Curriculum Unit Template

Taneyville R-II School
2019-20

Grade Level: 6th grade **Subject**: Science **Quarter**:
Unit Title: Intro to Earth Science

Standards	Vocabulary	Activities/Resources	Formative/Summative Assessments
1st week of school: (2 days) Mindset, goal setting, learning strategies, expectations 2nd week Lab Safety 3rd week Graphing/Data collection 4th week Scientific Method Engineering Method- (overview-More in STEAM) Link- for post-it note activity Kesler Lab Stations	Differentiation Expectations Perspectives Variables investigate/investigations observe/observations Data Opinion Claim Evidence Reasoning	Post-it note stations activity ● Get to know you activity ● Finish the sentence starter to learn what is your best learning environment? ● Sentence starters used: ○ I want to earn my h/s diploma because… ○ The most effective teachers are the ones who… ○ The most helpful classmates are the ones who… ○ One of my weaknesses in science is… ○ One of my strengths in science is… ○ To read and really understand a challenging text, I need… ○ To produce my best work, I need… ○ By the end of the year, I plan to achieve the following goal.. Kesler Stations: Lab Safety, Graphing, Scientific Method, Engineering Method,	Students will end up back at the first sentence starter station. As a pair they will share their data (the answer that is repeated the most) aloud with the class.. Teacher will observe participation and validity of responses. Lab Safety Stations- record sheet Lab Safety Test Lab Safety Contract Graphing Stations- record sheet Graphing Quiz Scientific Method stations- record sheet Methods Quiz

Grade Level: 6th grade **Subject**: Science **Quarter**:

Unit Title: 1. Earth: History of EARTH

Standards	Vocabulary	Activities/Resources	Formative/Summative Assessments
2 weeks (took longer than expected…) Pangea/Continental Drift Theory/Plate Boundaries **-I CAN describe the historical developments that support the plate tectonic theory.** **-I CAN relate plate tectonics to the formation of crustal Features.** - HISTORY OF EARTH ESS 1.C ESS2.A.1 ESS 2.A.2 ESS 2.B https://lessons.keslerscience.com/	Continental drift theory Plate tectonics Glacial evidence Fossil evidence Pangea landform/rock layers evidence Alfred Wegener Oceanic crust Continental crust Volcanic islands Mountain range Subduction zone/boundary Transform Convergent Divergent Subduction Mid-atlantic ridge Sea floor spreading Ring of fire Convection current Trench mid -ocean ridge	https://goo.gl/SRhDbI (engagement video) Pictures of Fossils 1. Have the students do a Think-Pair-Share to discuss the objective. One student will read the objective and the other student will respond with their understanding of the objective (topic). Class Activity 1. Tell students they are going to learn about a scientist named Alfred Wegener. Ask the class if anyone has heard of him before and in what context. Tell them Wegener discovered a very important geological theory, but it was not well received during his lifetime. 2. Ask students to watch the video, and see if they can determine why the theory was not well received when it was introduced. Explore: Lab stations Explain: Powerpoint and students taking notes Elaborate: **Challenge project for Continental Drift-** Students will choose one area they want to know more about and assume your teacher is going to ask you to present your research to the class. How do you want to communicate your findings? Find a presentation style that best fits you and create something amazing. **Challenge project for Plate Tectonics:** You are a geologist doing research on plate boundaries. You want to identify the boundaries and find places on earth that are representative of the **three types** of plate boundaries. Choose one project to communicate your findings..	5E lesson model: 1. Engage 2. Explore (station labs) 3. Explain (powerpoint/students take notes 4. Elaborate (challenge project) **5. Evaluation (quizzes, homework, test)** **a. Sticky note quiz to review from the day before** **b. homework -worksheet that reviews the notes** **c. Test at the end of each "idea"**

Grade Level: 6th grade **Subject**: Science **Quarter**:

Unit Title: 3. Earth: Earthquakes

Standards	Vocabulary	Activities/Resources	Formative/Summative Assessments
1 week Earthquakes/Tsunamis (convection currents) **-I CAN identify the role plate boundaries plays in earthquakes.** **I CAN model different types of faults and their related stresses.** **I CAN compare seismic waves and interpret graphs relating to seismic waves.** **I CAN identify the process by which epicenters are determined.** **I CAN describe how tsunamis form and their effects.** **I CAN determine how humans can reduce the impact of very unpredictable earthquakes.** Earth's systems ESS 2.A.1 ESS 2.A.2 ESS 3.B https://lessons.keslerscience.com/	Earthquake Epicenter P-waves S- waves Surface waves Magnitude Seismograph Seismogram Seismology Seismic waves Focus Aftershock Tsunami Normal fault Reverse fault strike - slip faults Richter scale Stress Compression,shearing, tension Hanging wall Foot wall Fault line Mercalli scale	(Engagement) https://goo.gl/VLmcnx 1. Watch the video above. 2. Draw a square on the white board. Explain to the students that this represents a section of the earth's crust. Because of Plate Tectonic this block is constantly being stressed. 3. Discuss the word stress as a class. In what other context have they heard this word? 4. Tell them they are going to be learning about three types of stress that cause rocks to shift, which sometimes leads to an earthquake. 5. Draw three simple diagrams using arrows of compression, tension and Shearing (Explore) Lab Stations (Explain) Powerpoint/Notes (Elaborate)- challenge project--demonstrations/newscast/diorama	5E lesson model: 1. Engage 2. Explore (station labs) 3. Explain (powerpoint/students take notes) 4. Elaborate (challenge project) 5. Evaluation (quizzes, homework, test) d. Quizziz e. homework -worksheet that reviews the notes **f.** Review and Test

Grade Level: 6th grade **Subject**: Science **Quarter**:

Unit Title: 2. Earth: layers, minerals, rocks

Standards	Vocabulary	Activities/Resources	Formative/Summative Assessments
3 weeks Earth's Layers, Properties of Minerals, Rock Cycle (Density??) **I CAN describe the characteristics of the structural layers of Earth.** **I CAN illustrate the structural layers** **of the Earth.** **I CAN define the properties of a mineral.** **I CAN describe how different minerals are identified.** **I CAN list common uses for minerals.** **I Can classify rocks as metamorphic, igneous, or sedimentary by the processes of their formation.** Earth's Materials and Systems ESS 2.A.1 ESS 2.B.1 ESS 2.C.3 ESS3.A https://lessons.keslerscience.com Sciencespot.net	Crust Asthenosphere Lithosphere mantle Outer/Inner core Density Iron Plasticity convection Magma pressure Nickel magnetic field Sedimentary Metamorphic Igneous Sediments Compaction Cementation Heat/Pressure Melting Cooling/hardening Lava Weathering Erosion Deposition Inorganic Naturally formed Chemical composition Crystalline structure Color luster streak hardness shape cleavage density fracture	Engagement: Earth Layers: https://goo.gl/k36bLd Mineral and Rock Cycle: Table Investigation Powerpoint-Earth Layers (Kesler) --student guided notes Powerpoint-combine minerals and rocks (science Doodle sheets (w/powerpoint) Challenge/choice project- Earth Layers- "model magic" Kesler inquiry lab Rocks and minerals- Mighty Minerals- (Science Spot) -investigation and comic -hardcopy in curriculum folder Ride the Rock Cycle- - webquest type -hardcopy in curriculum folder	5E lesson model: 1. Engage 2. Explore (station labs) 3. Explain (powerpoint/students take notes) 4. Elaborate (challenge project) 5. Evaluation (quizzes, homework, test) g. Quizziz h. homework -worksheet that reviews the notes i. Review and Test

Grade Level: 6th grade **Subject**: Science **Quarter**:

Unit Title: 4. Earth: Volcanoes, erosion/weathering

Standards	Vocabulary	Activities/Resources	Formative/Summative Assessments
3 weeks Volcanoes/ Erosion and Deposition/Weathering **I CAN identify the parts of a volcano.** **I CAN compare and contrast the four types of volcanoes.** **I CAN describe the processes by which volcanoes form.** **I CAN explain the predictable pattern of where volcanoes are located.** Earth's Systems ESS2.A.1 ESS2.A.2 ESS3.A.1 https://lessons.keslerscience.com	Different types of Volcanoes: Shield Composite Cinder cone Dormant Lava dome Extinct Plate tectonics Secondary vent Magma Lava Ring of Fire Island Arc Hot spot Magma chamber Volcanic pipe Main vent Crater Pyroclastic flow Caldera Volcanic neck Igneous intrusion Subduction zone Dike Sill rift valley Mid-ocean ridge Volcanic ash Volcanic bomb	Engagement: video https://goo.gl/vd6ZpT -Do a think-pair-share -KWL chart Explore: Station labs Explain: Powerpoint-I use Kesler's Volcano unit -Students take guided notes -quiz Elaborate: Challenge/choice project- Volcanoes -infographic -tutorial -creative story -model -blog -student choice Evaluate: Test Engagement: youtube video https://goo.gl/vRRaKV Powerpoint-Kesler weathering and erosion -student notes -quiz Challenge/choice project-weathering/erosion/deposition-pretend your head of company that wants to build a resort...Include: how weathering/deposition/erosion could affect the area overtime and list preventive measures -billboard -video -prezi -podcast -wepage Test	5E lesson model: 1. Engage 2. Explore (station labs) 3. Explain (powerpoint/students take notes) 4. Elaborate (challenge project) **5. Evaluation (quizzes, homework, test)** **j. Quizziz** **k. homework -worksheet that reviews the notes** **l. Review and Test**

Grade Level: 6th grade **Subject**: Science **Quarter**:

Unit Title: 5. Fossils/Geologic time scale

Standards	Vocabulary	Activities/Resources	Formative/Summative Assessments
3 Weeks Geologic time scale Fossil records (Topographic maps????) I CAN identify fossils as evidence of past living organisms. I CAN classify the different types of fossilization. I CAN differentiate between relative and absolute age. I CAN interpret the fossil record using the Geologic Time Scale. I CAN distinguish similarities between organisms living today with those of the past ESS1.C	Fossil Sedimentary rocks Annonites Stromatolites Trace fossil Index fossil Casts Molds Relative age Absolute age Geologic time scale Fossil record Coprolite Permineralization Petrification Carbonization Law of superposition Burrows Paleontologists Fossil resin Replacement Tar and Ice	May show this youtube video/song https://www.youtube.com/watch?v=RNSrNT-nIDE&list=PLoVY7fxw1iriyHf57ZwUtS09rpBg99Bqn&index=4 **Fossil Tour** https://ucmp.berkeley.edu/education/explorations/tours/fossil/5to8/Page2.html -virtual tour about fossils...as students navigate the tour..Have them do flashcards of vocabulary terms.. **Powerpoint and modified student notes** **Challenge/choice project:** **-creative writing**-Choose an organism, explain the circumstance of its death and then the steps that went into fossilizing it. You can be inventive while still including real facts about fossils. **-video lesson**— Create a video lesson on fossils. Choose one of these topics as your lesson: fossilization types, how fossils help determine the environment at the time, or how organisms have change over time using the Geological Time Scale. **-song-**Create some kind of musical expression interpreting what you have learned in your study of fossils. You can video your song or possibly perform it for the class. **-foldable**– Develop a foldable or and interactive notebook template that demonstrates your understanding of fossils and how they form. Also, include information in their importance in interpreting Earth's geological history.- **-learning center**– Create a learning center for students to help them understand how fossils form and their importance in helping scientists interpret the geologic history of the Earth. Make it engaging.- **-student choice**	5E lesson model: 1. Engage 2. Explore (station labs) 3. Explain (powerpoint/students take notes) 4. Elaborate (challenge project) 5. Evaluation (quizzes, homework, test) m. Quizziz n. homework -worksheet that reviews the notes o. Review and Test May use project as final evaluation...

Grade Level: 6th grade **Subject**: Science **Quarter**:

Unit Title: 6. Earth: Oceans

Standards	Vocabulary	Activities/Resources	Formative/Summative Assessments
2 weeks Oceans/ (convection currents) (density)(atmosphere) (Hurricanes) I CAN identify the elements that make up the ocean. I CAN associate salinity and temperature with density. I CAN recognize that the Sun provides the energy that drives convection within the oceans, producing surface and deep ocean currents. I CAN give examples of seafloor structures, including locations. I CAN recognize human dependence on ocean systems and explain how human activities have modified the oceans. ESS2.B ESS2.C.3	H2o NaCl Convection Surface ocean currents Gulf stream Coriolis effect Density Salinity Oceans Tides Deep ocean currents Continental -shelf -slope -rise Abyssal plain Ocean trenches Volcanic island Suns energy Mid-ocean ridges Mariana trench Sea-floor spreading Submarine canyons Sea monts Oceanic crust Sonar Echo soundly Unsustainable fishing Pollution Climate change	**1.**-blow up globe -toss the globe around the room, as a student catches it record how many fingers are touching an ocean… do this a few times...then add up how many fingers touched the oceans -whole class discussion on how much of the earth is oceans -on blank world map...have students record as many of the earth's oceans (in proper location!) as possible **2. Kesler Ocean Station labs** **3. Powerpoint/guided notes** **4. Paired(2 students to each topic) Research project:** Coral reef-– Research the importance of coral reefs and explain ways they are being destroyed around the globe. What impact is that having on the environment? Surface currents- Research three important surface currents and explain how they effect the weather or climate in areas they impact. Deep ocean currents- Research how these currents impact life on earth. Why are they important? How is life affected by these currents? Climate change-What do climate change experts expect to happen to the oceans during the next century? What effect will this have on humans and the environment? SalinityExplain salinity and its effects on the ocean. What is its relationship to density. What areas of the ocean have the highest/lowest salinity? How does this impact different life forms? - Tides- How are tides and the moon related? What impact do tides have on human activity? Sea Floor Features - Identify features of the sea floor. What types of sea life are living around each of the different features? Pollution- There are many types of pollution found in the ocean. Choose two types and go in depth as to their causes and effects.-	5E lesson model: 1. Engage 2. Explore (station labs) 3. Explain (powerpoint/students take notes) 4. Elaborate (challenge project) 5. Evaluation (quizzes, homework, test) -Quizziz -homework -Review and Test **(include bonus question related to their specific topic**

Grade Level: 6th grade **Subject**: Science **Quarter**:

Unit Title: 7. Weather: Hydrosphere

Standards	Vocabulary	Activities/Resources	Formative/Summative Assessments
1 week (depending on time-this is covered in 5th grade) WATER CYCLE I Can describe how water continually cycles among land, ocean, and atmosphere. I Can identify the forms water takes through the water cycle. I Can describe how the sun and gravity affect the water cycle. ESS2.C.1 ESS2.C.2 ESS2.C.3	Water cycle Water storage Evaporation Sublimation Transpiration Condensation Precipitation Runoff Infiltration Groundwater Aquifer	Whole class Popcorn discussion of what they know about water cycle… Use this diagram to create flash cards of key definitions https://water.usgs.gov/edu/watercycle-kids-adv.html Lesson outline found here: https://gpm.nasa.gov/education/lesson-plans/exploring-water-cycle Hardcopy located in curriculum binder Freshwater connection video Water cycle video --students will fill out a water cycle capture sheet Teacher demonstration Water, Water, Everywhere video Student project: -mini poster - comic strip	5E lesson model: 1. Engage 2. Explore (station labs) 3. Explain (powerpoint/students take notes) 4. Elaborate (challenge project) 5. Evaluation (quizzes, homework, test) a. Quizziz b. homework - worksheet that reviews the notes C. Review and Test

Grade Level: 6th grade **Subject**: Science **Quarter**: **Unit Title**: 9. Weather: Global Warming and more...

Standards	Vocabulary	Activities/Resources	Formative/Summative Assessments
4 weeks Global Warming/Weather Maps and high and low pressure/ I CAN identify how global patterns of atmospheric movement influence local weather using weather maps that show high and low pressures and fronts. I CAN explain the terms 'global warming' and 'climate change' I CAN explain the causes and consequence of global warming and climate change I CAN lList several practical things people can do to respond to global warming and climate change. ESS2.C.1 ESS2.C.2 ESS2.C.3 ESS3.D	Anemometer Atmospheric pressure Air mass High pressure Low pressure Isobars Barometer Weather balloon Compass rose Thermometer Wind vane Fronts: Cold, Warm, Stationary, Occluded, Back door Global warming Carbon dioxide Greenhouse gas Emissions Weather vs climate Fossil fuels Sea level rise Global average temp PPM Methane Mitigation	Teacher demonstration or video of demonstration: https://goo.gl/3zgzXF Kesler station labs Powerpoint and guided notes Student Challenge/choice project: **Video-** Create a video to show to the kids in the Weather Club. They have been trying to understand what causes winds. Be sure to include global wind patterns created by low and high pressure systems. Weather maps are also important to understanding how wind affects local weather, so be sure to include information on how maps show air masses and their movements. **Podcast-** Create a podcast that will help people understand how local weather is affected by large high and low pressure systems, global wind systems, as well as frontal types. Be sure to include how these systems are recorded on weather maps. **Newscast-** Write a special public service announcement that explains how hurricanes and tornadoes form and how they affect local weather conditions. Be sure to explain how high and low pressure systems determine where hurricanes might make landfall. Tornadoes are usually associated with the passage of fronts, so include how frontal movement is driven by global patterns. **Blog- –** Blog about the local weather over a 10 day period. Do research so you know what has caused each event that occurs over this time period. For example, a cold front passes through your area, you could explain where the cold air came from and what weather was related to cold fronts. Be sure to show your knowledge of global air systems and their impact on local weather. **Prezi-** Create a Prezi that demonstrates your knowledge of how global air systems affect local weather. Be sure to add how weather maps show these movements**.**	5E lesson model: 6. Engage 7. Explore (station labs) 8. Explain (powerpoint/students take notes) 9. Elaborate (challenge project) **10. Evaluation (quizzes, homework, test)** **a. Quizziz** **b. homework -worksheet that reviews the notes** **c. Review and Test**

Grade Level: 6th grade **Subject**: Science **Quarter**: 4

Unit Title:8.Natural Hazards

Standards	Vocabulary	Activities/Resources	Formative/Summative Assessments
2 weeks Catastrophic Events I CAN predict and describe how different types of catastrophic events impact ecosystems such as floods, hurricanes, or tornadoes. ESS3.B	Catastrophic events Ecosystem Flood Hurricane Tornado Wildfire Tsunami Earthquake Meteor Blizzard Drought Volcano	https://goo.gl/BM7Fjn (Most Brutal Natural Disasters) Powerpoint/guided notes/inquiry lab Challenge project **Journal** – You are a journalist in the field and you discover an event that could be catastrophic. Write five journal entries describing what is happening over a five day period, and how this event is impacting the environment. What might be the end results of this event? **Pamphlet -** Create a pamphlet that warns people about a particular catastrophic event. Give details as to why this event is harmful for both plants, animals and the environment, including humans. Explain what people can do to protect themselves from the impact of this disaster. **Newspaper Article** – As a reporter you are reporting on a possible catastrophic disaster. Give details as to why this event is harmful for both plants, animals and the environment, including humans. Explain what people can do to protect themselves from the impact of this disaster. **News Report** – You are a journalist in the field and you discover an event that could be catastrophic. You quickly assemble your news team and begin covering the event. Give details as to why this event is harmful for both plants, animals, and the environment, including humans. Explain what people can do to protect themselves from the impact of this disaster. **Personal Story** – You have experienced a catastrophic disaster yourself and want to share it with other. In a story telling way give the details of the disaster and how it impacted you, others, and possibly the environment. **Student Choice** – Present your idea to the teacher for approval.	5E lesson model: 11. Engage 12. Explore (station labs) 13. Explain (powerpoint/students take notes) 14. Elaborate (challenge project) 15. Evaluation (quizzes, homework, test) a. Quizziz b. homework -worksheet that reviews the notes c. Review and Test **Challenge project will be the Assessment**

Grade Level: 6th grade **Subject**: Science **Quarter**:

Unit Title: Human Impact

Standards	Vocabulary	Activities/Resources	Formative/Summative Assessments
2 weeks…. Humans impact on earth and resources **ESS3.C.1-**Analyze data to define the relationship for how increases in human population and per-capita consumption of natural resources impact Earth's systems. [Clarification Statement: Examples of data include grade-appropriate databases on human populations and the rates of consumption of food and natural resources (such as freshwater, mineral, and energy). Examples of impacts can include changes to the appearance, composition, and structure of Earth's systems as well as the rates at which they change.] **ESS3.C.2-**Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment. [Clarification Statement: Examples of the design process include examining human environmental impacts, assessing the kinds of solutions that are feasible, and designing and evaluating solutions that could reduce that impact. Examples of human impacts can include water usage (such as the withdrawal of water from streams and aquifers or the construction of dams and levees), land usage (such as urban development, agriculture, or the removal of wetlands), and pollution (such as of the air, water, or land).]			5E lesson model: 16. Engage 17. Explore (station labs) 18. Explain (powerpoint/students take notes) 19. Elaborate (challenge project) **20. Evaluation (quizzes, homework, test)** **a. Quizziz** **b. homework -worksheet that reviews the notes** **c. Review and Test**

Grade Level: 6th grade **Subject**: Science **Quarter**: 4

Unit Title: Space

Standards	Vocabulary	Activities/Resources	Formative/Summative Assessments
End of school Space… Day/Night, Seasons Tides The Lunar Cycle Eclipses Solar System Arrangement and Planets Asteroids, meteors, and comets Galaxies and Light Years I can develop and use a model of the Earth-Sun-Moon system to describe the cyclic patterns of lunar phases, eclipses of the sun and moon, and seasons. I can develop and use a model to describe the role of gravity in the motions within galaxies and the solar system. I can analyze and interpret data to determine the scale properties of objects in the solar system. ESS1.A.1 ESS1.A.2	Rotation Revolution Orbit tilt axis Northern hemisphere Southern hemisphere Light intensity vernal equinox autumnal equinox Winter solstice eclipse Penumbra umbra Lunar cycle Full moon New moon Waxing crescent Waxing gibbous Waning crescent Waning gibbous Planets gravity Crater neap tide Tide Meteor meteorite Celestial bodies Atmosphere shooting star Extraterrestrial comet Tropic of cancer Tropic of capricorn Asteroid belt Comet's tail Elliptical orbit Oort cloud Kuiper belt	Inquiry lab Space unit-hardcopy in curriculum binder… Project/research/models	5E lesson model: 21. Engage 22. Explore (station labs) 23. Explain (powerpoint/students take notes) 24. Elaborate (challenge project) **25. Evaluation (quizzes, homework, test)** **a. Quizziz** **b. homework -worksheet that reviews the notes** **c. Review and Test**

ESS1.A.3 ESS1.B	Spectral class Apparent magnitude Super giant Giants White dwarf Red dwarf Temperature H-R diagram Luminosity Main sequence Terrestrial planets Brightness Absolute magnitude		

General Lesson Overview(5E concept):

1. Bellringer and objective (I use **I can** statements for the objective)
2. Introduction/Engagement (I do/We do- Guided)- An engaging activity or demonstration to get them "hooked" on the concept
3. Explore (students do -Guided/Independent)-stations and labs
4. Explain (I do)--I use guided notes, where they fill in the blanks while I go through a powerpoint
5. Elaborate (Student challenge projects) (students do- Independent)
6. Evaluation (students do- Independent)

(I like to **explore** 1st to get them even more curious about our topic and then **explain** but sometimes I do switch these)

4 DAY WEEK CHANGE: Tuesday-Intro/Engage….explore

Wednesday- Explore/Elaborate
Thursday-Elaborate/Challenge
Friday-Evaluation