Unit 1: Earth's Water and Atmosphere (Earth and Space Science)

Content Area: **Science**
Course(s): **Earth Science 7**
Time Period: **Sept-June**
Length: **60 Days**
Status: **Published**

Title Section

Department of Curriculum and Instruction

Belleville Public Schools

Curriculum Guide

Earth Science, Grade 7

HMH Earth's Water & Atmosphere (Module E)

Belleville Board of Education

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Board Approved: Anticipated, September 23, 2019

Unit Overview

Engineering Design

- 7 steps of scientific methods
- Distinguish among independent variables, dependent variables, constants, and controls

Water Cycle

- Circulation in Earth's Atmosphere
- Circulation in Earth's Oceans
- Water Cycle

Weather

- Influences on Weather
- Weather Prediction
- Severe weather and storms

Climate

- Influences On Climate
- Climate Change
- Humans and Climate Change

Enduring Understanding

- The world of science presents itself in many different capacities.
- Scientists follow a specific process of investigation to reach conclusions and theories.
- Internationally all scientists use specific units of measure to organize data and report results.
- Connections between humans and the ocean are important.
- Weather (in the short term) and climate (in the long term) involve the transfer of energy and water in and out of the atmosphere.
- Earth’s components form systems. These systems continually interact at different rates of time, affecting the Earth regionally and globally.
- The composition and structure of the atmosphere allow life to be present on Earth.
- The unequal heating of the Earth’s surface and the Coriolis effect cause major wind patterns, responsible for weather and climate.
- The results of the complex interactions of land, ocean and atmosphere affect the Earth's weather and climate systems.
- Climate is influenced locally and globally by atmospheric interactions with landmasses and bodies of water

Essential Questions

- How are oceans a reservoir of valuable food, energy, and mineral resources?
- How do waves and tides affect life and property in coastal areas?
- What is the composition of seawater?
- What causes weather to be short term vs. climate that is long term?
- How does the sun provide energy to Earth's atmosphere, allowing life to exist?
- How does the ozone layer protect humans?
- How do air masses, pressure systems, and fronts cause weather to change?
- How do weather changes affect your daily activities?
- How do wind systems determine major weather patterns on Earth?
- How many climate zones does the Earth have?

Exit Skills

By the end of Module E, students should be able to:

- Identify the 7 steps of the scientific method
- Distinguish among independent variables, dependent variables, constants, and controls
- Explain how dissolved salts and other substances get in the ocean
- Describe the composition of seawater
- Explain how winds and the Coriolis effect influence surface currents
- Discuss the temperature of coastal waters
- Describe density currents
- Describe wave formation
- Analyze the formation of ocean tides
- Identify the gases in the Earth's atmosphere
- Describe the structure of the Earth's atmosphere
- Explain what causes air pressure
- Describe what happens to the energy Earth receives from the sun
- Compare and contrast heat transfer
- Explain the water cycle and its effect on the weather and climate
- Explain why different latitudes on Earth receive different amounts of solar energy
- Describe the Coriolis effect as it relates to air movement
- Locate doldrums, trade winds, prevailing westerlies, polar easterlies, and jet streams
- Explain how solar heating and water vapor in the atmosphere affect weather
- Discuss how clouds form and how they are classified
- Describe how rain, hail, sleet, snow develop
- Describe how weather is associated with front and high/low pressure areas
- Explain how different types of severe weather develop and their effects
- Explain how data are collected for weather maps and forecasts
- Identify the symbols used in a weather station model

New Jersey Student Learning Standards (NJSLS-S)

NextGen Science Standards

PS3.A Definitions of Energy

PS3.B	Conservation of Energy and Energy Transfer
	Energy and Matter
6-8.MS-ESS3-2.1.1	Graphs, charts, and images can be used to identify patterns in data.
6-8.MS-ESS3-5.1.1	Ask questions to identify and clarify evidence of an argument.
6-8.MS-ESS2-1.2.1	Develop and use a model to describe phenomena.
6-8.MS-ESS2-5.2.1	Cause and effect relationships may be used to predict phenomena in natural or designed systems.
6-8.MS-ESS2-4.2.1	Develop a model to describe unobservable mechanisms.
6-8.MS-ESS3-3.2.1	students classify relationships as causal or correlational, and recognize that correlation does not necessarily imply causation. They use cause and effect relationships to predict phenomena in natural or designed systems. They also understand that phenomena may have more than one cause, and some cause and effect relationships in systems can only be described using probability.
6-8.MS-ESS2-5.3.1	Collect data to produce data to serve as the basis for evidence to answer scientific questions or test design solutions under a range of conditions.
6-8.MS-ESS2-6.4.1	Models can be used to represent systems and their interactions—such as inputs, processes and outputs— and energy, matter, and information flows within systems.
6-8.MS-ESS3-2.4.1	Analyze and interpret data to determine similarities and differences in findings.
6-8.MS-ESS2-4.5.1	Within a natural or designed system, the transfer of energy drives the motion and/or cycling of matter.
6-8.MS-ESS2-2.6.1	Construct a scientific explanation based on valid and reliable evidence obtained from sources (including the students' own experiments) and the assumption that theories and laws that describe nature operate today as they did in the past and will continue to do so in the future.
6-8.MS-ESS3-3.6.1	Apply scientific principles to design an object, tool, process or system.
6-8.MS-ESS3-1.6.1	Construct a scientific explanation based on valid and reliable evidence obtained from sources (including the students' own experiments) and the assumption that theories and laws that describe the natural world operate today as they did in the past and will continue to do so in the future.
6-8.MS-ESS3-5.7.1	Stability might be disturbed either by sudden events or gradual changes that accumulate over time.
6-8.MS-ESS2-1.7.1	Explanations of stability and change in natural or designed systems can be constructed by examining the changes over time and processes at different scales, including the atomic scale.
6-8.MS-ESS2-2.ESS2.A.1	The planet's systems interact over scales that range from microscopic to global in size, and they operate over fractions of a second to billions of years. These interactions have shaped Earth's history and will determine its future.
6-8.MS-ESS2-1.ESS2.A.1	All Earth processes are the result of energy flowing and matter cycling within and among the planet's systems. This energy is derived from the sun and Earth's hot interior. The energy that flows and matter that cycles produce chemical and physical changes in Earth's materials and living organisms.
6-8.MS-ESS2-5.ESS2.C.1	The complex patterns of the changes and the movement of water in the atmosphere, determined by winds, landforms, and ocean temperatures and currents, are major determinants of local weather patterns.
6-8.MS-ESS2-4.ESS2.C.1	Water continually cycles among land, ocean, and atmosphere via transpiration, evaporation, condensation and crystallization, and precipitation, as well as downhill flows on land.
6-8.MS-ESS2-2.ESS2.C.1	Water's movements—both on the land and underground—cause weathering and erosion,

	which change the land's surface features and create underground formations.
6-8.MS-ESS2-6.ESS2.D.1	Weather and climate are influenced by interactions involving sunlight, the ocean, the atmosphere, ice, landforms, and living things. These interactions vary with latitude, altitude, and local and regional geography, all of which can affect oceanic and atmospheric flow patterns.
6-8.MS-ESS3-1.ESS3.A.1	Humans depend on Earth's land, ocean, atmosphere, and biosphere for many different resources. Minerals, fresh water, and biosphere resources are limited, and many are not renewable or replaceable over human lifetimes. These resources are distributed unevenly around the planet as a result of past geologic processes.
6-8.MS-ESS3-2.ESS3.B.1	Mapping the history of natural hazards in a region, combined with an understanding of related geologic forces can help forecast the locations and likelihoods of future events.
6-8.MS-ESS3-3.ESS3.C.1	Human activities have significantly altered the biosphere, sometimes damaging or destroying natural habitats and causing the extinction of other species. But changes to Earth's environments can have different impacts (negative and positive) for different living things.
6-8.MS-ESS3-3.ESS3.C.2	Typically as human populations and per-capita consumption of natural resources increase, so do the negative impacts on Earth unless the activities and technologies involved are engineered otherwise.
6-8.MS-ESS3-5.ESS3.D.1	Human activities, such as the release of greenhouse gases from burning fossil fuels, are major factors in the current rise in Earth's mean surface temperature (global warming). Reducing the level of climate change and reducing human vulnerability to whatever climate changes do occur depend on the understanding of climate science, engineering capabilities, and other kinds of knowledge, such as understanding of human behavior and on applying that knowledge wisely in decisions and activities.
SCI.MS-ESS2-5	Collect data to provide evidence for how the motions and complex interactions of air masses results in changes in weather conditions.
SCI.MS-ESS2-2	Construct an explanation based on evidence for how geoscience processes have changed Earth's surface at varying time and spatial scales.
SCI.MS-ESS2-6	Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates.
SCI.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.
SCI.MS-ESS3-2	Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.
SCI.MS-ESS3-1	Construct a scientific explanation based on evidence for how the uneven distributions of Earth's mineral, energy, and groundwater resources are the result of past and current geoscience processes.
SCI.MS-ESS3-5	Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.
SCI.MS-ESS2-1	Develop a model to describe the cycling of Earth's materials and the flow of energy that drives this process.
SCI.MS-ESS3-3	Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.

Interdisciplinary Connections

LA.RL.7.1	Cite several pieces of textual evidence and make relevant connections to support analysis of what the text says explicitly as well as inferences drawn from the text.

LA.RL.7.4	Determine the meaning of words and phrases as they are used in a text, including figurative and connotative meanings; analyze the impact of rhymes and other repetitions of sounds (e.g., alliteration) on a specific verse or stanza of a poem or section of a story or drama.
MA.7.RP.A.2b	Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships.
LA.W.7.1	Write arguments to support claims with clear reasons and relevant evidence.
MA.7.G.A.1	Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.
MA.7.7.1	Students extend their understanding of ratios and develop understanding of proportionality to solve single- and multi-step problems. Students use their understanding of ratios and proportionality to solve a wide variety of percent problems, including those involving discounts, interest, taxes, tips, and percent increase or decrease. Students solve problems about scale drawings by relating corresponding lengths between the objects or by using the fact that relationships of lengths within an object are preserved in similar objects. Students graph proportional relationships and understand the unit rate informally as a measure of the steepness of the related line, called the slope. They distinguish proportional relationships from other relationships.
SOC.6.1.8.B	Geography, People, and the Environment

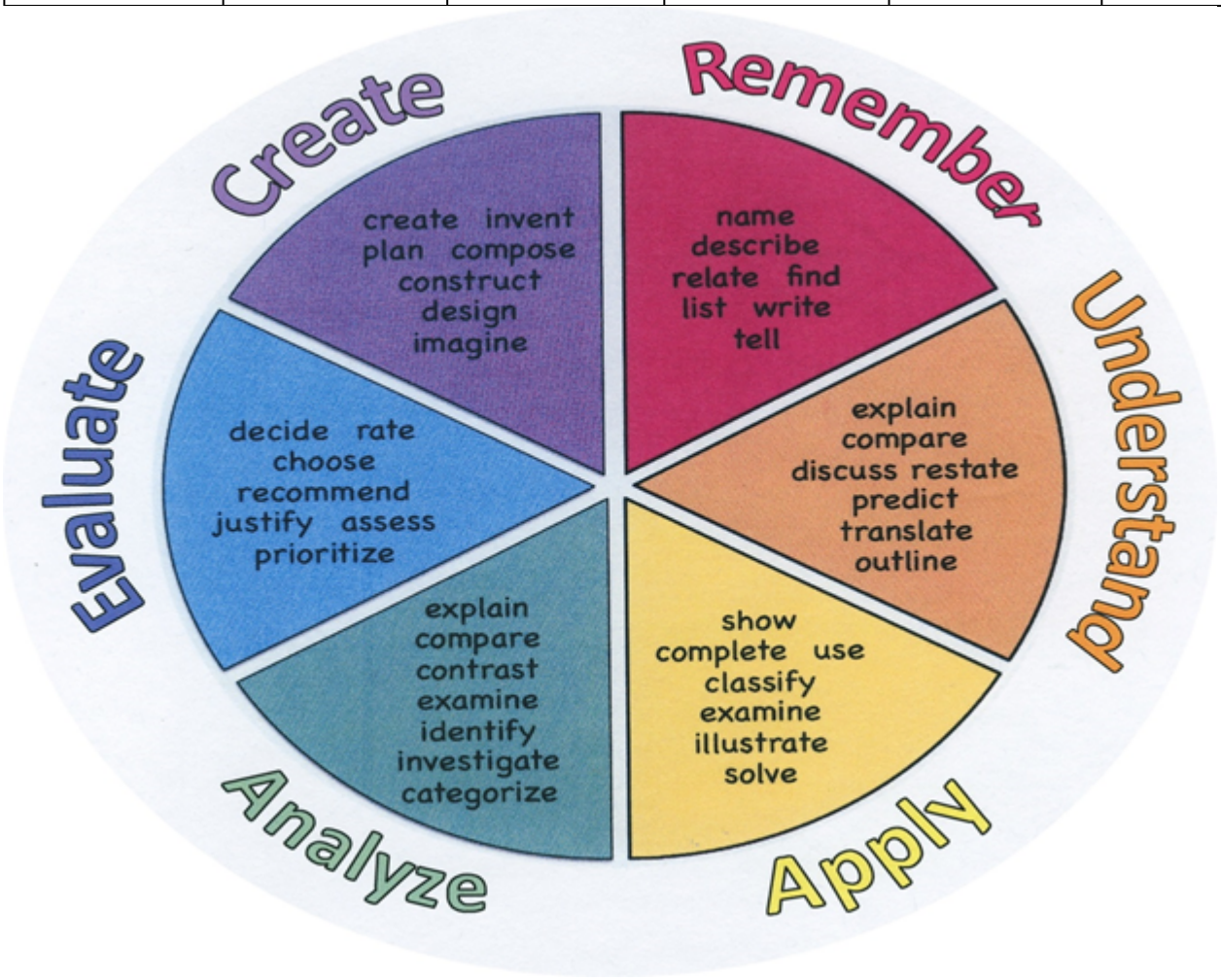
Learning Objectives

- Students will be able to use their learning of the scientific method to form conclusions on various experiments connected to the earth sciences.
- Students will be able to use their learning of ocean composition determine the differences of fresh, brackish and seawater.
- Students will be able to use their learning of ocean currents to identify that surface currents are the results of the Earth's rotation and deep ocean currents result from differences of salinity and temperate.
- Students will be able to use their learning of tides to infer that the differences in tidal heights is not just caused by the rotation of the earth but also the interactions of sun and moon
- Students will be able to use their learning to explore atmospheric conditions, as well as how humans affect weather and climate throughout their lives so that in the long run they will make smart decisions about their environment.
- Students will be able to use their learning of the atmosphere to create an analogous diagram depicting the structure of the atmosphere and the particular characteristics to explain how they impact weather and climate.
- Students will be able to use their learning of weather patterns to accurately predict the future weather for several day

Action Verbs: Below are examples of action verbs associated with each level of the Revised Bloom's Taxonomy.

Remember	Understand	Apply	Analyze	Evaluate	Create
Choose	Classify	Choose	Categorize	Appraise	Combine
Describe	Defend	Dramatize	Classify	Judge	Compose
Define	Demonstrate	Explain	Compare	Criticize	Construct
Label	Distinguish	Generalize	Differentiate	Defend	Design
List	Explain	Judge	Distinguish	Compare	Develop
Locate	Express	Organize	Identify	Assess	Formulate
Match	Extend	Paint	Infer	Conclude	Hypothesize
Memorize	Give Examples	Prepare	Point out	Contrast	Invent
Name	Illustrate	Produce	Select	Critique	Make
Omit	Indicate	Select	Subdivide	Determine	Originate
Recite	Interrelate	Show	Survey	Grade	Organize
Select	Interpret	Sketch	Arrange	Justify	Plan
State	Infer	Solve	Breakdown	Measure	Produce
Count	Match	Use	Combine	Rank	Role Play
Draw	Paraphrase	Add	Detect	Rate	Drive
Outline	Represent	Calculate	Diagram	Support	Devise

Point Quote Recall Recognize Repeat Reproduce	Restate Rewrite Select Show Summarize Tell Translate Associate Compute Convert Discuss Estimate Extrapolate Generalize Predict	Change Classify Complete Compute Discover Divide Examine Graph Interpolate Manipulate Modify Operate Subtract	Discriminate Illustrate Outline Point out Separate	Test	Generate Integrate Prescribe Propose Reconstruct Revise Rewrite Transform



Suggested Activities & Best Practices

Utilization of various **DefinedStem.com** projects which recognizes the different learning styles of the students. DefinedStem is both

problem and project-based learning.Content specific project:

- Rain Gardener
- Civil Engineering: Urban Heat Islands
- Actuary Hurricane relief

Utilization of **NEWSELA.com** that can be used for different leveled readers.

- Assign weekly informational text articles directly related to the lesson
- Complete reading comprehension activities on the assigned articles: quiz, power words, write

Assessment Evidence - Checking for Understanding (CFU)

Summative Module E Chapter Tests given in Google Classroom (Summative)

Periodic Vocabulary Quizzes (Summative)

Lab activities and Accompanying worksheets (Summative)

Defined Stem project (Alternate)

Why It Matters charts (KWL) (Formative)

Graphic Organizer (Formative)

BrainPop quizzes on videos covering Module E (Summative)

Newsela Article/Quiz covering Module E (Summative)

HMH Workbook Highlights & Questions (Formative)

Notebook Entries & Diagrams (Alternate)

Oncourse Assessment Tools (Formative)

"Do Now/Exit Ticket" Activity (Formative)

- Activities
- Admit Tickets
- Anticipation Guide
- Common Benchmarks
- Compare & Contrast
- Create a Multimedia Poster
- DBQ's
- Define
- Describe
- Evaluate
- Evaluation rubrics
- Exit Tickets
- Explaining
- Fist- to-Five or Thumb-Ometer
- Google Forms
- Illustration
- Journals
- Kahoot
- KWL Chart
- Learning Center
- Multimedia Reports
- Newspaper Headline
- Outline
- Plickers
- Question Stems
- Quickwrite
- Quizlet
- Quizzes Unit
- Red Light, Green Light
- review/Test prep
- Self- assessments
- Socratic Seminar
- Study Guide
- Surveys
- Teacher Observation Checklist
- Think, Pair, Share
- Think, Write, Pair, Share
- Top 10 List
- Unit tests

- Web-Based Assessments
- Written Reports

Primary Resources & Materials

- HMH workbook series: E and G and supplementary materials (lab kits)
- Internet resources
- 1:1 Google classroom platform: Docs, Sheet, Forms, Slides, Sites
- Video streaming: YouTube, BrainPOP

Ancillary Resources

- Outdoor area of school
- Chromebook/ 1:1 Google classroom platform

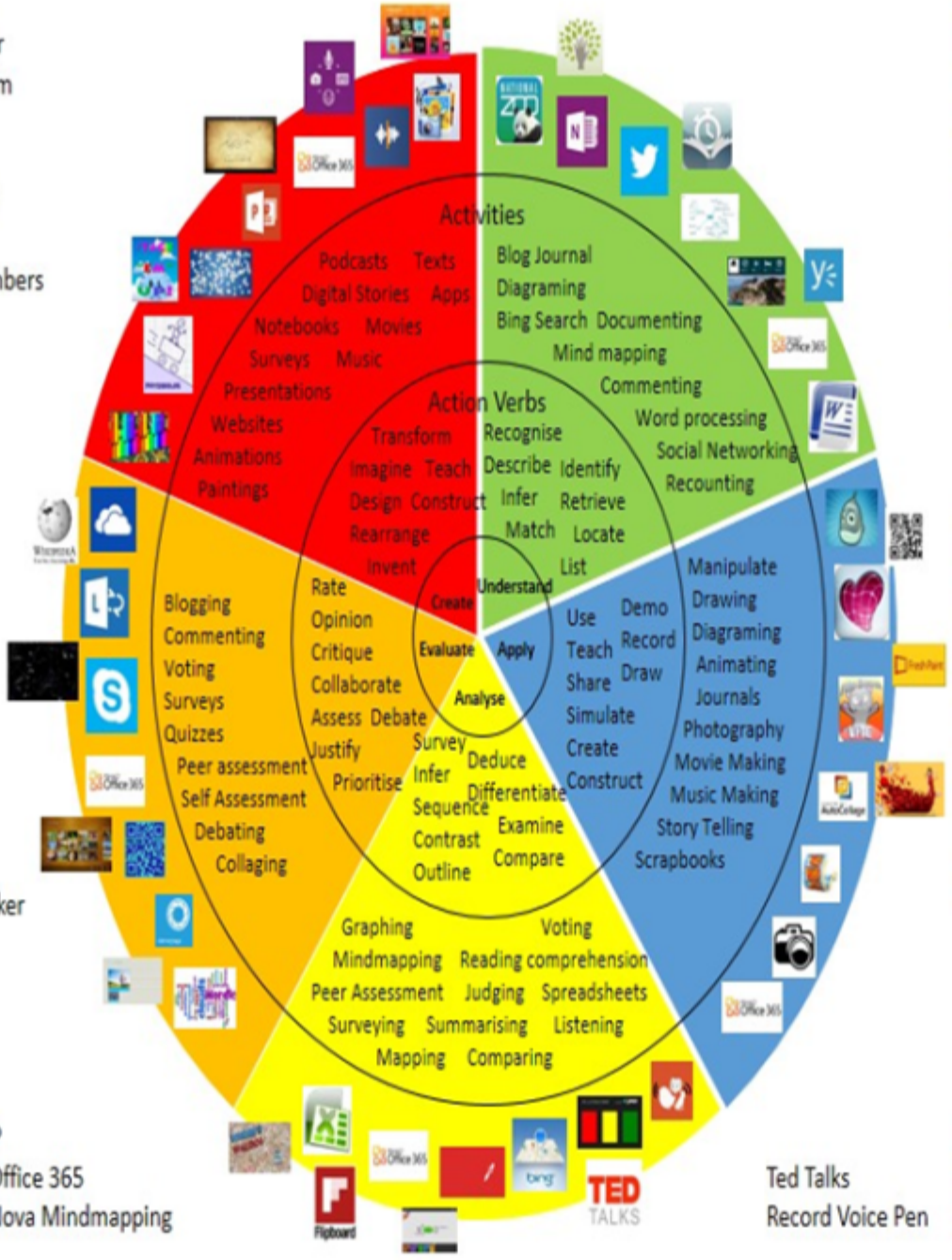
Technology Infusion

- Smart TV
- DefinedStem.com
- Document Camera
- Pod-casts video streams
- Discovery Education video streams
- YouTube video streams
- BrainPOP video streams
- Chromebooks
- Khan Academy
- Power Point presentation
- Flipgrid
- MS Word
- Google Applications: Classroom, Docs, Sheets, Slides, Forms, Sites

Win 8.1 Apps/Tools Pedagogy Wheel

Podcasts
Photostory 3
Kid Story Builder
Music Maker Jam
Paint A Story
Office 365
MS PowerPoint
Stack 'Em Up
NqSquared Numbers
Physamajig
Xylophone 8

Wikipedia
Skydrive
Lync
SkyMap
Skype
Office 365
Puzzle Touch
Easy QR
Memorylage
Life Moments
Word Cloud Maker



Where's Waldo?
MS Excel Office 365
Flipboard Nova Mindmapping

Ted Talks
Record Voice Pen

Originally taken from http://www.coetail.com/vzimmer/files/2013/02/iPadagogy-Wheel.001.jpg
And adapted for Windows 8.1 devices by Charlotte Beckhurst @CharBeckhurst

Alignment to 21st Century Skills & Technology

CRP.K-12.CRP2	Apply appropriate academic and technical skills.
CRP.K-12.CRP4	Communicate clearly and effectively and with reason.
CRP.K-12.CRP7	Employ valid and reliable research strategies.
CRP.K-12.CRP8	Utilize critical thinking to make sense of problems and persevere in solving them.
CAEP.9.2.8.B.3	Evaluate communication, collaboration, and leadership skills that can be developed through school, home, work, and extracurricular activities for use in a career.
CAEP.9.2.8.B.4	Evaluate how traditional and nontraditional careers have evolved regionally, nationally, and globally.
CAEP.9.2.8.B.6	Demonstrate understanding of the necessary preparation and legal requirements to enter the workforce.
CAEP.9.2.8.B.7	Evaluate the impact of online activities and social media on employer decisions.
TECH.8.1.8.A.2	Create a document (e.g., newsletter, reports, personalized learning plan, business letters or flyers) using one or more digital applications to be critiqued by professionals for usability.
TECH.8.1.8.A.4	Graph and calculate data within a spreadsheet and present a summary of the results.
TECH.8.1.8.B.1	Synthesize and publish information about a local or global issue or event (ex. telecollaborative project, blog, school web).
TECH.8.1.8.B.CS2	Create original works as a means of personal or group expression.
TECH.8.1.8.C.CS2	Communicate information and ideas to multiple audiences using a variety of media and formats.
TECH.8.1.8.C.CS4	Contribute to project teams to produce original works or solve problems.

21st Century Skills/Interdisciplinary Themes

- Communication and Collaboration
- Creativity and Innovation
- Critical thinking and Problem Solving
- ICT (Information, Communications and Technology) Literacy
- Information Literacy
- Life and Career Skills
- Media Literacy

21st Century Skills

CAEP.9.2.8.B.3	Evaluate communication, collaboration, and leadership skills that can be developed through school, home, work, and extracurricular activities for use in a career.
CAEP.9.2.8.B.4	Evaluate how traditional and nontraditional careers have evolved regionally, nationally, and globally.

CAEP.9.2.8.B.6	Demonstrate understanding of the necessary preparation and legal requirements to enter the workforce.
CAEP.9.2.8.B.7	Evaluate the impact of online activities and social media on employer decisions.

Differentiation

- Have students construct posters explaining the various weather patterns and cycles
- Have students hypothesis which sunscreen provides the best UV protection from the sun
- Have students jigsaw the following information: ocean currents, tides, and waves
- Have students construct an interactive notebook activity on the water cycle
- Have students construct an interactive notebook activity on global winds
- Have students graph the temperature, humidity, wind, precipitation, and air pressure of their local community for a month
- Have students construct a choropleth map to determine the frequency of tornadoes over a period of time
- HMH Module E - "Take It Further": for higher achieving students

1. Hydrologist
2. Snowflake Sizes and Patterns
3. People in Science
4. Exploring the Greenhouse Effect

Differentiations:

- Small group instruction
- Extra time to complete assignments
- Pairing oral instruction with visuals
- Repeat directions
- Use manipulatives
- Center-based instruction
- Study guides
- Teacher reads assessments allowed
- Rephrase written directions
- Multi-sensory approaches
- Additional time
- Highlight text

Lo-Prep Differentiations

- Exploration by interest
- Flexible grouping
- Goal setting with students
- Jigsaw
- Mini workshops to re-teach or extend skills
- Open-ended activities
- Think-Pair-Share

Hi-Prep Differentiations:

- Alternative formative and summative assessments
- Games and tournaments
- Group investigations
- Guided Reading

- Independent research and projects
- Interest groups
- Multiple texts
- Project-based learning
- Problem-based learning
- Stations/centers
- Think-Tac-Toes
- Tiered activities/assignments
- Tiered products

Special Education Learning (IEP's & 504's)

- additional time for skill mastery
- assistive technology
- behavior management plan
- Center-Based Instruction
- check work frequently for understanding
- computer or electronic device utilizes
- extended time on tests/ quizzes
- have student repeat directions to check for understanding
- highlighted text visual presentation
- modified assignment format
- modified test content
- modified test format
- modified test length
- multi-sensory presentation
- multiple test sessions
- preferential seating
- preview of content, concepts, and vocabulary
- printed copy of board work/notes provided
- Provide modifications as dictated in the student's IEP/504 plan
- reduced/shortened reading assignments
- Reduced/shortened written assignments
- secure attention before giving instruction/directions
- shortened assignments
- student working with an assigned partner
- teacher initiated weekly assignment sheet

- Use open book, study guides, test prototypes

English Language Learning (ELL)

- allowing products (projects, timelines, demonstrations, models, drawings, dioramas, poster boards, charts, graphs, slide shows, videos, etc.) to demonstrate student's learning;
- allowing students to correct errors (looking for understanding)
- allowing the use of note cards or open-book during testing
- decreasing the amount of workpresented or required
- having peers take notes or providing a copy of the teacher's notes
- modifying tests to reflect selected objectives
- providing study guides
- reducing or omitting lengthy outside reading assignments
- reducing the number of answer choices on a multiple choice test
- teaching key aspects of a topic. Eliminate nonessential information
- tutoring by peers
- using computer word processing spell check and grammar check features
- using true/false, matching, or fill in the blank tests in lieu of essay tests
- using videos, illustrations, pictures, and drawings to explain or clarif

At Risk

- allowing products (projects, timelines, demonstrations, models, drawings, dioramas, poster boards, charts, graphs, slide shows, videos, etc.) to demonstrate student's learning
- allowing students to correct errors (looking for understanding)
- allowing students to select from given choices
- allowing the use of note cards or open-book during testing
- collaborating (general education teacher and specialist) to modify vocabulary, omit or modify items to reflect objectives for the student, eliminate sections of the test, and determine how the grade will be determined prior to giving the test.
- decreasing the amount of workpresented or required
- having peers take notes or providing a copy of the teacher's notes
- marking students' correct and acceptable work, not the mistakes
- modifying tests to reflect selected objectives
- providing study guides
- reducing or omitting lengthy outside reading assignments
- reducing the number of answer choices on a multiple choice test

- teaching key aspects of a topic. Eliminate nonessential information
- tutoring by peers
- using authentic assessments with real-life problem-solving
- using true/false, matching, or fill in the blank tests in lieu of essay tests
- using videos, illustrations, pictures, and drawings to explain or clarify

Talented and Gifted Learning (T&G)

- Above grade level placement option for qualified students
- Advanced problem-solving
- Allow students to work at a faster pace
- Cluster grouping
- Complete activities aligned with above grade level text using Benchmark results
- Create a blog or social media page about their unit
- Create a plan to solve an issue presented in the class or in a text
- Debate issues with research to support arguments
- Flexible skill grouping within a class or across grade level for rigor
- Higher order, critical & creative thinking skills, and discovery
- Multi-disciplinary unit and/or project
- Teacher-selected instructional strategies that are focused to provide challenge, engagement, and growth opportunities
- Utilize exploratory connections to higher-grade concepts
- Utilize project-based learning for greater depth of knowledge

Sample Lesson

Unit Name: HMH Earth's Water and Atmosphere (Module E)

NJSLS: See Link

Interdisciplinary Connection: See Link

Statement of Objective: Students will create a desalination apparatus after reading an accompanying article from **NEWSELA** entitled **"California tries one solution to water problems — treating seawater"**

Anticipatory Set/Do Now: Students will read a NEWSELA article directly related to the lesson topic and complete the activities associated with it

Learning Activity:

1 - Class discussion on article and questions
2 - Class to be divided into groups (optional grouping by grade, reading level, heterogenous etc)

3 - Student pairs will be given a tin container, saran wrap, cup (dixie), pebble, coffee filter, and a beaker.

4- Students will demonstrate the process of desalination by creating 2 classroom models.

1st pair will demonstrate the distillation based method

2nd pair will demonstrate the reverse osmosis method. Each will assemble their models using items on the materials list

5- Students will create an illustration depicting how water and salt travels in both desalination processes (distillation & reverse osmosis).

Student Assessment/CFU's: See Link - As an exit ticket- all students will explain the following questions:

- What is the purpose of a desalination apparatus?
- What purpose does the saran wrap serve in the desalination apparatus?
- What purpose does the pebble serve?

Materials:

1. Chromebooks
2. NEWSELA article
3. Aluminum tray
4. Saran wrap
5. Cup (dixie)
6. Pebble
7. Coffee filter
8. Beaker

21st Century Themes and Skills: See Link

Differentiation: See Link (Groups determined according to interest with at least one proactive student within each group to take initiative and try to construct the desalination apparatus.)

Intergration of Technology: Teacher laptop, Smart TV, Chromebook, NEWSELA, Google Classroom

SCI.MS-ESS2-6	Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates.
SCI.MS-ESS3-2	Analyze and interpret data on natural hazards to forecast future catastrophic events and

	inform the development of technologies to mitigate their effects.
SCI.MS-ESS3-5	Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.
SCI.MS-ESS2-5	Collect data to provide evidence for how the motions and complex interactions of air masses result in changes in weather conditions.