SUMMER SCHOOL
TEACHER GUIDE

Science/6th Grade

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Summer School Curriculum Guide

The Elementary and Middle Summer School Program will be for 20 days. Students will have a total of 18 daily lessons and day 19 and 20 will be for reviewing lessons/quizzes and post-test.

- Eighteen (18) days of daily lessons
- One (1) day post-test review and post-test
- One (1) day of reviewing lessons, retake daily post-tests, and makeup missed lessons.

All students and staff will use Grade Results for their summer curriculum. Each lesson will open daily, and students will not be able to work ahead; however, students can work on previously opened lessons. Students can retake a daily post-test 3 times before it locks. If a student needs to retake a daily lesson post-test for a 4th time, then the teacher will have to open the lesson post-test again. Teachers should not delete any prior lesson post-test. Grade Results will post the highest grade from each students' lesson post-test.

MS Classroom Schedule – Time below is an *approximate* breakdown of time.
- **Attendance in PowerSchool** – 5 minutes
- **Lesson Introduction** (I Do) – 5 minutes
- **Lesson Activities/Supplemental** (We Do) – 60 minutes
- **Break** – 10 Minutes (Site Administrator will work with teachers on breaks)
- **Teacher Lesson Review** – 5 minutes
- **Independent Work** – Student Lesson Review*/Post-test (They Do) – 40 minutes
- **Closing/Wrap Up**– 5 minutes
- **Total Time**: **2 hours 10 minutes**

***Lesson Review** – Students will review lessons for essential knowledge/information prior to the daily test.

The following will be used within Grade Results:
- **Lessons** with Content Area, Videos, and Activities
- **Supplemental** Teacher Resources:
  - o Click on Supplemental o Click on Resource to view (Example: Flocabulary, BrainPOP, Others)
  - o Teacher will review with the students the items that need to be completed.
  - o Teachers can select additional Supplemental Resources as needed if time permits.
  - o To view another resource once you are in a resource, use the Toggle Sidebar in the top righthand corner. It has three dashes. An example is listed below.

Post-Test – Each lesson will have a daily post-test.

Graded Work – The Post-Test will be the daily graded work. Graded work is automatically calculated by the Grade Results Software.

Anchor Charts – Some subjects may have Anchor Charts available with their lesson.

Summer School Lesson Plan

Subject/Grade: Science /6th Grade **Day: 1**

Topic/Lesson Title & Grade Results #: Types of Energy: Lesson 1

Objective(s): Students will

- Define energy.
- Explain potential and kinetic energy, using examples.
- Describe gravitational potential energy, elastic potential energy, magnetic potential energy, and electric potential energy.
- Explain vibrational kinetic energy, rotational kinetic energy, and translational kinetic energy.

Guiding Question(s): What is energy? What are the two major types of energy?

TN Curriculum Standard(s): 6.PS3.1; 6.PS3.3: **Standard Description(s):** .1-Analyze the properties and compare sources of kinetic, elastic potential, gravitational potential, electric potential, chemical, and thermal energy. .3-Analyze and interpret data to show the relationship between kinetic energy and the mass of an object in motion and its speed.

Materials/Resources Needed: Grade Results Online Platform, Grade Results video, paper, pencil, or notes in Grade Results

Technology: Computer, Whiteboard, Promethean/Smartboard

Key Vocabulary/Terms:
Electric potential energy: Potential energy of an object in an electric field.
Energy: The ability to do work.
Gravitational potential energy: Energy possessed by an object due to its elevation (height) relative to a lower elevation.
Kinetic energy: The energy possessed by an object by virtue of its motion.
Magnetic potential energy: Potential energy in a magnetic field.
Mechanical energy: The energy associated with either the motion or position of an object.
Potential energy: The energy stored in an object by virtue of its position or the state of strain.
Rotational kinetic energy: The kinetic energy due to the rotational motion of an object.
Translational kinetic energy: The kinetic energy possessed by an object due to its motion from one place to another.
Vibrational kinetic energy: The kinetic energy due to the vibrational motion of an object.

Take Attendance (5 minutes)

Lesson Introduction (I Do): (10 minutes) TTW explain that there are two major types of energy and they come in many forms. Energy is found everywhere! TTW share the lesson objectives and introduction from slides 1 – 2 then discuss with Ss.

Vocabulary: (5 minutes) The teacher and students will define and discuss the vocabulary terms. TTW ask Ss to go to slide 24 for the vocabulary list and definitions. TTW will call on different Ss to read the vocabulary words and ask if they can give examples of the type of energy. If they cannot, TTW let the student know that "we will learn about an example as we go through the lesson" and/or the teacher may offer an example.

Lesson Activities (We Do): (40 minutes)
Slides 1 – 9: SW read and work on activities about energy and types of energy. TTW ask different Ss to read content as the class goes through the lesson. Intermittently, the teacher may read small portions. TTW facilitate discussions throughout the lesson on any videos watched or activities included allowing Ss to discuss and summarize content

periodically as they go through the lesson. TTW discuss content and allow Ss to work on embedded activities about energy and types of energy.
Slide 10-12: During discussion of PE formula, TTW reiterate the relationship of mass and height on the potential energy of objects. TTW emphasizes that the higher up off the ground or surface the objects are the more potential energy an object will have, particularly when the mass of the objects are the same. Additionally, if the height of the objects is the same the object with the greater mass will have greater potential energy. TSW complete the interactive activity that will demonstrate the relationship of the properties of PE.
Slides 13-21: TTW facilitate a whole group discussion about Kinetic Energy reiterating the various types noted ,along with, the factors/properties that indicate the KE of objects. TSW watch the videos and complete the interactive activities on Kinetic Energy demonstrating the relationship of mass and speed on the KE of objects.
SW achieve a score for accuracy as they complete the embedded lesson activities, independently or as a whole group. TTW may ask the Ss what they see, think, or wonder about any of the content as they go through the lesson.

BREAK – 10 MINUTES

Supplemental Resources: **(5 minutes)** –TTW explain to the students how the supplemental material will be utilized. TTW use supplemental resources for early finishers except BRAINPOP (used to facilitate review before lesson assessments: SW watch the Forms of Energy, page 1, and Conservation of Energy, page 2, video via BrainPOP. TTW facilitate a discussion after the BrainPOP videos by allowing Ss to work through the quiz portion of the videos.

Additional Supplemental Resources: No additional supplementals

Lesson Review: (25 minutes) TTW ask Ss to go to **slide 22** for the Lesson Review to discuss concept points from the lesson. TTW ask Ss questions and allow Ss to ask questions about the lesson or the points made in the Lesson Review. Further review points: TTW allows students to watch BrainPOP, Forms of Energy, Conservation of Energy. When the video is complete TTW facilitate discussion via the BrainPOP quiz.

Independent Work – Posttest (They Do): (25 minutes). TSW complete the posttest independently. Explain to the students that they will be assessed and will work independently. Encourage them to think critically and do their very best on the Posttest. The Posttest will count as the grade for the daily lesson.

Closing/Wrap Up/Notes Review: (5 minutes) Closing question: WHAT STUCK WITH YOU? TSW write in their composition book or use parking lot at least 1 important concept that they remember. TTW allow 2-3 minutes for students to write their answers. Afterwards TTW allow 2-3 students to share out what stuck with them. Additionally, TTW address the guiding question(s) and ask the Ss to place their answer in the composition book or allow Ss to give verbal answers.

Summer School Lesson Plan

Subject/Grade: Science /6th Grade **Day: 2**

Topic/Lesson Title & Grade Results #: Conversion of Energy: Lesson 2

Objective(s): Students will

- Define potential energy and kinetic energy.
- Distinguish between kinetic and potential energies.
- Describe the change of energy of objects in motion

Guiding Question(s): How can energy be transferred from one form to another, from one place to another, or from one object to another?

TN Curriculum Standard(s): 6.PS3.2: **Standard Description(s):** Construct a scientific explanation of the transformations between potential and kinetic energy.

Materials/Resources Needed: Grade Results Online Platform, Grade Results video, paper, pencil, or notes in Grade Results

Technology: Computer, Whiteboard, Promethean/Smartboard

Key Vocabulary/Terms:
Energy: Ability to do work.
Kinetic energy: Energy possessed by an object by virtue of its motion.
Motion: A change in position of an object with respect to time and its reference point.
Potential energy: Energy possessed by an object by virtue of its position.
Roller coaster: An elevated railway in an amusement park with sharp curves and steep incline.
Velocity: The speed of an object in a given direction.

Take Attendance (5 minutes)

Lesson Introduction (I Do): (10 minutes) Students will be working on activities relating to the conversion of energy. TTW share the lesson objectives and introduction from slides 1 – 2 then briefly discuss content and animations with Ss.

Vocabulary: (5 minutes) The teacher and students will define and discuss the vocabulary terms. TTW ask Ss to go to page 14 for the vocabulary list and definitions. TTW will call on different Ss to read the vocabulary words and ask if they can give examples of the vocabulary terms. If they cannot, TTW let the student(s) know that "we will learn about an example as we go through the lesson" and/or the teacher may offer an example.

Lesson Activities (We Do): (40 minutes)
Slides 1-7 SW read and work on activities about energy conversion from PE to KE. TTW ask different Ss to read content as the class goes through the lesson. Intermittently, the teacher may read small portions. TTW facilitate discussions throughout the lesson on any videos watched or activities included allowing Ss to discuss and summarize content throughout the lesson. TTW discuss content and allow Ss to work on embedded activities about PE and KE calculations.
Slides 8-12 TTW facilitate discussion about the conservation of energy by emphasizing that although energy can be changed, it cannot be created or destroyed (The Law of Conservation of Energy). TTW continue with the discussion and reading as Ss manipulate the various animations/activities and view the videos that illustrate the change in energy types within the concept of The Law of Conservation of Energy.

SW achieve a score for accuracy as they complete the embedded lesson activities, independently or as a whole group. TTW may ask the Ss what they see, think or wonder about any of the content as they go through the lesson.

BREAK – 10 MINUTES

Supplemental Resources: **(5 minutes)** –TTW explain to the students how the supplemental material will be utilized. TTW use supplemental resources for early finishers or as supplemental to the lesson review.
As a lesson review supplemental: TTW allow students to watch video; Bill Nye Supplemental Page 4. TTW discuss the concepts of the conversion of energy from the video, for example, Name 3 things that can generate electrical energy- **sun (solar cells), water, nuclear, coal, wind**; Energy can be **transferred/converted from one type of energy to another;** When the tank was lifted, it gave the water **potential energy.**

Additional Supplementals: As an early finisher for Ss who finish early after the posttest, TSW work independently on 1. Page 1 Flocabulary: Energy Vocab Game**. 2.** TSW watch the Potential and Kinetic Energy Video (Page 2 Supplemental) 3. Facts about Energy (page 3)
Ss will not be penalized for not watching the videos if they do not finish before time expires. Ss will not be graded or penalized for not completing early finisher activities and other Ss will not be penalized for not starting/completing early finisher activities.

Lesson Review: (25 minutes) TTW ask Ss to go to slide 13 for the Lesson Review to discuss concept points from the lesson. TTW ask Ss questions and allow Ss to ask questions about the lesson or the points made in the Lesson Review.

Independent Work – Posttest (They Do): (25 minutes). TSW complete the posttest independently. Explain to the students that they will be assessed and will work independently. Encourage them to think critically and do their very best on the Posttest. The Posttest will count as the grade for the daily lesson.

Closing/Wrap Up/Notes Review: (5 minutes) Closing question: WHAT STUCK WITH YOU? TSW write in their composition book or use parking lot at least 1 important concept that they remember. TTW allow 2-3 minutes for students to write their answers. Afterwards TTW allow 2-3 students to share out what stuck with them. Additionally, TTW address the guiding question(s) and ask the Ss to place their answer in the composition book or allow Ss to give verbal answers.

Summer School Lesson Plan

Subject/Grade: Science /6th Grade **Day: 3**

Topic/Lesson Title & Grade Results #: Heat Transfer Through Earth's System: Lesson 3

Objective(s): Students will

- Analyze different processes by which heat is transferred throughout Earth's system.

Guiding Question(s): What is heat? How is heat transferred through Earth's systems?

TN Curriculum Standard(s): 6.PS3.4: **Standard Description(s):** Conduct an investigation to demonstrate the way that heat (thermal energy) moves among objects through radiation, conduction, or convection.

Materials/Resources Needed: Grade Results Online Platform, Grade Results video, paper, pencil, or notes in Grade Results

Technology: Computer, Whiteboard, Promethean/Smartboard

Key Vocabulary/Terms:
Altitude: The height of an object in relation to sea level.
Buoyant: Tendency to float in a fluid.
Convection current: A vertical movement of fluids (which includes air) driven by heat.
Good conductor of heat: A material that allows flow of heat energy more easily.
Poor conductor of heat: A material that does not allow flow of heat energy more easily.
Temperature: A measure of heat intensity due to the kinetic energy associated with the motion of atoms and molecules.
Thermal: A rising mass of warm air that transfers heat into the atmosphere and forms convective circulation.
Thermal energy: The total internal energy of a system, which is in a thermodynamic equilibrium, by virtue of its temperature

Take Attendance (5 minutes)

Lesson Introduction (I Do): (10 minutes) Students will be working on activities relating to heat transfer. TTW share the lesson objectives and introduction from slides 1 – 2. Ss will work through activities on the introduction page then discuss.

Vocabulary: (5 minutes) TTW highlight and discuss the meaning of the vocabulary words from the Lesson 3 activities with the Ss. SW go to page 14. The teacher and students will define and discuss the vocabulary terms. TTW ask Ss to go to page 14 for the vocabulary list and definitions. TTW will call on different Ss to read the vocabulary words and ask if they can give examples of the vocabulary terms. If they cannot, TTW let the student(s) know that "we will learn about an example as we go through the lesson" and/or the teacher may offer an example.

Lesson Activities (We Do): (40 minutes)
Slides 1-9 TTW facilitate discussions on heat transfer, namely conduction, convection, and radiation. TSW read and watch videos illustrating the different characteristics of each type of heat transfer. TTW ask different Ss to read content as the class goes through the lesson. Intermittently, the teacher may read small portions. TTW facilitate discussions throughout the lesson on videos watched and ask Ss to summarize content they viewed.
Slides 10-12 TTW will continue to facilitate discussion on heat transfer through embedded animations, videos, and activities. Similarities about the different types of heat transfer will be examined. TTW ask Ss to summarize what they learned after working on the embedded activities and watching the videos about heat transfer.

SW achieve a score for accuracy as they complete the embedded lesson activities, independently or as a whole group. TTW may ask the Ss what they see, think or wonder about any of the content as they go through the lesson.

BREAK – 10 MINUTES

Supplemental Resources: **(5 minutes)** –TTW explain to the students how the supplemental material will be utilized. TTW use supplemental resources for early finishers except BRAINPOP (used to facilitate review before lesson assessments: SW watch the Heat Transfer video via BrainPOP, Supplemental pg 1. TTW facilitate a discussion after the BrainPOP video by allowing Ss to work through the quiz portion of the videos.

Additional Supplemental Resources: As an early finisher if Ss complete the posttest before time expires. Page 4 Supplemental (Bill Nye/Heat). SW watch the video. TTW ask questions from the video, for example, what are 3 ways that heat is transferred? **Convection, conduction, radiation**; How is convection transferred? exchange of heat and cool air; conduction? by touch; radiation? by waves; Heat is a form of **energy** and can "do" work. What kind of work does heat do? **Changes the temperature of objects** Moving molecules make things cool down or **heat up**?
Page 3 Supplemental Video: Solar energy. TSW watch the video and type in the chat at least 2-3 concepts learned from the video. Page 2 Using Energy. Ss will not be graded or penalized for not completing early finisher activities. Ss will not be penalized for not starting/completing early finisher activities.

Lesson Review: (25 minutes) 1. See Supplemental- Use BrainPOP Video 2.TTW ask Ss to go to slide 13 for the Lesson Review to discuss concept points from the lesson. TTW ask Ss questions and allow Ss to ask questions about the lesson or the points made in the Lesson Review. Further review points: TTW allow students to watch BrainPOP, Heat Transfer (pg 1). When the video is complete TTW facilitate discussion via the BrainPOP quiz.

Independent Work – Posttest (They Do): (25 minutes). TSW complete the posttest independently. Explain to the students that they will be assessed and will work independently. Encourage them to think critically and do their very best on the Posttest. The Posttest will count as the grade for the daily lesson.

Closing/Wrap Up/Notes Review: (5 minutes) Closing question: WHAT STUCK WITH YOU? TSW write in their composition book or use parking lot at least 1 important concept that they remember. TTW allow 2-3 minutes for students to write their answers. Afterwards TTW allow 2-3 students to share out what stuck with them. Additionally, TTW address the guiding question(s) and ask the Ss to place their answer in the composition book or allow Ss to give verbal answers.

Summer School Lesson Plan

Subject/Grade: Science /6th Grade **Day: 4**

Topic/Lesson Title & Grade Results #: Engineering Device: Conversion of Energy: Lesson 4

Objective(s): Students will:

- Explain the Law of Conservation of Energy.
- Illustrate the design of a Rube Goldberg device.
- Design, build, and refine an energy conversion device.
- Determine the reasoning found in solutions for the scientific problem of conserving solar energy

Guiding Question(s): What is the Law of Conservation of Energy?

TN Curriculum Standard(s): 6.ETS1.2: **Standard Description(s):** Design and test different solutions that impact energy transfer

Materials/Resources Needed: Grade Results Online Platform, Grade Results video, paper, pencil, or notes in Grade Results

Technology: Computer, Whiteboard, Promethean/Smartboard

Key Vocabulary/Terms:

Conductivity: A property of conducting heat or electricity.
Domino effect: A cumulative effect produced when one event initiates a succession of similar events.
Electric circuit: An unbroken loop of conductive material that allows the electrons to flow through continuously without a beginning or an end.
Energy: The ability to do work.
Kinetic energy: Energy possessed by an object due to its motion.
Mechanical energy: The energy associated with either the motion or position

Take Attendance (5 minutes)

Lesson Introduction (I Do): (10 minutes) Students will be working on activities relating to the conversion of energy via design of various devices. TTW share the lesson objectives and introduction from slides 1 – 2 then discuss content and tasks with Ss.

Vocabulary: (5 minutes) TTW highlight and discuss the meaning of the vocabulary words from the Lesson 4 activities with the Ss. SW go to page 22. The teacher and students will define and discuss the vocabulary terms. TTW ask Ss to go to page 14 for the vocabulary list and definitions. TTW will call on different Ss to read the vocabulary words and ask if they can give examples of the vocabulary terms. If they cannot, TTW let the student(s) know that "we will learn about an example as we go through the lesson" and/or the teacher may offer an example.

Lesson Activities (We Do): (45 minutes)
This lesson reemphasizes the conversion of energy via engineering design.
Slides 1-7 TTW ask Ss to look for examples of the Law of Conservation of Energy (energy is neither created nor destroyed but can be transformed) throughout the lesson activities. TTW ask different Ss to read content as the class goes through the lesson. Conversion calculations will be examined. TTW facilitate discussions noting the final outcome of the total

energy regardless of the calculated PE and KE -energy is converted but the total energy does not change-energy is neither destroyed nor created.
Slides 8-20 TSW read and work on activities about energy conversion via engineering devices. TTW facilitate discussion on the design of devices relating to energy conversion. TSW watch videos on the design and complete embedded activities about Rube Goldberg Design, Solar Cells, Solar Ovens, and Electric Generators. The T may ask student questions, such as, how does the design work? Is it effective? Does it save time? Why, where, when will (if) you need such a design? . The T may ask Ss to brainstorm to think of a design that will demonstrate energy conversion.
SW achieve a score for accuracy as they complete the embedded lesson activities, independently or as a whole group. TTW may ask the Ss what they see, think, or wonder about any of the content as they go through the lesson

BREAK – 10 MINUTES

Supplemental: (not included for this lesson)
Additional Teacher Resources: (not included for this lesson)

Lesson Review: (25 minutes) TTW ask Ss to go to slide 21 for the Lesson Review to discuss concept points from the lesson. TTW ask Ss questions and allow Ss to ask questions about the lesson or the points made in the Lesson Review.

Independent Work – Posttest (They Do): (25 minutes). TSW complete the posttest independently. Explain to the students that they will be assessed and will work independently. Encourage them to think critically and do their very best on the Posttest. The Posttest will count as the grade for the daily lesson.

Closing/Wrap Up/Notes Review: (5 minutes) Closing question: WHAT STUCK WITH YOU? TSW write in their composition book or use parking lot at least 1 important concept that they remember. TTW allow 2-3 minutes for students to write their answers. Afterwards TTW allow 2-3 students to share out what stuck with them. Additionally, TTW address the guiding question(s) and ask the Ss to place their answer in the composition book or allow Ss to give verbal answers.

Summer School Lesson Plan

Subject/Grade: Science /6th Grade **Day: 5**

Topic/Lesson Title & Grade Results #: Renewable and Non-Renewable Resources: Lesson 5

Objective(s): Students will:

- Explain renewable energy resources.
- Describe non-renewable energy resources.
- Explain how fossil fuels are formed and their uses.

Guiding Question(s): What are renewable resources? What are non-renewable resources?

TN Curriculum Standard(s): 6.ESS3.1: **Standard Description(s):** Differentiate between renewable and nonrenewable resources by asking questions about their availability and sustainability.

Materials/Resources Needed: Grade Results Online Platform, Grade Results video, paper, pencil, or notes in Grade Results

Technology: Computer, Whiteboard, Promethean/Smartboard

Key Vocabulary/Terms:

- **Biomass energy:** The energy produced from plant material, manure, or any other organic materials.
- **Coal:** A black or dark brown rock formed over millions of years by the decomposition of plants.
- **Electricity:** A form of energy that provides power to devices that produce light and heat.
- **Energy:** The ability to do work.
- **Fossil fuels:** A natural fuel derived from the remains of dead plants and animals of previous geologic times.
- **Generator:** A device that produces direct current (DC) from a rotating shaft.
- **Geothermal energy:** The energy produced by heat within the Earth.
- **Hydropower:** The power derived from the energy of falling water and running water.
- **Natural gas:** A gaseous fossil fuel.
- **Non-renewable energy:** The type of energy coming from a source that cannot be replenished in a short period.
- **Nuclear fission:** A process of breaking a massive nucleus into two, which releases an enormous amount of energy.
- **Nuclear fuel:** A fuel material used in nuclear power plants to produce nuclear energy.
- **Nuclear reactor:** A device used to start and maintain nuclear reactions, thus producing nuclear energy in a controlled manner.
- **Renewable energy:** An energy resource that can be easily replaced in a short period.
- **Shaft:** The rotating part in the center of a wind generator or motor.
- **Solar power:** Energy from the Sun that is converted into thermal or electrical energy.
- **Substation:** A part of an electrical generation, transmission, and distribution system.
- **Turbine:** A rotary mechanical device that extracts energy from a fluid flow and converts it into useful work.
- **Wind power:** The power of the wind to provide electricity.

Take Attendance (5 minutes)

Lesson Introduction (I Do): (10 minutes) Students will be working on activities relating to renewable and non-renewable resources. TTW share the lesson objectives and introduction from slides 1 – 2 then discuss with Ss. TTW allow Ss opportunity to engage in introductory activities and tasks on page 2.

Vocabulary: (5 minutes) TTW highlight and discuss the meaning of the vocabulary words from the Lesson 14 activities with the Ss. The teacher and students will define and discuss the vocabulary terms. TTW ask Ss to go to page 17 for the

vocabulary list and definitions. TTW will call on different Ss to read the vocabulary words and ask if they can give examples of the vocabulary terms. If they cannot, TTW let the student(s) know that "we will learn about an example as we go through the lesson" and/or the teacher may offer an example.

Lesson Activities (We Do): (40 minutes)
Slides 1-10 TTW facilitate discussions about renewable energy. TSW discuss and summarize content relating to the videos and activities. TTW emphasize the 5 main types of renewable energy including other examples that Ss can think of based on the characteristic of renewable energy being able to be restored over a "short period" of time.
Slides 11-14 TTW facilitate discussions about non-renewable energy. TSW discuss and summarize content relating to the videos and activities. TTW emphasize the 4 main types of non-renewable energy including emphasizing how non-renewable energy differs from renewable energy.
Slide 15 As a whole group, TTW facilitate the activity about the advantages or disadvantages of energy resources. SW achieve a score for accuracy as they complete the embedded lesson activities, independently or as a whole group. TTW may ask the Ss what they see, think, or wonder about any of the content as they go through the lesson.

BREAK – 10 MINUTES

Supplemental Resources: **(5 minutes)** –TTW explain to the students how the supplemental material will be utilized. TTW use supplemental resources for early finishers except BRAINPOP (used to facilitate review before lesson assessments: SW watch the Natural Resources video via BrainPOP page2. TTW facilitate a discussion after the BrainPOP videos by allowing Ss to work through the quiz portion of the videos.

Additional Supplemental Resources: As an early finisher if Ss complete the posttest before time expires.**:** Supplemental page 3(Renewable Energy) & page 4 (Non-Renewable Energy). After viewing the video TTW may engage Ss in discussion based on the video content. What is the difference between renewable vs non-renewable resources? What are some examples of each? TTW ask Ss. What did you See? Think? Wonder? Ss may engage in remaining supplementals as time permits. As an early finisher, Ss will not be penalized for not watching the videos if they do not finish before time expires. Ss will not be graded or penalized for not completing early finisher activities and other Ss will not be penalized for not starting/completing early finisher activities.

Lesson Review: (25 minutes) TTW ask Ss to go to slide 16 for the Lesson Review to discuss concept points from the lesson. TTW ask Ss questions and allow Ss to ask questions about the lesson or the points made in the Lesson Review. Further review points: TTW allow students to watch BrainPOP, Natural Resources. When the video is complete TTW facilitate discussion via the BrainPOP quiz.

Independent Work – Posttest (They Do): (25 minutes). TSW complete the posttest independently. Explain to the students that they will be assessed and will work independently. Encourage them to think critically and do their very best on the Posttest. The Posttest will count as the grade for the daily lesson.

Closing/Wrap Up/Notes Review: (5 minutes) Closing question: WHAT STUCK WITH YOU? TSW write in their composition book or use parking lot at least 1 important concept that they remember. TTW allow 2-3 minutes for students to write their answers. Afterwards TTW allow 2-3 students to share out what stuck with them. Additionally, TTW address the guiding question(s) and ask the Ss to place their answer in the composition book or allow Ss to give verbal answers.

Summer School Lesson Plan

Subject/Grade: Science /6th Grade **Day: 6**

Topic/Lesson Title & Grade Results #: Influence of Solar Energy on the Atmosphere: Lesson 6

Objective(s): Students will

- Describe solar energy
- Discuss how solar energy influences the global patterns of atmospheric air movements
- Discuss the process of heating water

Guiding Question(s): How does the sun affect the atmosphere?

TN Curriculum Standard(s): 6.ESS2.2, 6.ESS2.3: **Standard Description(s): 2.2**- Diagram convection patterns that flow due to uneven heating of the earth. 2.3- Construct an explanation for how atmospheric flow, geographic features, and ocean currents affect the climate of a region through heat transfer.

Materials/Resources Needed: Grade Results Online Platform, Grade Results video, paper, pencil, or notes in Grade Results

Technology: Computer, Whiteboard, Promethean/Smartboard

Key Vocabulary/Terms:

- **Climate:** A state of weather condition prevailing in an area for a certain period of time.
- **Convection current:** A vertical movement of fluids (which includes air) driven by heat.
- **Evaporation:** A process of conversion of liquid into its gaseous form.
- **Hail:** A form of solid water (ice) precipitation.
- **Humidity:** The amount of water vapor present in the air.
- **Land breeze:** A type of wind that blows from land to the sea or ocean.
- **Ocean current:** A continuous directed movement of the water in the ocean.
- **Precipitation:** Any form of water falling from the sky.
- **Sea breeze:** A type of wind that develops over the sea and blows towards the seashore.
- **Solar energy:** Heat and light energy reaching Earth from the Sun.
- **Solar radiation:** Radiant energy emitted by the Sun.
- **Solar system:** The system that consists of the Sun, the planets and their moons, and other non-stellar objects, such as asteroids and dwarf planets.
- **Transpiration:** A process of release of water vapor from the leaves of plants.
- **Weather:** A state of the atmosphere with respect to temperature, humidity, precipitation, and winds.

Take Attendance (5 minutes)

Lesson Introduction (I Do): (10 minutes) Students will be working on activities relating to solar energy and its role in the water cycle and the formation of wind. TTW share the lesson objectives and introduction from slides 1 – 2 then discuss with Ss. TTW allow Ss the opportunity to watch video and discuss content on page 2.

Vocabulary: (5 minutes) TTW highlight and discuss the meaning of the vocabulary words from the Lesson 16 activities with the Ss. The teacher and students will define and discuss the vocabulary terms. TTW ask Ss to go to page 9 for the vocabulary list and definitions. TTW will call on different Ss to read the vocabulary words and ask if they can give examples of the vocabulary terms. If they cannot, TTW let the student(s) know that "we will learn about an example as we go through the lesson" and/or the teacher may offer an example.

Lesson Activities (We Do): (60 minutes)
This is a relatively short lesson packed with a great deal of coordinating concepts.
Slides 1-7 SW read and work on activities about solar energy and its role in the water cycle and the formation of wind. TTW ask different Ss to read content as the class goes through the lesson. Intermittently, the teacher may read small portions. TTW facilitate discussions throughout the lesson on videos watched and activities. Allow Ss to discuss and summarize content as they go through the lesson.
SW achieve a score for accuracy as they complete the embedded lesson activities, independently or as a whole group. TTW may ask the Ss what they see, think, or wonder about any of the content as they go through the lesson.

BREAK – 10 MINUTES

Supplemental Resources: **(5 minutes)** –TTW explain to the students how the supplemental material will be utilized. TTW use supplemental resources for early finishers except BRAINPOP (used to facilitate review before lesson assessments: SW watch the Water Cycle video via BrainPOP, Supplemental pg 1. TTW facilitate a discussion after the BrainPOP videos by allowing Ss to work through the quiz portion of the videos.

Additional Supplemental Resources: As an early finisher if they finish the posttest before time expires. Page 2 Water Cycle video with real world examples. TSW make an illustration of the water cycle in the science composition notebook. As an early finisher, Ss will not be penalized for not watching the videos if they do not finish before time expires. Ss will not be graded or penalized for not completing early finisher activities and other Ss will not be penalized for not starting/completing early finisher activities.

Lesson Review: (25 minutes) TTW ask Ss to go to slide 8 for the Lesson Review to discuss concept points from the lesson. TTW ask Ss questions and allow Ss to ask questions about the lesson or the points made in the Lesson Review. Further review points: TTW allow students to watch BrainPOP, Water Cycle. When the video is complete TTW facilitate discussion via the BrainPOP quiz.

Independent Work – Posttest (They Do): (25 minutes). TSW complete the posttest independently. Explain to the students that they will be assessed and will work independently. Encourage them to think critically and do their very best on the Posttest. The Posttest will count as the grade for the daily lesson.

Closing/Wrap Up/Notes Review: (5 minutes) Closing question: WHAT STUCK WITH YOU? TSW write in their composition book or use parking lot at least 1 important concept that they remember. TTW allow 2-3 minutes for students to write their answers. Afterwards TTW allow 2-3 students to share out what stuck with them. Additionally, TTW address the guiding question(s) and ask the Ss to place their answer in the composition book or allow Ss to give verbal answers.

Summer School Lesson Plan

Subject/Grade: Science /6th Grade **Day: 7**

Topic/Lesson Title & Grade Results #: Human Activities on the Environment and Biodiversity: Impacts and Solutions: Lesson 7

Objective(s): Students will

- Describe the impact of human activities on the environment and biodiversity.
- Design a solution for reducing the impacts of human activities on the environment and biodiversity.

Guiding Question(s): What is biodiversity? What impact can humans have on the environment and biodiversity?

TN Curriculum Standard(s): ETS1.1: **Standard Description(s):** Evaluate design constraints on solutions for maintaining ecosystems and biodiversity.

Materials/Resources Needed: Grade Results Online Platform, Grade Results video, paper, pencil, or notes in Grade Results

Technology: Computer, Whiteboard, Promethean/Smartboard

Key Vocabulary/Terms:

- **Abiotic factors:** Non-living physical and chemical elements of an environment.
- **Acid rain:** The rain that contains a high concentration of acids.
- **Air pollution:** Introduction of contaminants into the air that pollutes it.
- **Biotic factors:** The living components of an ecosystem.
- **Deforestation:** The clearing of forests in a certain area.
- **Ecosystem:** A system formed by the interaction of a group of organisms and their environment.
- **Environment:** The surroundings that help animals and plants to live.
- **Extinction:** The disappearance of all members of a species from the face of the Earth.
- **Habitat:** A natural environment in which living organisms usually live.
- **Pollution:** Introduction of contaminants into the natural environment.
- **Soil pollution:** The contamination of soil in a particular region by the penetration of harmful pesticides and insecticides.
- **Species:** A group of physically similar organisms that can exchange genetic information and produce fertile offspring.
- **Sulfur dioxide:** A colorless, toxic gas which is a major air pollutant in industrial areas and is responsible for acid rain.
- **Sustainable:** The method of long-term harvesting or using a resource without depleting it permanently and without harming the environment.
- **Water pollution:** Pollution of water bodies with substances produced through human activities that negatively affect organisms.

Take Attendance (5 minutes)

Lesson Introduction (I Do): (10 minutes) Ss will be working on activities relating to the environment and biodiversity. TTW share the lesson objectives and introduction from slides 1 – 2 then discuss with Ss.

Vocabulary: (5 minutes) TTW highlight and discuss the meaning of the vocabulary words from the Lesson 12 activities with the Ss. The teacher and students will define and discuss the vocabulary terms. TTW ask Ss to go to page 25 for the vocabulary list and definitions. TTW will call on different Ss to read the vocabulary words and ask if they can give examples

of the vocabulary terms. If they cannot, TTW let the student(s) know that "we will learn about an example as we go through the lesson" and/or the teacher may offer an example.

Lesson Activities (We Do): (40 minutes)
Slides 1-3 TTW will ask Ss to read the introduction and turn and talk about what they read. After watching the video, TTW facilitate a discussion about the environment in which we live: What is in our environment? Do we need everything in our environment? What could we live without? Why do we need all the elements that appear in our environment? How do we rely on our environment?
Slides 4-10 SW read and work on activities about human activities and their impact on environment and biodiversity. TTW ask different Ss to read content as the class goes through the lesson. Intermittently, the teacher may read small portions. TTW facilitate discussions throughout the lesson on videos watched and activities included allowing Ss to discuss and summarize content as they examine the content.
Slides 11-14 TTW continue to facilitate discussion about the environment relative to the habitat of native and invasive species. Ss should be able to correlate how the environment is affected by invasive species and if the "invasion" is necessarily a human impact. (The wind, ocean, and birds could be carriers of invasive species.)
Slides 15-23 TTW allow Ss to examine various areas relating to how humans impact the environment and threaten biodiversity. After watching the videos and engaging in the activities, TSWBAT discuss several ways that humans impact our environment and biodiversity and suggest a way for sustaining the environment.
SW achieve a score for accuracy as they complete the embedded lesson activities**,** independently or as a whole group. TTW may ask the Ss what they see, think, or wonder about any of the content as they go through the lesson.

BREAK – 10 MINUTES

Supplemental Resources: **(5 minutes)** –TTW explain to the students how the supplemental material will be utilized. TTW use supplemental resources for early finishers except BRAINPOP (used to facilitate review before lesson assessments: SW watch the Humans and the environment video via BrainPOP, Supplemental pg 1. TTW facilitate a discussion after the BrainPOP videos by allowing Ss to work through the quiz portion of the videos.

Additional Supplemental Resource: Biodiversity page 2: What is biodiversity? After Ss watch the video, TTW facilitate a discussion. What is causing mass extinction? Are there any patterns to biodiversity? Why is the Amazon a biodiversity hotspot? Why is biodiversity important? What are humans doing to affect the Amazon?
As an early finisher, Ss will not be penalized for not watching the videos if they do not finish before time expires. Ss will not be graded or penalized for not completing early finisher activities and other Ss will not be penalized for not starting/completing early finisher activities.

Lesson Review: (25 minutes) TTW ask Ss to go to slide 24 for the Lesson Review to discuss concept points from the lesson. TTW ask Ss questions and allow Ss to ask questions about the lesson or the points made in the Lesson Review. Further review points: TTW allow students to watch BrainPOP, Humans and the Environment. When the video is complete TTW facilitate discussion via the BrainPOP quiz.

Independent Work – Posttest (They Do): (25 minutes). TSW complete the posttest independently. Explain to the students that they will be assessed and will work independently. Encourage them to think critically and do their very best on the Posttest. The Posttest will count as the grade for the daily lesson.

Closing/Wrap Up/Notes Review: (5 minutes) Closing question: WHAT STUCK WITH YOU? TSW write in their composition book or use parking lot at least 1 important concept that they remember. TTW allow 2-3 minutes for students to write their answers. Afterwards TTW allow 2-3 students to share out what stuck with them. Additionally, TTW address the guiding question(s) and ask the Ss to place their answer in the composition book or allow Ss to give verbal answers.

Summer School Lesson Plan

Subject/Grade: Science /6th Grade **Day: 8**

Topic/Lesson Title & Grade Results #: Human Activity and Technology on Earth's Spheres: Lesson 8

Objective(s): Students will

- Explain the impact of human activities and technology on the lithosphere.
- Identify the impact of human activities on the atmosphere.
- Describe the impact of human activities on the hydrosphere.

Guiding Question(s): How can Earth's resources be used wisely?

TN Curriculum Standard(s): 6.ESS3.3: **Standard Description(s):** Assess the impacts of human activities on the biosphere including conservation, habitat management, species endangerment, and extinction.

Materials/Resources Needed: Grade Results Online Platform, Grade Results video, paper, pencil, or notes in Grade Results

Technology: Computer, Whiteboard, Promethean/Smartboard

Key Vocabulary/Terms:

- **Atmosphere:** The gaseous envelope surrounding the earth.
- **Biosphere:** The life existing zone around Earth.
- **Catchment:** Collection of rainfall over a drainage area.
- **Cryosphere:** The frozen solid ice part of the earth.
- **Deforestation:** Conversion of forested areas to non-forested land due to human activities.
- **Development:** Mode of growing or progressing.
- **Drip irrigation:** Slow and frequent application of water to the plant root zone under low pressure.
- **Eutrophication:** The enrichment of inorganic plant nutrients in water bodies.
- **Fertilizers:** The plant nutrient used for the growth of plants.
- **Fossil fuels:** Carbon-based fuels, such as coal, oil and natural gas that are formed over millions of years from the remains of ancient plants and animals.
- **Global Warming:** The net increase in earth's temperature.
- **Grey water:** Wastewater that drains from washing machines, sinks, hand basins, dishwashers, bathtubs or showers.
- **Gutter:** Channel on the roof of a building, for carrying off rainwater.
- **Hydrosphere:** All of Earth's water in solid, liquid and gas form.
- **Incineration:** The process of destroying waste material by burning.
- **Lithosphere:** The outer part of Earth comprised of crust and upper mantle.
- **Resource:** Source of supply that is used to sustain or help.
- **Seepage:** The process of leakage.
- **Sustainable development:** Economic development that tries to secure the future.
- **Urbanization:** Process by which rural people migrate to live in cities.
- **Xeriscaping:** Designing a landscape that requires minimal water use.

Take Attendance (5 minutes)

Lesson Introduction (I Do): (10 minutes) Students will be working on activities relating to human impact and technology on our land and water resources. TTW share the lesson objectives and introduction from slides 1 – 2 then discuss with Ss.

Vocabulary: (10 minutes) TTW highlight and discuss the meaning of the vocabulary words from the Lesson 15 activities with the Ss. The teacher and students will define and discuss the vocabulary terms. TTW ask Ss to go to page 10 for the vocabulary list and definitions. TTW will call on different Ss to read the vocabulary words and ask if they can give examples of the vocabulary terms. If they cannot, TTW let the student(s) know that "we will learn about an example as we go through the lesson" and/or the teacher may offer an example.

Lesson Activities (We Do): (40 minutes)
Slides 1-8 SW read and work on activities about human impact and technology on our land and water resources. TTW ask different Ss to read the text as the class goes through the lesson. Intermittently, the teacher may read short portions. TTW facilitate discussions throughout the lesson on videos watched and activities allowing Ss to discuss and summarize content as they go through the lesson.
SW achieve a score for accuracy as they complete the embedded lesson activities, independently or as a whole group. TTW may ask the Ss what they see, think, or wonder about any of the content as they go through the lesson.

BREAK – 10 MINUTES

Supplemental Resources: **(5 minutes)** –TTW explain to the students how the supplemental material will be utilized. TTW use supplemental resources for early finishers except BRAINPOP (used to facilitate review before lesson assessments: SW watch the Greenhouse Effect video via BrainPOP, Supplemental pg 1. TTW facilitate a discussion after the BrainPOP videos by allowing Ss to work through the quiz portion of the videos.

Additional Supplemental Resources: As an early finisher if they complete the posttest before time expires.
TSW will watch the remaining supplemental videos. As a written prompt, TTW offer the following question: What is one thing that you can do to make the planet greener? Or allow Ss to write what he/she gained/learned by watching the videos and how any of the information can be used in their lives. As an early finisher, Ss will not be penalized for not watching the videos if they do not finish before time expires. Ss will not be graded or penalized for not completing early finisher activities and other Ss will not be penalized for not starting/completing early finisher activities.

Lesson Review: (25 minutes) TTW ask Ss to go to slide 9 for the Lesson Review to discuss concept points from the lesson. TTW ask Ss questions and allow Ss to ask questions about the lesson or the points made in the Lesson Review. Further review points: Supplemental-TTW allow students to watch BrainPOP, Greenhouse Effect page 1. When the video is complete TTW facilitate discussion via the BrainPOP quiz.

Independent Work – Posttest (They Do): (25 minutes). TSW complete the posttest independently. Explain to the students that they will be assessed and will work independently. Encourage them to think critically and do their very best on the Posttest. The Posttest will count as the grade for the daily lesson.

Closing/Wrap Up/Notes Review: (5 minutes) Closing question: WHAT STUCK WITH YOU? TSW write in their composition book or use parking lot at least 1 important concept that they remember. TTW allow 2-3 minutes for students to write their answers. Afterwards TTW allow 2-3 students to share out what stuck with them. Additionally, TTW address the guiding question(s) and ask the Ss to place their answer in the composition book or allow Ss to give verbal answers.

Summer School Lesson Plan

Subject/Grade: Science /6th Grade **Day: 9**

Topic/Lesson Title & Grade Results #: Ocean Currents and Wind: Lesson 9

Objective(s): Students will

- Discuss ocean currents.
- Explain the causes of surface currents.
- Explain the causes of deep-water currents.
- Describe the effects of ocean currents.

Guiding Question(s): How does water move in the ocean?

TN Curriculum Standard(s): 6.ESS2.1: **Standard Description(s):** Gather evidence to justify that oceanic convection currents are caused by the sun's transfer of heat energy and differences in salt concentration leading to global water movement.

Materials/Resources Needed: Grade Results Online Platform, Grade Results video, paper, pencil, or notes in Grade Results

Technology: Computer, Whiteboard, Promethean/Smartboard

Key Vocabulary/Terms:

- **Climate:** A state of weather condition prevailing in an area for a certain period of time.
- **Coriolis Effect:** The deflection of a moving mass from one place to another in a rotating system, with reference to a standard position out of the rotating system.
- **Deep current:** A stream-like movement of ocean water far below the surface.
- **Downwelling:** A process of vertical movement of surface water to the bottom.
- **Humidity:** The amount of water vapor present in the air.
- **Lake:** A body of water surrounded by land.
- **Longshore Drift:** Waves approaching the coast at an angle, which results in the gradual zig-zag movement of beach materials along the coast.
- **Ocean current:** A continuous directed movement of the water in the ocean.
- **Precipitation:** Any form of water falling from the sky.
- **Rip current:** A fast-moving narrow channel of water away from beach in a concentrated stream.
- **Salinity:** The measure of the amount of dissolved salts in a liquid.
- **Stream:** A channel through which water is continually flowing downhill.
- **Surface current:** A stream-like movement of ocean water near the surface of the ocean.
- **Tradewinds:** The wind belts flowing between 30° latitude and the equator in both hemispheres.
- **Upwelling:** A process that occurs when deeper, colder water from the bottom of the ocean is moved up toward the surface away from the shore.
- **Water wave:** A disturbance on the surface of the water that transfers energy through matter or space.
- **Westerlies:** The wind that moves toward the poles between 30° and 60° latitudes in both the hemispheres.

Take Attendance (5 minutes)

Lesson Introduction (I Do): (10 minutes) Students will be working on activities relating to ocean currents. TTW share the lesson objectives and introduction from slides 1 – 2. The T and Ss will view the introduction video then discuss with Ss. TTW ask Ss What does the narrator mean by, "waves are unpredictable?" TTW allow Ss to share out.

Vocabulary: (5 minutes) TTW highlight and discuss the meaning of the vocabulary words from the Lesson 17 activities with the Ss. The teacher and students will define and discuss the vocabulary terms. TTW ask Ss to go to page 14 for the vocabulary list and definitions. TTW will call on different Ss to read the vocabulary words and ask if they can give examples of the vocabulary terms. If they cannot, TTW let the student(s) know that "we will learn about an example as we go through the lesson" and/or the teacher may offer an example.

Lesson Activities (We Do): (40 minutes)
Slides 1-6 SW read and complete activities and videos about oceans' surface currents and wind. TTW ask different Ss to read content as the class goes through the lesson. TTW facilitate discussions throughout the lesson on videos and activities, along with discussing and summarizing the content as they go through the lesson. How does the wind affect the Earth's water.
Slides 7-8 TTW facilitate a discussion on the effects of the Coriolis Effect on oceans and what causes deep ocean currents. Ss should understand how the Coriolis Effect occurs and how it is different in the Northern Hemisphere vs the Southern Hemisphere.
Slides 9-12 TTW continue the discussion as it leads to answering the question: What can ocean currents affect? SS will continue to view the videos and activities to assist them to formulate an answer to the previous question.
SW achieve a score for accuracy as they complete the embedded lesson activities, independently or as a whole group. TTW may ask the Ss what they see, think, or wonder about any of the content as they go through the lesson.

BREAK – 10 MINUTES

Supplemental Resources: **(5 minutes)** –TTW explain to the students how the supplemental material will be utilized. TTW use supplemental resources for early finishers except BRAINPOP (used to facilitate review before lesson assessments: SW watch the Ocean Currents video via BrainPOP, Supplemental page 2. TTW facilitate a discussion after the BrainPOP videos by allowing Ss to work through the quiz portion of the videos.

Additional Supplemental Resources: As an early finisher if they finish the posttest before the time expires: Flocabulary-Wind Patterns. TTW allow Ss to watch the video then engage in the activities provided.
As an early finisher, Ss will not be penalized for not watching the videos if they do not finish before time expires. Ss will not be graded or penalized for not completing early finisher activities and other Ss will not be penalized for not starting/completing early finisher activities.

Lesson Review: (25 minutes) TTW ask Ss to go to slide 13 for the Lesson Review to discuss concept points from the lesson. TTW ask Ss questions and allow Ss to ask questions about the lesson or the points made in the Lesson Review. Further review points: Supplemental-TTW allow students to watch BrainPOP, Ocean Currents. When the video is complete TTW facilitate discussion via the BrainPOP quiz.

Independent Work – Posttest (They Do): (25 minutes). TSW complete the posttest independently. Explain to the students that they will be assessed and will work independently. Encourage them to think critically and do their very best on the Posttest. The Posttest will count as the grade for the daily lesson.

Closing/Wrap Up/Notes Review: (5 minutes) Closing question: WHAT STUCK WITH YOU? TSW write in their composition book or use parking lot at least 1 important concept that they remember. TTW allow 2-3 minutes for students to write their answers. Afterwards TTW allow 2-3 students to share out what stuck with them. Additionally, TTW address the guiding question(s) and ask the Ss to place their answer in the composition book or allow Ss to give verbal answers.

Summer School Lesson Plan

Subject/Grade: Science /6th Grade **Day: 10**

Topic/Lesson Title & Grade Results #: Effects of Mountain and Ocean on Weather and Climate: Lesson 10

Objective(s): Students will

- Define weather and climate.
- Describe the effects of the oceans on weather and climate.
- Explain the effects of mountains on weather and climate.

Guiding Question(s): How does air pressure, temperature, air movement, and humidity in the atmosphere affect both weather and climate?

TN Curriculum Standard(s): 6.ESS2.2, 6.ESS2.3, 6.ESS2.5, 6.ESS2.6: **Standard Description(s):** .2) Diagram convection patterns that flow due to uneven heating of the earth. .3) Construct an explanation for how atmospheric flow, geographic features, and ocean currents affect the climate of a region through heat transfer. .5) Analyze and interpret data from weather conditions, weather maps, satellites, and radar to predict probable local weather patterns and conditions. .6) Explain how relationships between the movement and interactions of air masses, high- and low-pressure systems, and frontal boundaries result in weather conditions and severe storms.

Materials/Resources Needed: Grade Results Online Platform, Grade Results video, paper, pencil, or notes in Grade Results
Technology: Computer, Whiteboard, Promethean/Smartboard

Key Vocabulary/Terms:

- **Climate:** A state of weather condition prevailing in an area for a certain period of time.
- **Condensation:** The change of state from gas to liquid.
- **Leeward side:** The side of a mountain facing away from the wind.
- **Ocean current:** A continuous directed movement of the water in the ocean.
- **Precipitation:** Any form of water falling from the sky.
- **Prevailing wind:** Wind that blows often from one direction than from any other direction.
- **Weather:** A state of the atmosphere with respect to temperature, humidity, precipitation, and winds.
- **Windward side:** The side of a mountain facing toward the wind.

Take Attendance (5 minutes)

Lesson Introduction (I Do): (10 minutes) Students will be working on activities relating to geographic structures and their effect on weather and climate. TTW share the lesson objectives and introduction from slides 1 – 2 then allow Ss to share their thoughts about the question posed on page 2 referencing the picture.

Vocabulary: (5 minutes) TTW highlight and discuss the meaning of the vocabulary words from the Lesson 18 activities with the Ss. The teacher and students will define and discuss the vocabulary terms. TTW ask Ss to go to page 13 for the vocabulary list and definitions. TTW will call on different Ss to read the vocabulary words and ask if they can give examples of the vocabulary terms. If they cannot, TTW let the student(s) know that "we will learn about an example as we go through the lesson" and/or the teacher may offer an example.

Lesson Activities (We Do): (40 minutes)
Slides 1-3 TTW introduce the lesson and allow the Ss to become familiar with some key terms about weather and climate with a word search activity.

Slides 4-5 TSW compare the characteristics of weather vs climate and complete an activity to show their understanding of the lesson**.**
Slides 6-11 SW read and work on activities about geographic structures and their effect on weather and climate. TTW ask different Ss to read content as the class goes through the lesson. Intermittently, the teacher may read small portions. TTW facilitate discussions throughout the lesson on videos and activities allowing Ss to summarize their learning.
SW achieve a score for accuracy as they complete the embedded lesson activities, independently. TTW may ask the Ss what they see, think, or wonder about any of the content as they go through the lesson.

Supplemental Resources: **(3-5 minutes)** BRAINPOP (used to facilitate review before lesson assessments: SW watch the Weather video via BrainPOP, Supplemental pg 2. TTW facilitate a discussion after the BrainPOP videos by allowing Ss to work through the quiz portion of the videos.

Additional Supplemental Resource: As an early finisher if they complete the posttest before time expires: Flocabulary: Weather page 1. TSW complete the activities provided.
As an early finisher, Ss will not be penalized for not watching the videos if they do not finish before time expires. Ss will not be graded or penalized for not completing early finisher activities and other Ss will not be penalized for not starting/completing early finisher activities.

Lesson Review: (25 Minutes) TTW ask Ss to go to slide 12 for the Lesson Review to discuss concept points from the lesson. TTW ask Ss questions and allow Ss to ask questions about the lesson or the points made in the Lesson Review. Further review points: TTW allow students to watch BrainPOP, Weather. When the video is complete TTW facilitate discussion via the BrainPOP quiz.

Independent Work – Posttest (They Do): (25 minutes). TSW complete the posttest independently. Explain to the students that they will be assessed and will work independently. Encourage them to think critically and do their very best on the Posttest. The Posttest will count as the grade for the daily lesson.

Closing/Wrap Up/Notes Review: (5 minutes) Closing question: WHAT STUCK WITH YOU? TSW write in their composition book or use parking lot at least 1 important concept that they remember. TTW allow 2-3 minutes for students to write their answers. Afterwards TTW allow 2-3 students to share out what stuck with them. Additionally, TTW address the guiding question(s) and ask the Ss to place their answer in the composition book or allow Ss to give verbal answers.

Summer School Lesson Plan

Subject/Grade: Science /6th Grade **Day: 11**

Topic/Lesson Title & Grade Results #: Energy Transfer in an Ecosystem: Lesson 11

Objective(s): Students will

- Define ecosystem.
- Describe food chain and food web.
- Explain the flow of energy in an ecosystem.
- Explain energy pyramid

Guiding Question(s): How are different parts of the environment connected?

TN Curriculum Standard(s): 6.LS2.3: **Standard Description(s):** Draw conclusions about the transfer of energy through a food web and energy pyramid in an ecosystem.

Materials/Resources Needed: Grade Results Online Platform, Grade Results video, paper, pencil, or notes in Grade Results

Technology: Computer, Whiteboard, Promethean/Smartboard

Key Vocabulary/Terms:

- **Carnivore:** An aquatic or terrestrial flesh-eating animal.
- **Consumer:** An animal that cannot make its own food and eats plants or other animals.
- **Decomposer:** The organism that feeds on decaying matter.
- **Energy:** Measurement of the ability of a body to do work.
- **Food chain:** The path of flow of energy through an ecosystem.
- **Food web:** An interconnected group of food chains in an ecosystem.
- **Herbivore:** An animal that feeds on grasses and other plants.
- **Omnivore:** An animal that feeds on both animal and vegetable substances.
- **Photosynthesis:** The process of the production of food (sugar) from the Sun, carbon dioxide, and water.
- **Predator:** An organism that captures and feeds on other organisms.
- **Producer:** An organism that is responsible for the production of complex organic compounds from simple inorganic molecules.
- **Scavenger:** An animal that consumes dead animals.

Take Attendance (5 minutes)

Lesson Introduction (I Do): (10 minutes) Students will be working on activities relating to energy transfer in an ecosystem. TTW share the lesson objectives and introduction from slides 1 – 2 then discuss with Ss. TTW pause to allow Ss opportunity to watch the video.

Vocabulary: (5 minutes) TTW highlight and discuss the meaning of the vocabulary words from the Lesson 5 activities with the Ss. The teacher and students will define and discuss the vocabulary terms. TTW ask Ss to go to page 25 for the vocabulary list and definitions. TTW will call on different Ss to read the vocabulary words and ask if they can give examples of the vocabulary terms. If they cannot, TTW let the student(s) know that "we will learn about an example as we go through the lesson" and/or the teacher may offer an example.

Lesson Activities (We Do): (40 minutes)
Slides 1- 3 TSW engage in videos and activities to examine the flow of energy in an ecosystem. TTW continue to emphasize that most of the energy that we use and need for life-systems come from the sun.
Slides 4-11 TSW continue to engage in activities and watch videos to learn about the various components of an ecosystem and their roles(niche). Each component will be viewed independently so that the students can come to grasp how the ecosystem functions. TTW clear up any misconceptions and facilitate discussions.
Slides 12- 20 TSW read and work on activities about energy relationships and energy transfer. Food chains, food webs, and energy pyramids will be the focus as Ss investigate how energy moves in an ecosystem and differentiating between a food chain vs a food web. TTW facilitate discussions and ask Ss to remember about the sustainability of an environment. TTW tie the sustainability of an ecosystem and the importance of a food web. TTW ask different Ss to read content as the class goes through the lesson. Intermittently, the teacher may read small portions. TTW facilitate discussions throughout the lesson on videos and activities allowing Ss to summarize content periodically as they go through the lesson.
SW achieve a score for accuracy as they complete the embedded lesson activities, independently. TTW may ask the Ss what they see, think or wonder about any of the content as they go through the lesson.

BREAK – 10 MINUTES

Supplemental: (5 minutes) Supplemental Resources: **(3-5 minutes)** –TTW explain to the students how the supplemental material will be utilized. TTW use supplemental resources for early finishers except BRAINPOP (used to facilitate review before lesson assessments: SW watch the Ecosystems video via BrainPOP, Supplemental pg 1. TTW facilitate a discussion after the BrainPOP videos by allowing Ss to work through the quiz portion of the videos.

Additional Supplemental Resources: As an early finisher if Ss complete the posttest before time expires. Video pg 3: Flow of Energy Through an Ecosystem; TTW allow Ss opportunity to watch each video. After watching each video, TTW facilitate discussion for each video content with Ss.
Video Page 4 Supplemental: Fabulous Food Chain; Page 2: Energy in Ecosystems can be viewed by the Ss.
Ss will not be penalized for not watching the videos if they do not finish before time expires. Ss will not be graded or penalized for not completing early finisher activities and other Ss will not be penalized for not starting/completing early finisher activities.

Lesson Review: (25 minutes) TTW ask Ss to go to slide 21 for the Lesson Review to discuss concept points from the lesson. TTW ask Ss questions and allow Ss to ask questions about the lesson or the points made in the Lesson Review. Further review points: TTW allow students to watch BrainPOP-Ecosystems. When the video is complete TTW facilitate discussion via the BrainPOP quiz.

Independent Work – Posttest (They Do): (25 minutes). TSW complete the posttest independently. Explain to the students that they will be assessed and will work independently. Encourage them to think critically and do their very best on the Posttest. The Posttest will count as the grade for the daily lesson.

Closing/Wrap Up/Notes Review: (5 minutes) Closing question: WHAT STUCK WITH YOU? TSW write in their composition book or use parking lot at least 1 important concept that they remember. TTW allow 2-3 minutes for students to write their answers. Afterwards TTW allow 2-3 students to share out what stuck with them. Additionally, TTW address the guiding question(s) and ask the Ss to place their answer in the composition book or allow Ss to give verbal answers.

Summer School Lesson Plan

Subject/Grade: Science /6th Grade **Day: 12**

Topic/Lesson Title & Grade Results #: Interactions Among Organisms: Lesson 12

Objective(s): Students will

- List the biotic and abiotic items in a classroom ecosystem.
- Tabulate the differences between the various symbiotic relationships.
- Explain the concept of food chains and their types.
- Discuss the various ecological pyramids

Guiding Question(s): How do organisms interact?

TN Curriculum Standard(s): 6.LS2.2: **Standard Description(s):** Determine the impact of competitive, symbiotic, and predatory interactions in an ecosystem.

Materials/Resources Needed: Grade Results Online Platform, Grade Results video, paper, pencil, or notes in Grade Results

Technology: Computer, Whiteboard, Promethean/Smartboard

Key Vocabulary/Terms:

- **Abiotic:** All nonliving things.
- **Barnacle:** A marine crustacean with feathery food-catching appendages.
- **Biomass:** The dry mass of the organisms used as fuel.
- **Biotic:** All living organisms.
- **Commensalism:** A symbiotic relationship between two different organisms, in which one benefits and the other is not harmed.
- **Competition:** The struggle between species and individuals to survive.
- **Consumer:** An organism that ingests another organism in a food chain.
- **Decomposer:** Organism, such as bacteria or fungi, which breaks down dead organisms.
- **Ecology:** The study of the interactions between organisms and their environment.
- **Environment:** The surroundings in which an organism lives.
- **Food chain:** An arrangement of organisms in a biological community in the order that each is eaten by the other.
- **Food web:** A complex of interrelated food chains.
- **Herbivore:** An animal that feeds on plants.
- **Host:** An organism in or on which another organism lives.
- **Interspecific:** The relationship between species.
- **Intraspecific:** The relationship within a species.
- **Legume plant:** A plant of the *Leguminosae* family, such as clover, alfalfa, beans, peas, etc.
- **Mutualism:** A relationship between organisms of two different species in which both are benefitting.
- **Parasite:** An organism that lives in or on an animal or a plant.
- **Parasitism:** A symbiotic relationship, in which one is benefited and the other is harmed.
- **Photosynthesis:** A biochemical process, dependent on energy from the Sun, which synthesizes complex organic materials from carbon dioxide and water.
- **Predation:** An interaction between a predator and a prey.
- **Predator:** An animal that lives by killing and eating other animals.
- **Prey:** An animal that is killed by another for food.
- **Producer:** A photosynthetic green plant or an autotrophic organism.
- **Symbiosis:** A close living relationship between two different organisms.
- **Tapeworm:** A flatworm parasite in the intestine of vertebrates

Take Attendance (5 minutes)

Lesson Introduction (I Do): (10 minutes) Students will be working on activities relating to the interaction of living things. TTW share the lesson objectives and introduction from slides 1 – 2 then discuss with Ss. This lesson ties back to Lesson 11 video supplements as students learn about ecosystems and their inter-working structure.

Vocabulary: (5 minutes) TTW highlight and discuss the meaning of the vocabulary words from the Lesson 7 activities with the Ss. The teacher and students will define and discuss the vocabulary terms. TTW ask Ss to go to page 20 for the vocabulary list and definitions. TTW will call on different Ss to read the vocabulary words and ask if they can give examples of the vocabulary terms. If they cannot, TTW let the student(s) know that "we will learn about an example as we go through the lesson" and/or the teacher may offer an example.

Lesson Activities (We Do): (40 minutes)
Slides 1-3 TSW read and work on activities about interactions among organisms. TTW emphasize the makeup of an ecosystem with biotic and abiotic factors. TSWBAT to differentiate between the two factors and give examples to show their understanding.
Slides 4-10 TSW study the diverse types of interactions to understand how organisms interact in the ecosystem to maintain balance and sustainability. TSW read the text, watch the videos, and complete activities to come to an understanding of how the interactions make it possible for organisms to occupy the same space.
Slides 12-18 Food webs and food chains are reintroduced to note that not all food chains are alike. Additionally, there are various forms of pyramids to indicate the contrasting functions of organisms and energy transfer in an ecosystem. TTW ask different Ss to read content as the class goes through the lesson. Intermittently, the teacher may read small portions. TTW facilitate discussions throughout the lesson on videos and activities allowing Ss to discuss and summarize the content as they go through the lesson.
TSW achieve a score for accuracy as they complete the embedded lesson activities, independently**.** TTW may ask the Ss what they see, think, or wonder about any of the content as they go through the lesson.

BREAK – 10 MINUTES

Supplemental Resources: **(5 minutes)** –TTW explain to the students how the supplemental material will be utilized. TTW use supplemental resources for early finishers or as a lesson review supplemental.
Supplemental Page 1 /Flocabulary: Ecosystems (Video). TTW allow Ss the opportunity to watch the video and discuss the concept points noted in the video relating to the food chain, for example: What part of the food chain feeds off dead organisms? What is a predator? Give an example. Supplemental Page 4/Magic School Bus; Why do animals compete? Are coral reefs living?

Additional Supplementals: As an early finisher, Flocabulary Lyric Lab may be used if Ss complete the posttest before time expires. Mass extinction page 2; Animals form partnerships page 3; Symbiosis pg 5. Ss will not be penalized for not watching the videos if they do not finish before time expires. Ss will not be graded or penalized for not completing early finisher activities and other Ss will not be penalized for not starting/completing early finisher activities.

Lesson Review: (25 minutes) TTW ask Ss to go to slide 19 for the Lesson Review to discuss concept points from the lesson. TTW ask Ss questions and allow Ss to ask questions about the lesson or the points made in the Lesson Review.

Independent Work – Posttest (They Do): (25 minutes). TSW complete the posttest independently. Explain to the students that they will be assessed and will work independently. Encourage them to think critically and do their very best on the Posttest. The Posttest will count as the grade for the daily lesson.

Closing/Wrap Up/Notes Review: (5 minutes) Closing question: WHAT STUCK WITH YOU? TSW write in their composition book or use parking lot at least 1 important concept that they remember. TTW allow 2-3 minutes for

students to write their answers. Afterwards TTW allow 2-3 students to share out what stuck with them. Additionally, TTW address the guiding question(s) and ask the Ss to place their answer in the composition book or allow Ss to give verbal answers.

Summer School Lesson Plan

Subject/Grade: Science /6th Grade **Day: 13**

Topic/Lesson Title & Grade Results #: Impact of Environmental Factors on Population: Lesson 13

Objective(s): Students will

- Discuss population dynamics.
- Explain density-dependent factors and their impacts on population.
- Explain density-independent factors.

Guiding Question(s): What impact can human activity have on population? How do humans and human population growth affect the environment?

TN Curriculum Standard(s): 6.LS2.1: **Standard Description(s):** Evaluate and communicate the impact of environmental variables on population size.

Materials/Resources Needed: Grade Results Online Platform, Grade Results video, paper, pencil, or notes in Grade Results

Technology: Computer, Whiteboard, Promethean/Smartboard

Key Vocabulary/Terms:

- **Abiotic factors:** Non-living physical and chemical elements of an environment.
- **Biotic factors:** The living components of an ecosystem.
- **Competition:** A symbiotic relationship among living things for resources.
- **Emigration:** The movement of an organism out of a population.
- **Immigration:** The movement of an organism from one population to another, thus affecting the new population.
- **Iowa Lake:** A lake in the U.S. states of Iowa and Minnesota.
- **Natural disaster:** An event caused by forces of nature that cause destruction of living things and their properties.
- **Pollination:** The transfer of pollen from the male part of a flower to the female part of the plants.
- **Population dynamics:** The changes in the number of individuals in a population over time.
- **Population:** A collection of individual organisms of the same species that occupy some specific area.
- **Predation:** A relationship between two species of animal in a community, in which one (the predator) kills/hunts the other (the prey).
- **The Bass:** North American freshwater fishes of the family Centrarchidae.
- **Weather:** The state of the atmosphere, such as temperature, moisture, pressure, etc.

Take Attendance (5 minutes)

Lesson Introduction (I Do): (10 minutes) Students will be working on activities relating to the impact of environmental factors on the population. TTW share the lesson objectives and introduction from slides 1 – 2 then discuss with Ss. TTW pause to allow Ss the opportunity to view the video and discuss.

Vocabulary: (5 minutes) TTW highlight and discuss the meaning of the vocabulary words from the Lesson 6 activities with the Ss. The teacher and students will define and discuss the vocabulary terms. TTW ask Ss to go to page 10 for the vocabulary list and definitions. TTW will call on different Ss to read the vocabulary words and ask if they can give examples of the vocabulary terms. If they cannot, TTW let the student(s) know that "we will learn about an example as we go through the lesson" and/or the teacher may offer an example.

Lesson Activities (We Do): (40 minutes)
Slides 1-3 TTW introduce students to populations dynamics. TSWBAT describe a population in an ecosystem and what environmental factors may affect an ecosystem.
Slides 4-8 TSW continue to read the text, watch videos, and complete the activities to gain an understanding of the environmental factor, density.
SW read and work on activities about impact of environmental factors on population. TTW ask different Ss to read content as the class goes through the lesson. Intermittently, the teacher may read small portions. TTW facilitate discussions throughout the lesson on videos and activities included allowing Ss to summarize content as they go through the lesson.
SW achieve a score for accuracy as they complete the embedded lesson activities, independently. TTW may ask the Ss what they see, think, or wonder about any of the content as they go through the lesson.

BREAK – 10 MINUTES

Supplemental Resources: **(5 minutes)** –TTW explain to the students how the supplemental material will be utilized. TTW use supplemental resources for early finishers except BRAINPOP (used to facilitate review before lesson assessments: SW watch the Population Growth video via BrainPOP, Supplemental pg 1. TTW facilitate a discussion after the BrainPOP videos by allowing Ss to work through the quiz portion of the videos.

Additional Supplemental Resources: As an early finisher if Ss complete the posttest before time expires Page 3 Supplemental Population Change, Adaptation & Interdependence. After watching each video, TTW facilitate discussion for each video content with Ss. TTW allow Ss to watch Page 2 Supplemental Video/Natural Disasters.
Ss will not be penalized for not watching the videos if they do not finish before time expires. Ss will not be graded or penalized for not completing early finisher activities and other Ss will not be penalized for not starting/completing early finisher activities.

Lesson Review: (25 minutes) TTW ask Ss to go to slide 9 for the Lesson Review to discuss concept points from the lesson. TTW ask Ss questions and allow Ss to ask questions about the lesson or the points made in the Lesson Review. Further review points: TTW allow students to watch BrainPOP, Population Growth. When the video is complete TTW facilitate discussion via the BrainPOP quiz.

Independent Work – Posttest (They Do): (25 minutes). TSW complete the posttest independently. Explain to the students that they will be assessed and will work independently. Encourage them to think critically and do their very best on the Posttest. The Posttest will count as the grade for the daily lesson.

Closing/Wrap Up/Notes Review: (5 minutes) Closing question: WHAT STUCK WITH YOU? TSW write in their composition book or use parking lot at least 1 important concept that they remember. TTW allow 2-3 minutes for students to write their answers. Afterwards TTW allow 2-3 students to share out what stuck with them. Additionally, TTW address the guiding question(s) and ask the Ss to place their answer in the composition book or allow Ss to give verbal answers.

Summer School Lesson Plan

Subject/Grade: Science /6th Grade **Day: 14**

Topic/Lesson Title & Grade Results #: Limiting Factors in an Ecosystem: Lesson 14

Objective(s): Students will

- List the limiting factors affecting the population in an ecosystem.
- Explain the limiting factors that depend on population density.
- Describe the limiting factors that do not depend on population density.

Guiding Question(s): How do limiting factors impact the growth of a population?

TN Curriculum Standard(s): 6.LS2.6: **Standard Description(s):** Research the ways in which an ecosystem has changed over time in response to changes in physical conditions, population balances, human interactions, and natural catastrophes.

Materials/Resources Needed: Grade Results Online Platform, Grade Results video, paper, pencil, or notes in Grade Results

Technology: Computer, Whiteboard, Promethean/Smartboard

Key Vocabulary/Terms:

- **Bioaccumulation:** Gathering of substances like pesticides, or other chemicals in an organism.
- **Climate:** The weather conditions in an area.
- **Deforestation:** The clearing of forests to make the land available for other uses.
- **Disease:** An abnormal condition of an organism where the normal functions are disturbed.
- **Drought:** A prolonged period of abnormally low rainfall, leading to shortage of water.
- **Ecosystem:** A unit that consists of all living organisms that interact together with all of the non-living factors in an environment.
- **Flood:** An overflow of water on land which is dry.
- **Global warming:** The increase in the average temperature of Earth's climatic system.
- **Habitat:** Ecological or environmental area that is inhabited by a particular species of animal, plant, or other organisms.
- **Limiting factors:** Factors that regulate population growth.
- **Overfishing:** The overexploitation of fish populations in seas and lakes, leading to their significant depletion.
- **Pollutant:** A harmful substance that damages the environment.
- **Pollution:** Introduction of harmful or poisonous substances into the natural environment.
- **Population:** A group of individuals of the same species living in a particular geographical area and interbreeding.
- **Predation:** A biological interaction where a predator feeds on its prey.
- **Predator:** An organism that kills and eats other organisms.
- **Prey:** An organism that is killed and eaten by another organism.
- **Sewage:** Waste material carried away from homes, businesses, and other buildings.
- **Urbanization:** Increasing the number of people, their homes, and their ancillary systems in urban areas.
- **Volcano:** A mountain where lava erupts from the magma chamber under the earth's surface.

Take Attendance (5 minutes)

Lesson Introduction (I Do): (10 minutes) Students will be working on activities relating to the limiting factors in an ecosystem. TTW share the lesson objectives and introduction from slides 1 – 2 then discuss with Ss.

Vocabulary: (5 minutes) TTW highlight and discuss the meaning of the vocabulary words from the Lesson 8 activities with the Ss. The teacher and students will define and discuss the vocabulary terms. TTW ask Ss to go to page 22 for the vocabulary list and definitions. TTW will call on different Ss to read the vocabulary words and ask if they can give examples of the vocabulary terms. If they cannot, TTW let the student(s) know that "we will learn about an example as we go through the lesson" and/or the teacher may offer an example.

Lesson Activities (We Do): (40 minutes)
Slides 1-3 TTW lead Ss in a discussion surrounding limiting factors on a population that can affect an ecosystem. TSW indicate what some examples of limiting factors may consist of in an ecosystem. TSW complete activities to show their understanding of limiting factors.
Slides 4-15 TSW investigate limiting factors, resource availability, disease, climate, human activities, and pollution by reading the text, watching videos, and completing activities that will assist them in their understanding of these concepts. TTW facilitate a discussion around these concepts throughout the lesson on videos and activities allowing Ss to summarize the content as they go through the lesson. TTW ask different Ss to read content as the class goes through the lesson. Intermittently, the teacher may read small portions.
SW achieve a score for accuracy as they complete the embedded lesson activities, independently or as a whole group. TTW may ask the Ss what they see, think, or wonder about any of the content as they go through the lesson.

BREAK – 10 MINUTES

Supplemental: (5 minutes) –TTW explain to the students how the supplemental material will be utilized.
TTW use supplemental resources for early finishers or as supplemental to lesson review.
Page 1 Supplemental/Limiting Factors. TTW allow Ss the opportunity to watch the video. When they have finished, TTW facilitate a discussion of the video. Possible question: How does density dependent differ from density independent factors? Allow 2-3 Ss explain their understanding of limiting factors.

Additional Supplementals: As an early finisher, Ss may watch Page 2 (songbirds in Jamaica) and/or page 3 supplemental (habitat destruction) if Ss complete the posttest before time expires. Ss will not be penalized for not watching the videos if they do not finish before time expires. Ss will not be graded or penalized for not completing early finisher activities and other Ss will not be penalized for not starting/completing early finisher activities.

Lesson Review: (25 minutes) TTW ask Ss to go to slide 21 for the Lesson Review to discuss concept points from the lesson. TTW ask Ss questions and allow Ss to ask questions about the lesson or the points made in the Lesson Review.

Independent Work – Posttest (They Do): (25 minutes). TSW complete the posttest independently. Explain to the students that they will be assessed and will work independently. Encourage them to think critically and do their very best on the Posttest. The Posttest will count as the grade for the daily lesson.

Closing/Wrap Up/Notes Review: (5 minutes) Closing question: WHAT STUCK WITH YOU? TSW write in their composition book or use parking lot at least 1 important concept that they remember. TTW allow 2-3 minutes for students to write their answers. Afterwards TTW allow 2-3 students to share out what stuck with them. Additionally, TTW address the guiding question(s) and ask the Ss to place their answer in the composition book or allow Ss to give verbal answers.

Summer School Lesson Plan

Subject/Grade: Science /6th Grade **Day: 15**

Topic/Lesson Title & Grade Results #: Biological Succession: Lesson 15

Objective(s): Students will

- Define succession.
- Determine the cause of a succession.
- List two examples of ecological succession.
- Differentiate between the types of succession.
- Describe the steps involved in biological succession.
- Determine the major differences between primary and secondary succession.
- Explain how pioneer species contribute to ecological succession.
- Describe a climatic community.

Guiding Question(s): How do ecosystems change?

TN Curriculum Standard(s): 6.LS2.6: **Standard Description(s):** Research the ways in which an ecosystem has changed over time in response to changes in physical conditions, population balances, human interactions, and natural catastrophes.

Materials/Resources Needed: Grade Results Online Platform, Grade Results video, paper, pencil, or notes in Grade Results

Technology: Computer, Whiteboard, Promethean/Smartboard

Key Vocabulary/Terms:

- **Aggregation:** A group of organisms of the same or different species living closely together.
- **Allogenic succession:** A pattern of succession characterized by an environmental change inducing biological succession.
- **Annual plants**: Plants existing for a single growing season.
- **Autogenic succession:** A pattern of succession in which the environment and plant community change due to the action of the plants.
- **Catastrophic climax**: Development of vegetation after a natural disaster.
- **Climatic climax:** The final stage of biological succession, made possible by and dependent upon a specific climate in its area.
- **Climax community:** A final, stable community in the ecosystem.
- **Climax:** The final stage of succession consisting of a stable community.
- **Community**: Group of various organisms in a specific place.
- **Controlled succession:** A pattern of succession that is controlled by humans.
- **Ecesis:** The establishment of a plant or animal in an environment.
- **Edaphic climax:** Local substrate conditions that control the development of climax communities in a particular region.
- **Intermediate species**: Species that replace the pioneer species within an ecosystem.
- **Invasion**: Establishment of a species in a barren area.
- **Nudation:** An area that is made barren.
- **Perennial plants:** Plants that survive for many growing seasons.
- **Pioneer species:** Species that colonize in barren areas.
- **Primary succession**: Succession that begins in a barren area.
- **Progressive succession:** A pattern of succession characterized by a transition of small, simple plant communities being replaced by large, complex plants with increased biomass.

- **Retrogressive succession:** A pattern of succession in which a disturbance causes the area to revert to an earlier seral stage.
- **Secondary succession**: Series of community changes that occur to recover the environment from the previously damaged habitat.
- **Serial**: Sequence of communities in a locality.
- **Seral stage:** A transition of plant communities during an ecological succession.
- **Sere:** The individual growth stage of an ecosystem.
- **Subclimax:** The period that occurs before the climatic climax.
- **Succession:** The transition of the species and environment of an ecosystem over time.

Take Attendance (5 minutes)

Lesson Introduction (I Do): (10 minutes) Students will be working on activities relating to biological succession. Check for prior knowledge re: succession, biological vs ecological, pioneer (pioneer species). TTW share the lesson objectives and introduction from slides 1 – 2 then discuss with Ss.

Vocabulary: (5 minutes) TTW highlight and discuss the meaning of the vocabulary words from the Lesson 9 activities with the Ss. The teacher and students will define and discuss the vocabulary terms. TTW ask Ss to go to page 11 for the vocabulary list and definitions. TTW will call on different Ss to read the vocabulary words and ask if they can give examples of the vocabulary terms. If they cannot, TTW let the student(s) know that "we will learn about an example as we go through the lesson" and/or the teacher may offer an example.

Lesson Activities (We Do): (40 minutes)
Slides 1-3 TTW introduce the process of biological succession or how an ecosystem changes over time. TSW read the text and TTW facilitate a discussion surrounding this concept. TSW answer the check for understanding.
Slides 4-9 SW read and work on activities about ecological succession, causes, types, communities associated with succession, and the types of succession climax. TTW ask different Ss to read content as the class goes through the lesson. Intermittently, the teacher may read small portions. TTW facilitate discussions throughout the lesson on videos and activities allowing Ss to summarize the content as they go through the lesson. TSWBAT differentiate between the two types of ecological successions. Additionally, TSWBAT
SW achieve a score for accuracy as they complete the embedded lesson activities, independently or as a whole group. TTW may ask the Ss what they see, think, or wonder about any of the content as they go through the lesson.

BREAK – 10 MINUTES

Supplemental Resources: **(5 minutes)** –TTW explain to the students how the supplemental material will be utilized. TTW use supplemental resources for early finishers or as a supplemental to the lesson review.
As an early finisher if Ss complete the posttest may watch supplemental page 1 Khan Academy. After viewing, TTW discuss with Ss how communities change after a disturbance. Ss can provide examples of a disturbances?
Ss will not be penalized for not watching the videos if they do not finish before time expires. Ss will not be graded or penalized for not completing early finisher activities and other Ss will not be penalized for not starting/completing early finisher activities.

Lesson Review: (25 minutes) TTW ask Ss to go to slide 10 for the Lesson Review to discuss concept points from the lesson. TTW ask Ss questions and allow Ss to ask questions about the lesson or the points made in the Lesson Review.

Independent Work – Posttest (They Do): (25 minutes). TSW complete the posttest independently. Explain to the students that they will be assessed and will work independently. Encourage them to think critically and do their very best on the Posttest. The Posttest will count as the grade for the daily lesson.

Closing/Wrap Up/Notes Review: (5 minutes) Closing question: WHAT STUCK WITH YOU? TSW write in their composition book or use parking lot at least 1 important concept that they remember. TTW allow 2-3 minutes for students to write their answers. Afterwards TTW allow 2-3 students to share out what stuck with them. Additionally, TTW address the guiding question(s) and ask the Ss to place their answer in the composition book or allow Ss to give verbal answers.

Summer School Lesson Plan

Subject/Grade: Science /6th Grade **Day: 16**

Topic/Lesson Title & Grade Results #: Terrestrial and Aquatic Biomes: Lesson 16

Objective(s): Students will

- Discuss the biotic and abiotic factors in the major terrestrial biomes.
- Discuss the biotic and abiotic factors in aquatic biomes.
- Draw models of terrestrial and aquatic biomes based on characteristics such as climate, plant, and animal life.

Guiding Question(s): What makes one biome different from another? What are land biomes? What are aquatic biomes?

TN Curriculum Standard(s): 6.LS2.4: **Standard Description(s):** Using evidence from climate data, draw conclusions about the patterns of abiotic and biotic factors in different biomes, specifically the tundra, taiga, deciduous forest, desert, grasslands, rainforest, marine, and freshwater ecosystems.

Materials/Resources Needed: Grade Results Online Platform, Grade Results video, paper, pencil, or notes in Grade Results

Technology: Computer, Whiteboard, Promethean/Smartboard

Key Vocabulary/Terms:

- **Aquatic biome:** The area dominated by water.
- **Biomes:** A large area with a specific type of climate and group of flora and fauna.
- **Carnivore:** An aquatic or terrestrial flesh-eating animal.
- **Climate:** A weather condition existing in an area over a long period.
- **Decomposer:** The organism that feeds on decaying matter.
- **Estuary:** The wide mouth of a river, where the tide meets the river current.
- **Grassland:** A large, open space, with rolling terrains of bushes and grasses.
- **Herbivore:** An animal that feeds on grasses and other plants.
- **Marsh:** A type of wetland covered with tall grasses.
- **Migration:** A seasonal movement of animals from one region to another.
- **Nutrients:** Nourishment necessary for growth and maintenance of life.
- **Phytoplankton:** Microscopic floating plants on the surface of the water.
- **Sediments:** Fine particles and large suspended solids that have fallen to the bottom of a liquid**.**
- **Swamp:** A type of wetland that is forested.
- **Wetland:** An area of land saturated with water.

Take Attendance (5 minutes)

Lesson Introduction (I Do): (10 minutes) Students will be working on activities relating to terrestrial (land) and aquatic (water) biomes. TTW discuss the lesson objectives and introduction from slides 1 – 2 with Ss. TTW discuss the map on page 2 and allow Ss time to watch video then discuss.

Vocabulary: (5 minutes) TTW highlight and discuss the meaning of the vocabulary words from the Lesson 10 activities with the Ss. The teacher and students will define and discuss the vocabulary terms. TTW ask Ss to go to page 19 for the vocabulary list and definitions. TTW will call on different Ss to read the vocabulary words and ask if they can give examples of the vocabulary terms. If they cannot, TTW let the student(s) know that "we will learn about an example as we go through the lesson" and/or the teacher may offer an example.

Lesson Activities (We Do): (40 minutes)
Slide 1 TTW introduce Ss to various terrestrial (land) and aquatic (water) biomes. SW read and work on activities about land and water biomes/ecosystems noting their characteristics. TTW ask different Ss to read content as the class goes through the lesson. Intermittently, the teacher may read small portions. TTW facilitate discussions throughout the lesson on videos and activities included allowing Ss to summarize content as they go through the lesson.
SW achieve a score for accuracy as they complete the embedded lesson activities, independently or as a whole group. TTW may ask the Ss what they see, think, or wonder about any of the content as they go through the lesson.
Slides 3-10 Land Biomes SW engage in discussions and activities relating to various land biomes. TTW guide Ss through discussions noting the superlative biome, i.e., hottest, coldest, driest, similar, most diverse. What type of biome do we live in in Tennessee? Deciduous Forest.
Slides 12-15 Aquatic Biomes SW engage in discussions and activities relating to various aquatic biomes and their characteristics and TSWBAT distinguish between freshwater biome(very low percentage of salet) vs marine biome (very high percentage of salt)
Slides 16-17 Terrestrial and Aquatic Biomes differences

BREAK – 10 MINUTES

Supplemental Resources: **(5 minutes)** –TTW explain to the students how the supplemental material will be utilized. TTW use supplemental resources for early finishers except BRAINPOP (used to facilitate review before lesson assessments: SW watch the Land Biomes, Underwater World video via BrainPOP, Supplemental pgs 6 & 7. TTW facilitate a discussion after the BrainPOP videos by allowing Ss to work through the quiz portion of the videos.

Additional Supplemental Resources: As an early finisher if Ss complete the posttest before time expires. Flocabulary: SW watch video then complete the vocab game activity, independently or as a whole group activity. After the Ss have been given ample time, TTW as 1-2 Ss to share out any concept points from the activities. As an early finisher, TTW allow the Ss to watch one of the other Flocabulary videos (Desert, Tundra, Grassland, Forests) of their choice if they finish the posttest before time expires.
Ss will not be penalized for not watching the videos if they do not finish before time expires. Ss will not be graded or penalized for not completing early finisher activities and other Ss will not be penalized for not starting/completing early finisher activities.

Lesson Review: (25 minutes) TTW ask Ss to go to slide 18 for the Lesson Review to discuss concept points from the lesson. TTW ask Ss questions and allow Ss to ask questions about the lesson or the points made in the Lesson Review. Further review points: TTW allow students to watch BrainPOP, Land Biomes and Underwater World. When the videos are complete TTW facilitates discussion via the BrainPOP quiz.

Independent Work – Posttest (They Do): (25 minutes). TSW complete the posttest independently. Explain to the students that they will be assessed and will work independently. Encourage them to think critically and do their very best on the Posttest. The Posttest will count as the grade for the daily lesson.

Closing/Wrap Up/Notes Review: (5 minutes) Closing question: WHAT STUCK WITH YOU? TSW write in their composition book or use parking lot at least 1 important concept that they remember. TTW allow 2-3 minutes for students to write their answers. Afterwards TTW allow 2-3 students to share out what stuck with them. Additionally, TTW address the guiding question(s) and ask the Ss to place their answer in the composition book or allow Ss to give verbal answers.

Summer School Lesson Plan

Subject/Grade: Science /6th Grade **Day: 17**

Topic/Lesson Title & Grade Results #: Impact of the introduction, Removal, and Reintroduction of an Organism on an Ecosystem: Lesson 17

Objective(s): Students will

- Discuss the potential consequences of the introduction of an organism to an ecosystem.
- Explore the causes why people relocate species.
- Predict what will happen if one organism is removed from a food web.
- Describe the impact of the reintroduction of an organism to an ecosystem.

Guiding Question(s): What happens to an ecosystem if organisms are introduced, removed or re-introduced?

TN Curriculum Standard(s): 6.LS2.4: **Standard Description(s):** Using evidence from climate data, draw conclusions about the patterns of abiotic and biotic factors in different biomes, specifically the tundra, taiga, deciduous forest, desert, grasslands, rainforest, marine, and freshwater ecosystems.

Materials/Resources Needed: Grade Results Online Platform, Grade Results video, paper, pencil, or notes in Grade Results

Technology: Computer, Whiteboard, Promethean/Smartboard

Key Vocabulary/Terms:

- **Biodiversity:** The existence of a variety of life forms within an ecosystem.
- **Colonization:** The process of setting up a foothold, by a species, in a new area, region, or continent.
- **Competition:** Rivalry between two or more entities for a particular thing.
- **Endangered species:** Species in the process of vanishing or facing a very high risk of extinction.
- **Exotic species:** Species living in an area where they do not exist naturally.
- **Extinct species:** Species that have completely vanished from Earth.
- **Habitat:** The area where an individual lives.
- **Indigenous:** Originating naturally in an area.
- **Invasive species:** A species brought to a region from another place, purposely or accidentally.
- **Native species:** Species that occur in an environment naturally.
- **Non-native species:** Species that have not originated in the area where they are found.
- **Ornamental plant:** A plant that is grown for decorative purposes.
- **Species:** A group of individuals having the same general characteristics.

Take Attendance (5 minutes)

Lesson Introduction (I Do): (10 minutes) Students will be working on activities relating to the conversion of energy. TTW share the lesson objectives and introduction from slides 1 – 2 then discuss with Ss. TTW allow Ss the opportunity to engage in the introductory activities.

Vocabulary: (5 minutes) TTW highlight and discuss the meaning of the vocabulary words from the Lesson 11 activities with the Ss. The teacher and students will define and discuss the vocabulary terms. TTW ask Ss to go to page 12 for the vocabulary list and definitions. TTW will call on different Ss to read the vocabulary words and ask if they can give examples

of the vocabulary terms. If they cannot, TTW let the student(s) know that "we will learn about an example as we go through the lesson" and/or the teacher may offer an example.

Lesson Activities (We Do): (40 minutes)
Slides 1-4 What happens when an organism is introduced to an ecosystem? TTW facilitate discussions and guis Ss through activities relating to a range of factors that can impact an ecosystem.
Slides 5-8 Non-native organisms introduced to an ecosystem can take over the ecosystem. TSW examine what happens when invasive organisms inhabits an ecosystem. TSW watch videos and engage in activities to allow them to examine the consequence of such actions.
Slides 8-10 TSW examine the reintroduction, removal, and invasive species via- videos, discussion of the text, and activities.
TTW ask different Ss to read content as the class goes through the lesson. The teacher may read small portions. TSW summarize content as they go through the lesson.
SW achieve a score for accuracy as they complete the embedded lesson activities, independently or as a whole group. TTW may ask the Ss what they see, think, or wonder about any of the content as they go through the lesson.

BREAK – 10 MINUTES

Supplemental Resources: **(5 minutes)** –TTW explain to the students how the supplemental material will be utilized. TTW use supplemental resources for early finishers or as a supplemental to the lesson review.
Supplemental page1 Video: Lake Victoria: Uganda. After viewing video, TTW facilitate a discussion: What did they (Ss) See? Think? Wonder? What is particularly unique about Lake Victoria? What is the impact of some of the organisms in the area? What might happen to organisms that are native to an area when another organism is introduced to the area? Ss may watch supplementals if the posttest is complete before time expires.

Additional Supplementals: As an early finisher, Ss may watch the remaining supplemental videos. Ss will not be penalized for not watching the videos if they do not finish before time expires. Ss will not be graded or penalized for not completing early finisher activities and other Ss will not be penalized for not starting/completing early finisher activities.

Lesson Review: (25 minutes) TTW ask Ss to go to slide 11 for the Lesson Review to discuss concept points from the lesson. TTW ask Ss questions and allow Ss to ask questions about the lesson or the points made in the Lesson Review.

Independent Work – Posttest (They Do): (25 minutes). TSW complete the posttest independently. Explain to the students that they will be assessed and will work independently. Encourage them to think critically and do their very best on the Posttest. The Posttest will count as the grade for the daily lesson.

Closing/Wrap Up/Notes Review: (5 minutes) Closing question: WHAT STUCK WITH YOU? TSW write in their composition book or use parking lot at least 1 important concept that they remember. TTW allow 2-3 minutes for students to write their answers. Afterwards TTW allow 2-3 students to share out what stuck with them. Additionally, TTW address the guiding question(s) and ask the Ss to place their answer in the composition book or allow Ss to give verbal answers.

Summer School Lesson Plan

Subject/Grade: Science /6th Grade **Day: 18**

Topic/Lesson Title & Grade Results #: Effect of an Invasive Species on the Biodiversity within Ecosystems: Lesson 18

Objective(s): Students will

- Define non-native species.
- Explain the effect of an invasive species on biodiversity.
- Describe different techniques used to control invasive species.

Guiding Question(s): What is an invasive species?

TN Curriculum Standard(s): 6.LS2.5: **Standard Description(s):** Analyze existing evidence about the effect of a specific invasive species on native populations in Tennessee and design a solution to mitigate its impact.

Materials/Resources Needed: Grade Results Online Platform, Grade Results video, paper, pencil, or notes in Grade Results

Technology: Computer, Whiteboard, Promethean/Smartboard

Key Vocabulary/Terms:

- **Biodiversity:** Variety of life forms within an ecosystem.
- **Competition:** Number of individuals searching for the same limited resource.
- **Colonization:** Process of a species setting up a colony by spreading to new areas.
- **Endangered species:** Species in the process of vanishing or facing a very high risk of extinction.
- **Exotic species:** Species launched into an area where they do not exist naturally.
- **Extinct species:** Species that completely vanished from Earth.
- **Habitat:** Area where an individual lives.
- **Indigenous:** Originating naturally in an area.
- **Invasive species:** Species brought to a region from another place, purposely or accidentally.
- **Native species:** Species that exist in an environment naturally.
- **Non-native species:** Species that do not originate in the area they are found.
- **Ornamental plant:** Plants that are grown for decorative purposes.
- **Species:** Set of individuals having the same general characteristics.

Take Attendance (5 minutes)

Lesson Introduction (I Do): (10 minutes) Students will be working on activities relating to the effects of invasive species on biodiversity and ecosystems. TTW share the lesson objectives and introduction from slides 1 – 2 then discuss with Ss.

Vocabulary: (5 minutes) TTW highlight and discuss the meaning of the vocabulary words from the Lesson 13 activities with the Ss. The teacher and students will define and discuss the vocabulary terms. TTW ask Ss to go to page 9 for the vocabulary list and definitions. TTW will call on different Ss to read the vocabulary words and ask if they can give examples of the vocabulary terms. If they cannot, TTW let the student(s) know that "we will learn about an example as we go through the lesson" and/or the teacher may offer an example.

Lesson Activities (We Do): (40 minutes)

Slides 1-3 TTW reemphasize how organisms move from one place to another impacting biodiversity of an ecosystem. TSW examine the different types of invasive species, the vast number of specific invasive species, and their characteristics.

Slides 4-7 TTW conclude the lesson by facilitating a discussion from the text about the effects of invasive species on biodiversity and invasive species might be controlled within an ecosystem. TSW read and work on activities about the effects of invasive species on biodiversity and ecosystems. TTW ask different Ss to read content as the class goes through the lesson. Intermittently, the teacher may read small portions. Ss will summarize the content as they go through the lesson.
SW achieve a score for accuracy as they complete the embedded lesson activities, independently or as a whole group. TTW may ask the Ss what they see, think, or wonder about any of the content as they go through the lesson.

BREAK – 10 MINUTES

Supplemental Resources: **(5 minutes)** –TTW explain to the students how the supplemental material will be utilized. TTW use supplemental resources for early finishers except BRAINPOP (used to facilitate review before lesson assessments: SW watch the Invasive Species video via BrainPOP, Supplemental pg 2. TTW facilitate a discussion after the BrainPOP videos by allowing Ss to work through the quiz portion of the videos.

Additional Supplemental Resources: As an early finisher if Ss complete the posttest before time expires.
Flocabulary: Biodiversity at Risk: SW watch the video page 1. TTW facilitate discussions about biodiversity based on the video. TSW complete the lyric lab independently or the TTW allow the class to complete a lyric about biodiversity. If completed independently, TTW allow 2-3 Ss to share lyrics re: biodiversity. TSW may watch the other supplemental videos as time permits.
As an early finisher, Ss will not be penalized for not watching the videos if they do not finish before time expires. Ss will not be graded or penalized for not completing early finisher activities and other Ss will not be penalized for not starting/completing early finisher activities.

Lesson Review: (25 minutes) TTW ask Ss to go to slide 8 for the Lesson Review to discuss concept points from the lesson. TTW ask Ss questions and allow Ss to ask questions about the lesson or the points made in the Lesson Review. Further review points: TTW allow students to watch BrainPOP, Invasive Species. When the video is complete TTW facilitates discussion via the BrainPOP quiz.

Independent Work – Posttest (They Do): (25 minutes). TSW complete the posttest independently. Explain to the students that they will be assessed and will work independently. Encourage them to think critically and do their very best on the Posttest. The Posttest will count as the grade for the daily lesson.

Closing/Wrap Up/Notes Review: (5 minutes) Closing question: WHAT STUCK WITH YOU? TSW write in their composition book or use parking lot at least 1 important concept that they remember. TTW allow 2-3 minutes for students to write their answers. Afterwards TTW allow 2-3 students to share out what stuck with them. Additionally, TTW address the guiding question(s) and ask the Ss to place their answer in the composition book or allow Ss to give verbal answers.

Summer School Lesson Plan

Subject/Grade: Science /6th Grade **Day: 19**

Topic/Lesson Title & Grade Results #: Final Post-test Review and Post-test

Objective(s):

- Students will review lessons to prepare for the final Post-Test.
- Final Post-test will open. All students must complete the final Post-Test.

Materials/Resources Needed: Grade Results Online Platform, Grade Results video, paper, pencil, or notes in Grade Results

Technology: Computer, Whiteboard, TEAMs meeting (if applicable)

Take Attendance: 5 minutes

Lesson Introduction (I Do):
Identify the purpose of the course
Connect the course to missing or future coursework and Post-test

Lesson Activities/Supplemental (We Do) – 30-60 minutes

Lesson Activities and Review (We Do):
Check Grade Results and have students review activities/lesson that they have not completed or need assistance with. Hold an open Q&A for students to ask questions regarding the activities/lessons they are reviewing.

Independent Work – Posttest (They Do):
Students will review and complete any incomplete/missed/failed coursework.

Closing/Wrap Up:

Summer School Lesson Plan

Subject/Grade: Science /6th Grade **Day: 20**

Topic/Lesson Title & Grade Results #: Review, Make-up, Wrap-Up, Close-out

Objective(s):

- Students will review and complete all incomplete/missed/failed coursework.
- Students can retake daily post-tests up to three (3) times before tests lock. Teachers can unlock the test so students can retake the test.
- Students can retake final post-test

Materials/Resources Needed: Grade Results Online Platform, Grade Results video, paper, pencil, or notes in Grade Results

Technology: Computer, Whiteboard, TEAMs meeting (if applicable)

Take Attendance: 5 minutes

Lesson Introduction (I Do):
Identify the purpose of the course
Connect the course to missing or future coursework and Post-test

Lesson Activities/Supplemental (We Do) – 30-60 minutes

Lesson Activities and Review (We Do):
Check Grade Results and have students review activities/lesson that they have not completed or need assistance with. Hold an open Q&A for students to ask questions regarding the activities/lessons they are reviewing.

Independent Work – Posttest (They Do):
Students will review and complete any incomplete/missed/failed coursework.

Closing/Wrap Up: