfield School District. The identification procedures are reviewed annually.

According to N.J.A.C. 6A:8-3.1, all public school districts must have a board-approved gifted and talented identification process and provide services for identified students

enrolled in the grades of that school district. The regulations require that identification and services be made available to students in grades K-12.

When students are recommended for the Gifted and Talented Program there are multiple measures that are considered to determine if services are necessary and appropriate. The assessments used are as follows:

- *Cognitive Abilities Test (CogAT)*
- *Classroom Performance/Student Portfolios*
- *DRA2 Level*
- *iReady Diagnostic Scores*
- *Gifted Indicators Checklist*
- *Start Strong/NJSLA Assessment Data*

The N.J.A.C. requires that students be compared to their chronological peers in the local school district. The New Jersey Department of Education has not established state-level criteria for identifying students who are gifted, such as mandated tests or assessments, grade point averages, or IQ scores. Local school districts must use multiple measures to identify students.

Procedures

<https://www.straussesmay.com/seportal/Public/DistrictPolicy.aspx?policyid=2464&id=b8a33a9f505e4998a6db3fb8e1de778b>

Team meetings present the opportunity to review data and assess the educational needs of all students. Programs for gifted and talented students will be periodically evaluated for their continuing efficacy and adjusted accordingly. The parent of any student identified as gifted or talented shall be consulted regarding any program designed to address the student's particular needs.

NJDOE Fast Facts

<https://www.nj.gov/education/standards/gifted/>

<https://www.nj.gov/education/standards/gifted/legislation.shtml>

Gifted and talented student: The "[*Strengthening Gifted and Talented Education Act*](#)" defines a gifted and talented student as a "student who possesses or demonstrates a high level of ability in one or more content areas when compared to their chronological peers in the school district and who require modifications of their educational program if they are to achieve in accordance with their capabilities."

Twice-exceptional (2E) students: A twice-exceptional (2E) student is defined as "a student who is both gifted and a student with a disability. These students may also be

referred to as having dual exceptionalities or as being gifted with learning disabilities (GT/LD). This also applies to students who are gifted with ADHD or gifted with autism” (New Jersey Association for Gifted Children, www.nagc.org).

Instructional adaptation: An adjustment or modification to instruction enabling a student who is gifted and talented to participate in, benefit from, and demonstrate knowledge and application of the New Jersey Student Learning Standards in one or more content areas at the instructional level of the student, not just the student’s grade level.

Identifying gifted and talented students: The focus of identification is to provide programming and services in which students' specific learning needs and potential are appropriately addressed and met. In every New Jersey school district, there are students who require modifications to the general education curriculum if they are to achieve in accordance with their abilities. By identifying a student’s general intellectual ability, creativity, or specific academic area aptitudes, we are acknowledging that they need programming and services outside of the general education/grade level curriculum to advance their learning.

Supplemental Resources/Programming for Gifted Students

Edward V. Walton

- PETS Program – Primary Education Thinking Skills
- Group Solutions/Group Solutions 2 – Cooperative Logic Activities
- Lollipop Logic
- Beginning Thinking Skills
- AIMS Education Programming

James Caldwell and Thelma L. Sandmeier

Math/ELA

- Project M3: Mentoring Mathematical Minds
- Junior Great Books
- AIMS Education Programming
- Borenson Hands on Equations
- BizWorld
- Perplexors
- Advanced Math Explorations grade 3-5
- Challenging Units for Gifted Learners (ELA and Math)
- Creative Curriculum Extenders

- Differentiated Lessons & Projects
- Challenge Math Grades 4+
- Differentiating Instruction with Menus (All Content Areas)
- Jacob's Ladder
- Genius Hour/Passion Project
- Spatial Reasoning
- Logic Puzzles, Brain Games, Analogies

STEM

- Engineering is Elementary
- Engineer Throughout the Year
- PBS Design Squad
- DefinedSTEM
- Project Lead the Way (PLTW)

Enrichment Events

Experience for all students to be enriched through events related to the curricular or extracurricular activities. Examples include after school clubs, PTA-sponsored events, leadership opportunities, visual and performing arts, and community service opportunities.