Unit Plan

Basic Information: **Title** **Content Area** **Grade** **Duration** **Essential Question:**	Climate Change Science 8th grade 16 days How do we know our climate is changing?
Foundations of Instruction: **State Content Standards (SCS) Benchmarks**	**Standards:** **Next Generation Science Standards (Website)** ● 2-ESS2-3 .Obtain information to identify where water is found on Earth and that it can be solid or liquid. ● 3-ESS2-2 Obtain and combine information to describe climates in different regions of the world. ● 5-ESS2-1 Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact. ● MS-ESS2-4 Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity. ● HS-ESS2-2 Analyze geoscience data to make the claim that one change to Earth's surface can create feedbacks that cause changes to other Earth systems. ● HS-ESS3-5 Analyze geoscience data and the results from

global climate models to make an evidence-based forecast of the current rate of global or regional climate change and associated future impacts to Earth's systems.

Common Core State Standards for Mathematics (Website)

- CCSS.MATH.CONTENT.8.G.C.9 Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres. Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.
- CCSS.MATH.CONTENT.8.F.B.5 Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally.
- CCSS.MATH.CONTENT.8.F.B.4 Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (*x, y*) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.
- CCSS.MATH.CONTENT.8.SP.A.4 Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables. *For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores?*

Common Core State Standards for ELA (Website)

- CCSS.ELA-LITERACY.W.8.1.A Introduce claim(s), acknowledge and distinguish the claim(s) from alternate or

	opposing claims, and organize the reasons and evidence logically. • CCSS.ELA-LITERACY.W.8.1.B Support claim(s) with logical reasoning and relevant evidence, using accurate, credible sources and demonstrating an understanding of the topic or text. • CCSS.ELA-LITERACY.W.8.1.E Provide a concluding statement or section that follows from and supports the argument presented. • CCSS.ELA-LITERACY.W.8.2 Write informative/explanatory texts to examine a topic and convey ideas, concepts, and information through the selection, organization, and analysis of relevant content.
Summary of the standards/benchmarks and how they are met using the SPRINTT curriculum.	**Summary of Standards and Sprint curriculum connection.** *** This will be found as lesson 4 in the unit plan** • For this interdisciplinary unit, I feel that Phase III, lesson II in the Sprint curriculum fits best. I couldn't think of way to incorporate STEM into ELA authentically. This lesson really does it well. Students go through an investigation where they read and discover data through a series of comprehension questions. This helps them solidify the evidence they would use in the research paper. This would help cover ELA standard 8.1 A, B which goes over presenting claims and supporting evidence. When students begin the research paper they will also have to provide concluding statements. This will help cover ELA standards 8.1 E. and 8.2. I know at the same time I will be covering some math standards as well with graphing 8.F.B.5 which has to do with analyzing graphs. Of course, there will be plenty of coverage in the NGSS standards. I think the most prevalent in this lesson is HS-ESS3-5 Analyzing geoscience data and the results from global climate models to make an evidence-based forecast of the current rate of global or regional climate change and associated future impacts to Earth's systems. Students definitely dig into this standard by comparing results and data that is introduced in the lesson.
Daily Lessons and Activities	**(Click the link to view individual detailed Daily Lesson Plans)**

Instruction, Critical Thinking & Learning Theory Proficiencies	**Lesson 1:** What is causing sea level rise? Land ice Vs. Sea ice https://docs.google.com/document/d/1U9Iw85CsuO6K3VLr6bhR5bibtde-N7xViiP9WLvj-Xw/edit?usp=sharing **Lesson 2:** Graphing Sea Level Trends https://docs.google.com/document/d/1E01Rw4bKTNOD4pt3QX9AqaYwu9DqKEprFjHbk2Ucn5w/edit?usp=sharing **Lesson 3:** Building a Disaster Proof Structure https://docs.google.com/document/d/1ZayxEyBSJ_KXVIJaaJllirC1C6lN8LDkhG9QlttGdQE/edit?usp=sharing **Lesson 4:** Sprint Investigation http://www.us-satellite.net/sprintt/docs/Phase3_L2.pdf
Objectives *Discipline Knowledge Proficiency* **Summary of overall lessons/ STEM connection**	**Objectives:** **Lesson 1- What is causing sea level rise? Land Ice Vs. Sea Ice:** **Summary:** Students should be conducting an experiment to learn how melting ice contributes to sea-level rise. Students should begin by using data to predict which melting ice will contribute more to sea-level rise, land ice or sea ice. Students should then, compare results to predictions and provide an explanation for what they observed. Students should be able to understand the difference between land ice and sea ice and their effects on sea level. • Students will be able to understand the difference between

sea ice and land ice and their effects on sea level.

- Students will collect data by conducting an observation using containers, clay, ice and a ruler to see the if land ice or sea ice causes sea level rise. They will measure the water levels in each container and write down measurements in mm. They will graph their final results. The graph shows the relationship between land ice and sea ice levels. ("What's Causing Sea-Level Rise? Land Ice Vs. Sea Ice Activity | NASA/JPL Edu." *NASA*, NASA, 26 Apr. 2017, www.jpl.nasa.gov/edu/teach/activity/whats-causing-sea-level-rise-land-ice-vs-sea-ice/.)

Science & Engineering Practices:

- Asking questions (for science) and defining problems (for engineering)
- Developing and using models
- Planning and carrying out investigations
- Analyzing and interpreting data
- Using mathematics and computational thinking
- Constructing explanations (for science) and designing solutions (for engineering)
- Engaging in argument from evidence
- Obtaining, evaluating, and communicating information

Crosscutting Concepts:

- *Patterns.* Observed patterns of forms and events guide organization and classification, and they prompt questions about relationships and the factors that influence them.
- *Systems and system models*. Defining the system under study—specifying its boundaries and making explicit a model of that system—provides tools for

	understanding and testing ideas that are applicable throughout science and engineering. • *Energy and matter*: Flows, cycles, and conservation. Tracking fluxes of energy and matter into, out of, and within systems helps one understand the systems' possibilities and limitations. • *Structure and function*. The way in which an object or living thing is shaped and its substructure determine many of its properties and functions. **<u>Lesson 2- Graphing Sea Level Trends:</u>** **Summary:** The objective is to illustrate whether sea-level rise is occurring. The data source used in this lesson is intended to demonstrate that thermal expansion is occurring along with ice melting. Accordingly, it will help students see trends overtime with the use of 130 years of sea-level data collected by NASA. In effect, these trends can help them make predictions for the future. Students should be able to use sea-level rise data to create models and compare short-term trends to long-term trends. Students should also be able to determine whether sea-level rise is occurring based on the data. • Students will be able to use sea-level rise data to create models and compare short-term trends to long-term trends. They will then determine whether sea-level rise is occurring based on the data. This graph shows a proportional relationship between the sea level rise over the span of 130 years.

- (“Graphing Sea-Level Trends Activity | NASA/JPL Edu.” *NASA*, NASA, 17 Oct.2017,www.jpl.nasa.gov/edu/teach/activity/graphing-sea-level-trends/.)

Science & Engineering Practices:

- Asking questions (for science) and defining problems (for engineering)
- Developing and using models
- Planning and carrying out investigations
- Analyzing and interpreting data
- Using mathematics and computational thinking Constructing explanations (for science) and designing solutions (for engineering)
- Engaging in argument from evidence Obtaining, evaluating, and communicating information

Crosscutting Concepts:

- Patterns. Observed patterns of forms and events guide organization and classification, and they prompt questions about relationships and the factors that influence them.
- Cause and effect: Mechanism and explanation. Events have causes, sometimes simple, sometimes multifaceted. A major activity of science is investigating and explaining causal relationships and the mechanisms by which they are mediated. Such mechanisms can then be tested across given contexts and used to predict and explain events in new contexts.

Lesson 3- Building a Disaster Proof Structure:

Summary:
In this project, students should build model earthquake-resistant buildings and measure their movement during a simulated earthquake using Google's Science Journal app. Students should analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects. Students should also evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.

- Students will build a disaster proof structure by using the engineering process. They will make measurements to identify the size and proportion of their structure. They will use measurement and volume to build prototypes from their blueprints.

Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.

Science & Engineering Practices:

- *Analyzing and Interpreting Data.* Analyze and interpret data to determine similarities and differences in findings.
- *Constructing Explanations and Designing Solutions***.** Apply scientific principles to design an object, tool, process, or system.
-

Engaging in Argument from Evidence. Evaluate competing design solutions based on jointly developed and agreed-upon design criteria

Crosscutting Concepts:

- *Patterns.* Graphs, charts, and images can be used to identify patterns in data.

- *Stability and change***.** Stability might be disturbed either by sudden events or gradual changes that accumulate over time

Lesson 4- Sprint Investigation

Summary:

In this lesson students, will follow steps of the inquiry cycle utilizing authentic Western and Indigenous scientific data in order to investigate scientific data related to Earth's Polar Regions.

- Engage by reading background information on a specific topic.

- Explore by examining relevant data.

- Explain by drawing conclusions based on the data and identifying further questions for research.

- Elaborate by assembling work into a research report.

- Evaluate by presenting their findings to their peers and completing a self-evaluation.

Science & Engineering Practices:

- Asking questions (for science) and defining problems (for engineering)

- Developing and using models

- Planning and carrying out investigations

- Analyzing and interpreting data

	• Using mathematics and computational thinking • Constructing explanations (for science) and designing solutions (for engineering) • Engaging in argument from evidence • Obtaining, evaluating, and communicating information **Crosscutting Concepts:** • *Patterns.* Observed patterns of forms and events guide organization and classification, and they prompt questions about relationships and the factors that influence them. • *Systems and system models*. Defining the system under study—specifying its boundaries and making explicit a model of that system—provides tools for understanding and testing ideas that are applicable throughout science and engineering. • *Energy and matter*: Flows, cycles, and conservation. Tracking fluxes of energy and matter into, out of, and within systems helps one understand the systems' possibilities and limitations. *Structure and function*. The way in which an object or living thing is shaped and its substructure determine many of its properties and functions.
Preparing Class for Lesson	**Lesson 1:** What is causing sea level rise? Land ice Vs. Sea ice • Students will sit at their seats and take out their notebooks to take notes on the content. • Then they will get computers to access their worksheet. • One team member will pick up materials from the back of the classroom.

	● Team members will take turns setting up the activity. ● Team members will take turns measuring. ● All team members will record and contribute to overall questions and discussions. ● One team member will dump out ice and water when activity is over. ● Students will submit their work digitally on classroom platform. **Lesson 2:** Graphing Sea Level Trends ● Students will sit at their seats and take out their notebooks to take notes on the content. ● Then they will get computers to access their worksheet. ● Students will be broken up into groups of 4-5 to analyze data ● Data will be distributed based on total class group numbers. ● Students will submit their work digitally. **Lesson 3:** Building a Disaster Proof Structure ● Students will sit at their seats and take out their notebooks to take notes on the content.

	• Then they will get computers to access their worksheet. • Students will need to create a blueprint before being approved for accessing materials by teacher.Once teacher has approved blueprint students will begin building from materials provided. **Lesson 4:** Sprint Investigation • Students will access the Sprint portal to access the materials. • Students will need to submit a research paper as the final product of their investigation. • They will also need to be ready to present their findings. • Students will learn how to screencast to do this individually • They will also present as a group
Teaching the Lesson: **Pre-Assessment** **Activating** **Background Knowledge**	**Lesson 1:** What is causing sea level rise? Land ice Vs. Sea ice **Pre-Assessment:** Class discussion • What is sea level rise? • What is Climate Change? • Where is there a lot of ice on earth? • Is the ice on land or at sea?

- Which type of ice, if any, contributes more to sea-level rise?
- (Show pictures two different types of ice and a photo of coastal flooding) Ask what do these photos have in common?

Activating: Powerpoint with pictures and video : https://docs.google.com/presentation/d/1CZuNdIULw6MW1Zgb7kv1apbXMvUCvWjyP58AH7YVT_I/edit?usp=sharing

Background Knowledge:

- **Sea-Level Rise-** increase in the volume of water in the world's oceans, resulting in an increase in global mean sea level.
- **Climate Change-** rise in global average temperatures on land and sea.
- **Land Ice-** glaciers, large sheets of ice and snow that exist on land all year around.
- **Sea Ice-** icebergs, frozen seawater**.**
- **Thermal Expansion-** increase in volume that occurs when water is heated.

Lesson 2: Graphing Sea Level Trends

Pre-Assessment: Class discussion

- What is sea level and what are tides?

Activating: Powerpoint with pictures and videos:
https://docs.google.com/presentation/d/1Y9IFJbKFQzgLTiCNqEMOmr2_oJvdAPbL8UxFEFtnNM4/edit?usp=sharing
Background Knowledge:

- **Sea Level-** an overall measurement of the average height of the ocean.
- **Tides-** an expected rise and fall of ocean water in an area on a daily basis.
- **Thermal Expansion-** water expands as it warms so the more heat energy the ocean absorbs, the more space its waters require.
- **CO2-** concentration of carbon dioxide in the atmosphere created by burning fossil fuels.

Lesson 3: Building a Disaster Proof Structure
Pre-Assessment: Class discussion

- What are considered natural disasters?
- What damages can natural disasters cause?
- Can we prevent any of the damage?How?

Activating: Videos on natural disasters and testing for safety
https://www.youtube.com/watch?time_continue=1&v=e7ho6z32yyo
https://www.youtube.com/watch?time_continue=2&v=kzVvd4Dk6sw
Background Knowledge:

	● **Natural Disaster-** a natural event such as a flood, earthquake, or hurricane that causes great damage or loss of life. ● **Engineering Design Cycle-** The engineering design process is a series of steps that engineers follow to come up with a solution to a problem. Many times, the solution involves designing a product (like a machine or computer code) that meets certain criteria and/or accomplishes a certain task. ● **Prototype-** a first, typical or preliminary model of something, especially a machine, from which other forms are developed or copied.

Lesson 4: Sprint Investigation
Pre-Assessment: Group discussion

- Each student group first reads the 'Overview' for their Topic. Other relevant summaries must be read as well. The Topic is broken down by atmosphere (Air), biosphere (Life), hydrosphere (Water) and lithosphere (Land).

Note: Students may read these documents online or print them out.

- Read the Overview about your topic and complete the left side of the Topic Graphic Organizer. Then complete the right side of the Topic Graphic Organizer as you read about your specific sphere (Air, Life Water, or Land) and how it relates to this topic. As you complete the graphic organizers, be sure to write your findings in your own words. Do not copy directly from the information sheets.

Activating:

- What do we need to know? Now, on the main page of your Topic, select an Investigation. Follow the steps through all parts of your Investigation. Be sure to answer the questions that come your way! Your answers will be saved, and you will need to use them later.

Background Knowledge:

- When scientists share their work, they often present their research project at a conference with other scientists. They write a research paper from which other scientists will read and learn. Sometimes they prepare and present an oral presentation. Other times they present a poster to convey the same type of information. The graphic organizers that you have completed as you were conducting your research will help you to assemble your thoughts and notes into an 'online paper' a website. In addition to your notes, you will be able to

	use additional resources including videos, pictures and data that will help the reader of the research to understand your problem and why it is important to study. You will be able to upload other graphics and Excel graphs. As you prepare your paper, be sure to explain your findings clearly so that your peers will understand your topic and why your research project is so important.
Assessment: **Formative** **Summative** **Data Collection** **Rubric** **(I addedd the same rubric to each lesson and added the formative, summative, and data collection part from each lesson).**	**Lesson 1:** What is causing sea level rise? Land ice Vs. Sea ice **Formative Assesment:** Students should begin by watching and listening to a Google slides presentation with engaging memes to catch their interest that discusses sea-level rise and climate change. Students should also watch a short film explaining the main concept called "What If All The Ice Melted." ***Report:*** Students will complete reflections questions and graph their data. (Click link to view worksheet) https://docs.google.com/document/d/1UbreclDKEmBn2-05zFkJF98CcHTqdYoPuYgKPpgKFA0/edit?usp=sharing **Summative Assessment:** Students should conduct an experiment to learn how melting ice contributes to sea-level rise. Students should be asked to follow instructions for an activity in groups of four and will be provided the required materials. In this activity, students should learn about how sea ice and land ice contribute to sea-level rise. Students should observe ice melting on a solid surface near a body of water and ice melting in a body of water. Prior to the activity, students should predict what each situation should do to the level of water and then compare their prediction to what they observe after the experiment. ***Project/ Experiment:*** -Students should make predictions and provide reasoning for their

predictions.
-Students should get into groups of four to build the land-ice and sea-ice containers according to directions.

Data Collection: Students should also record their predictions on a data sheet and use their predictions to create a line graph using spreadsheet software. Students should then, be asked to compare their results to their predictions and explain their thinking through a series of questions.
Create a Graph:
- Groups should take measurements and record data at regular intervals.
-Groups should compare results to predictions and provide an explanation for what they observed.
-Students should be able to connect the model to the global events of ice melting and associated sea-level rise.

Rubric:
https://drive.google.com/file/d/1GnJFROm8VvThOCg9Wjv7K_ZwWnQ0uWJ4/view?usp=sharing

Lesson 2: Graphing Sea Level Trends

Formative Assessment: The purpose of the sea-level rise data used for this lesson is to enhance the topic of climate change by creating a visual presentation and a kinesthetic learning environment for my students using a Google slides presentation and including a physical activity. The visual presentation includes definitions, questions, scientific models and funny memes that are related to the main content. Students should also watch two short films on tides and rising sea levels. Students should engage with the visual presentation by writing short reflections on paragraphs read through out the Google slides presentation with a partner. In defining what sea-level means and showing how it is measured in a Google slides presentation, I am able to use data to visually and physically improve my lesson and teach students about the varied average sea surface height throughout history.
Report:
Students will present a summary of what they learned on slide.They will complete the reflection questions to analyze the data.
https://docs.google.com/document/d/1vpTQEDvXZSjnwOFUS9Ab-jaOxLcsF_4MgvC4tb7CPDE/edit?usp=sharing

Summative Assessment: Students then, engage in a physical activity where they are asked to analyze 130 years of sea-level measurements collected by scientists using a variety of methods in order to create their own graphs for comparison.

	Students should be asked to follow instructions for this activity and will be provided the required materials. In this activity, students will use sea-level rise data to create models and compare short-term trends to long-term trends. They will then determine whether sea-level rise is occurring based on the data. Students should then, be asked to explain their thinking through a series of questions. ***Project:*** Complete the GMSL student record sheet and graph the data. **Data Collection:** In groups of four, students should be asked to examine all twenty data sets. Students should be able to determine whether the data trendline should be rising, falling or remaining steady. **Rubric:** https://drive.google.com/file/d/1GnJFROm8VvThOCg9Wjv7K_ZwWnQ0uWJ4/view?usp=sharing **Lesson 3:** Building a Disaster Proof Structure **Formative Assessment:** In this activity, students should learn how to build a prototype disaster-proof house. Prior to starting, students must draw a diagram of the house. Once this drawing has been approved, students should be given building supplies. ***Report:*** Students should complete the Engineering Design Cycle worksheet. (Click link to view worksheet) https://docs.google.com/document/d/1kPdns1sttI8beFj52k8XeGTkwkDxB3VaA3i9whhoWUc/edit?usp=sharing **Summative Assessment:** Explore how technology can save lives in this fun engineering lesson plan! For example, earthquakes can cause devastation and loss of life when they strike, but earthquake-resistant buildings can stay standing and keep people safe. In this project, students should build a model house or building of any sort using the materials supplied. The house must have 4 walls, a roof, a door, 2 windows, and a base no smaller than 10 x 13 cm. Students should specifically be learning about the Engineering Design Cycle and how to build a disaster-proof prototype. ***Project:*** Students should build a disaster proof house or building using a blueprint they created with the engineering cycle. **Data Collection:** This lesson is meant to teach students about

natural disasters happening all around the world and what really happens when engineers work on a task.

Rubric:

- https://drive.google.com/file/d/1GnJFROm8VvThOCg9Wjv7K_ZwWnQ0uWJ4/view?usp=sharing

Lesson 4: Sprint Investigation

Formative Assessment: students will write a report on their findings after conducting the investigation.
Report:
Students will present a summary of what they learned on Google slides. They will complete the reflection questions to analyze the data. (Click link to view the graphic organizer)
http://www.us-satellite.net/sprintt/docs/topicgraphicrganizer.pdf

Project:
Complete questions and all sections on Sprint Portal.

Data Collection:
When students are divided into their teams, assign the Topics. Each student group first reads the 'Overview' for their Topic. Other relevant summaries must be read as well. The Topic is broken down by atmosphere (Air), biosphere (Life), hydrosphere (Water) and lithosphere (Land).

Rubric:
http://www.us-satellite.net/sprintt/docs/student/Investigation_Rubric_g78.pdf

Adaptations: **Differentiation/ UDL Considerations**	● **Provide multiple examples:** "The teacher provides multiple examples throughout the lesson with multiple models, practice activities, and additional math problems." ● **Highlight critical features:** "The teacher highlights critical features of the mathematics by stopping and calculating, checking in with students, and modeling behavior." ● **Provide multiple media and formats:** "The teacher supports understanding by identifying patterns not only in text but also in the environment of the classroom, school, etc. " ● **Support background context:**

	"Teachers analyze or pre-test students for key pre-skills and background knowledge." (Effective Classroom Practices Report by Tracey Hall, Ge Vue, Nicole Strangman, and Anne Meyer Published: 2004 (Links updated 2014)
Resources: **Materials**	**Materials:** **Lesson 1:** What is causing sea level rise? Land ice Vs. Sea ice ● Plastic food-storage container (2 per group) ● clay/ playdough ● Ice ● Ruler ● Water ● Permanent marker ● Student worksheet https://docs.google.com/document/d/1UbreclDKEmBn2-05zFkJF98CcHTqdYoPuYgKPpgKFA0/edit?usp=sharing ● Powerpoint

Technology Integration	https://docs.google.com/presentation/d/1CZuNdIULw6MW1Zgb7kv1apbXMvUCvWjyP58AH7YVT_I/edit?usp=sharing ● Google sheets **Lesson 2:** Graphing Sea Level Trends ● Student record sheet https://docs.google.com/document/d/1vpTQEDvXZSjnwOFUS9Ab-jaOxLcsF_4MgvC4tb7CPDE/edit?usp=sharing ● Data Sheets https://drive.google.com/drive/folders/

	0Bzx5Odm4e4N0ZnM3QU5qUVJYRzg?usp=sharing ● Powerpoint https://docs.google.com/presentation/d/1Y9IFJbKFQzgLTiCNqEMOmr2_oJvdAPbL8UxFEFtnNM4/edit?usp=sharing ● Google Sheets **Lesson 3:** Building a Disaster Proof Structure ● Engineering cycle worksheet https://docs.google.com/document/d/1kPdns1sttI8beFj52k8XeGTkwkDxB3VaA3i9whhoWUc/edit?

	usp=sharing • Smartphone with Google's Science Journal app, available for free on Google Play for Android devices (version 4.4 or newer) or from the App Store for iOS devices (iOS 9.3 or newer). • Tape • Rulers • Piece of corrugated cardboard that is larger than the base of the "house" • Assorted round objects to use as rollers: markers, marbles, etc. • Assorted shock-absorbing objects: rubber bands, cotton balls, erasers, springs • Object that is about the same weight as the phone (box of pencils, plastic baggie full of coins, etc.) • Glue • Scissors **Lesson 4:** Sprint Investigation • Devices to access Sprint Portal • Student accounts for Sprint Portal • Rubrics http://www.us-satellite.net/sprintt/docs/student/Investigation_Rubric_g78.pdf

	• Topic graphic organizer http://www.us-satellite.net/sprintt/docs/topicgraphicrganizer.pdf **Technology Integration:** ● Students will do research online to prepare for some of the content. ● Students will create a presentation of what they learned digitally on Google Slides. ● Students will graph digitally on Google Sheets. ● Students will reflect digitally using Google Docs. ● Students will view videos to gain background knowledge. ● Students will use Sprint Portal to conduct investigation ● Students will use Screen casting to show their findings.
Summarize Evaluate/ Reflect	**Overall Class Makeup Evaluation:** I have four students with IEP's. One of my students has SLD for auditory and one has OHI for auditory reasons as well. For these two students, I always provide visual aids and make sure to have subtitles in any videos I show in class. I also use a special

SPRINTT, replacing existing lessons with SPRINTT content, and outlines how and why	communication system. They also get preferential seating. My other student who has Autism I provide visual aids, graphic organizers, overview and note-taking organizers that are color coded. I allow the student to use a word processing computer program whenever possible. I allow the student to write about favorite topics whenever possible. Another student who has SLI, I provide a written copy of questions that will be asked during the discussion for the student who needs additional processing time. I have the student read ahead on a subject that will be discussed to become familiar with new vocabulary/concepts that will be presented during the discussion. I encourage the student to use of complete sentences when answering questions. Furthermore, before discussing new information, I list key vocabulary on the board. For my gifted students, I encourage students to explore concepts in depth and encourage independent studies or investigations. I use thematic instruction to connect learning across the curriculum. I encourage creative expression and thinking by allowing students to choose how to approach a problem or assignment. I also provide opportunities for independent learning by having stations. Lastly, I have small group learning twice a week to address students specific levels. **Concept and Resources:** • What big ideas or major concepts to you hope to address through this unit? I hope to make my students aware and knowledgeable of Climate Change. I want them to know and understand Sea Level its causes and effects. I want the students to be aware of the engineering process and how it can help with solving problems or facing challenges.

implementation will be successful	● What resources from this course do you intend to integrate with your unit plan? I plan to use the JPL education website and the Sprint Portal for content. ● How will using these resources help your students better achieve your goals for the unit? The JPL education website and Sprint curriculum provides data, background and ideas for activities. **How will I know Sprint is successful?** I really enjoy teaching science using a Google slides presentations that includes a physical activity such as an experiment because it helps me not repeat what I am saying more than once in regards to retention purposes. The information is being presented to students in three different ways all at once. Hence, the identical information is being heard in a lecture, at the same time the information is seen in graphs and illustrations through a visual Google slides presentation. Additionally, watching short films and using funny memes in the Google slides presentation also helps engage students successfully. Finally, it is also being used in a physical activity, which requires students to utilize their sense of touch to discover and learn. I feel like this previous experience my students have had with the lessons that follow up to the Sprint lesson will make them and I successful in the implementation of the investigation. I am excited to see the final product for the Sprint Investigations. I feel like I have successfully added in ELA components to this unit which I felt was lacking. I think having the support of this lesson happening in an ELA class allows me to focus on the writing aspect that connects perfectly with the ELA standards. Informational text is usually a challenge for students. I love the Sprint platform because it walks them through and prepares them well for the writing the research paper. I also like that it has a real-

	world component to it. This is what real scientists do. ● Furthermore, there are four primary types of learners: visual, auditory, reading/writing, and kinesthetic. Each one responds to different methods of teaching. I personally am a visual learner and feel that most people are as well when they get older so similarly, my experience with my students is that they are able retain and comprehend new ideas more effectively when they hear about the data, see the data and touch the data by using it in a physical activity. I think using a data source when teaching a scientific subject in the classroom is essential because it helps incorporate all four types of learners.

Calendar: Implementation Plan

*** two months March Lesson 1-3 April Lesson 4 (Sprint)**

March (Lesson 1-3)						
Sunday	**Monday**	**Tuesday**	**Wednesday**	**Thursday**	**Friday**	**Saturday**
				1	2	3
4	5	6	7 Lesson 1 Day 1	8 Lesson 1 Day 2	9 Lesson 1 Presentation	10
11	12	13	14 Lesson 2 Day 1	15 Lesson 2 Day 2	16 Lesson 2 Presentation	17
18	19	20	21 Lesson 3 Day 1	22 Lesson 3 Day 2	23 Lesson 3 Presentation	24
25	26 Spring Break	27 Spring Break	28 Spring Break	29 Spring Break	30 Spring Break	31

April (Lesson 4)						
Sunday	**Monday**	**Tuesday**	**Wednesday**	**Thursday**	**Friday**	**Saturday**
1	2	3 Lesson 4 Day 1 Students log into portal and Do Engage: by reading background information on a specific topic.	4 Lesson 4 Day 2 Engage: by reading background information on a specific topic.	5 Lesson 4 Day 3 Explore examining relevant data.	6 Lesson 4 Day 4 Explore examining relevant data.	7
8	9 Lesson 4 Day 5 Explain by drawing conclusions based on the data and identifying further questions for research.	10 Lesson 4 Day 6 Explain by drawing conclusions based on the data and identifying further questions for research.	11 Lesson 4 Day 7 Elaborate by assembling work into a research report	12 Lesson 4 Day 8 Elaborate by assembling work into a research report	13 Lesson 4 Day 9 Elaborate by assembling work into a research report	14
15	16 Lesson 4 Day 10 Evaluate by presenting their findings to their peers and completing a self-evaluation.	17 Lesson 4 Presentations Evaluate by presenting their findings to their peers and completing a self-evaluation.	18	19	20	21
22	23	24	25	26	27	28
29	30	27	28	29	30	31