Unit 4: Earth's Surface (Earth's Systems)

Content Area: **Science**
Course(s): **Science Gr 2**
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Title Section

Department of Curriculum and Instruction

Belleville Public Schools

Curriculum Guide

Science: Grade 2

Unit 4: Earth's Surface

Belleville Board of Education

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Unit Overview

In this unit, students will:

- gather information to identify where water is located on Earth.
- develop maps to represent locations of land and water on Earth.

Lesson 1 Overview:

- Gather information to identify that water is found in ponds, lakes, rivers, and oceans on Earth

Lesson 2 Overview:

- Develop a map to identify where land and water are located.

Enduring Understanding

Lesson 1

- **Enduring Understanding**: By gathering information, identify that water is found in ponds, rivers, lakes, and oceans on Earth.
- **Essential Question**: Where is water found on Earth?

Lesson 2

- **Enduring Understanding:** Creating and reading a map can identify where land and water are located on Earth.
- **Essential Question:** How can we map land and water?

Essential Questions

Unit 4 Essential Questions:

- Where is water found on Earth?
- What are the various types of bodies of water?
- How can we map land and water?
- Why are maps useful?

Exit Skills

By the end of Grade 2, Science Unit 4, the student should be able to:

- Read a map to identify land, water, and patterns.
- Use a map key to identify land and water features.
- Create a map, utilizing a key and compass rose.
- Make comparisons of ponds, lakes, rivers, and oceans.
- Gather information to compare water found on Earth.

New Jersey Student Learning Standards (NJSLS-S) & NGSS

SEP - Obtaining, Evaluating, and Communicating Information

SEP - Developing and Using Models

DCI - Plate Tectonics and Large-Scale System Interactions

DCI - The Roles of Water in Earth's Surface Processes

CCC - Patterns

NextGen Science Standards

2-ESS2-3	Obtain information to identify where water is found on Earth and that it can be solid or liquid.
2-ESS2-2.2	Developing and Using Models

Interdisciplinary Connections

Do the Math! pp. 192, 212

MA.2.NBT.A.3	Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.
MA.2.NBT.A.4	Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons.
MA.2.MD.B.5	Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.
MA.2.MD.D.10	Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put together, take-apart, and compare problems using information presented in a bar graph.
LA.W.2.8	Recall information from experiences or gather information from provided sources to answer a question.

Learning Objectives

Unit 4 Learning Objectives:

- SWBAT: Gather information to identify that water is found in ponds, lakes, rivers, and oceans on Earth.
- SWBAT: Develop a map to identify where land and water are located.

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	Restate	Change	Discriminate	Test	Generate

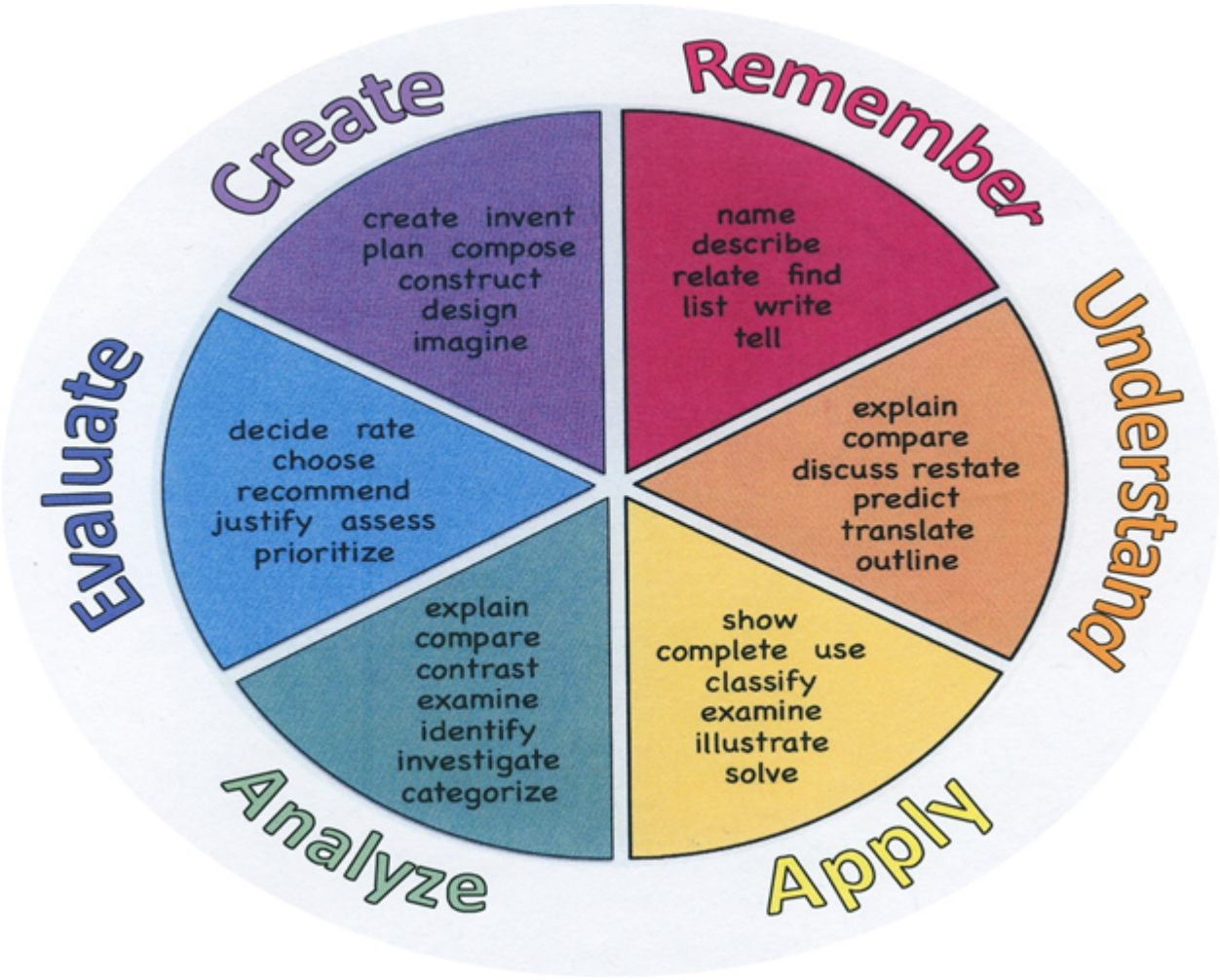
Quote
Recall
Recognize
Repeat
Reproduce

Rewrite
Select
Show
Summarize
Tell
Translate
Associate
Compute
Convert
Discuss
Estimate
Extrapolate
Generalize
Predict

Classify
Complete
Compute
Discover
Divide
Examine
Graph
Interpolate
Manipulate
Modify
Operate
Subtract

Illustrate
Outline
Point out
Separate

Integrate
Prescribe
Propose
Reconstruct
Revise
Rewrite
Transform



Suggested Activities & Best Practices

- Vocabulary Game- Guess the Word

- Unit Project- Explore Ocean Water
- Performance Task - Map and Island
- Student collaboration to build on prior knowledge
- Engineer it activity

Assessment Evidence - Checking for Understanding (CFU)

- Compare & Contrast
- Describe
- HMH End-of-Year Test (Benchmark)
- HMH Mid-Year Test (Benchmark)
- HMH Performance-based Assessment (Alternative)
- Illustration
- Quizzes (Formative)
- Think, Pair, Share
- Unit tests (Summative)

Primary Resources & Materials

HMH Science Dimensions: Teacher Edition, Student workbooks, online resources

HMH Equipment & Safety Kits

HMH Science Dimensions S&E Leveled Readers

- On Level: Why Are Resources Important?
- Extra Support: Why Are Resources Important?
- Enrichment: All About Rocks

Ancillary Resources

Additional Resources:

- online resources to provide further information to students

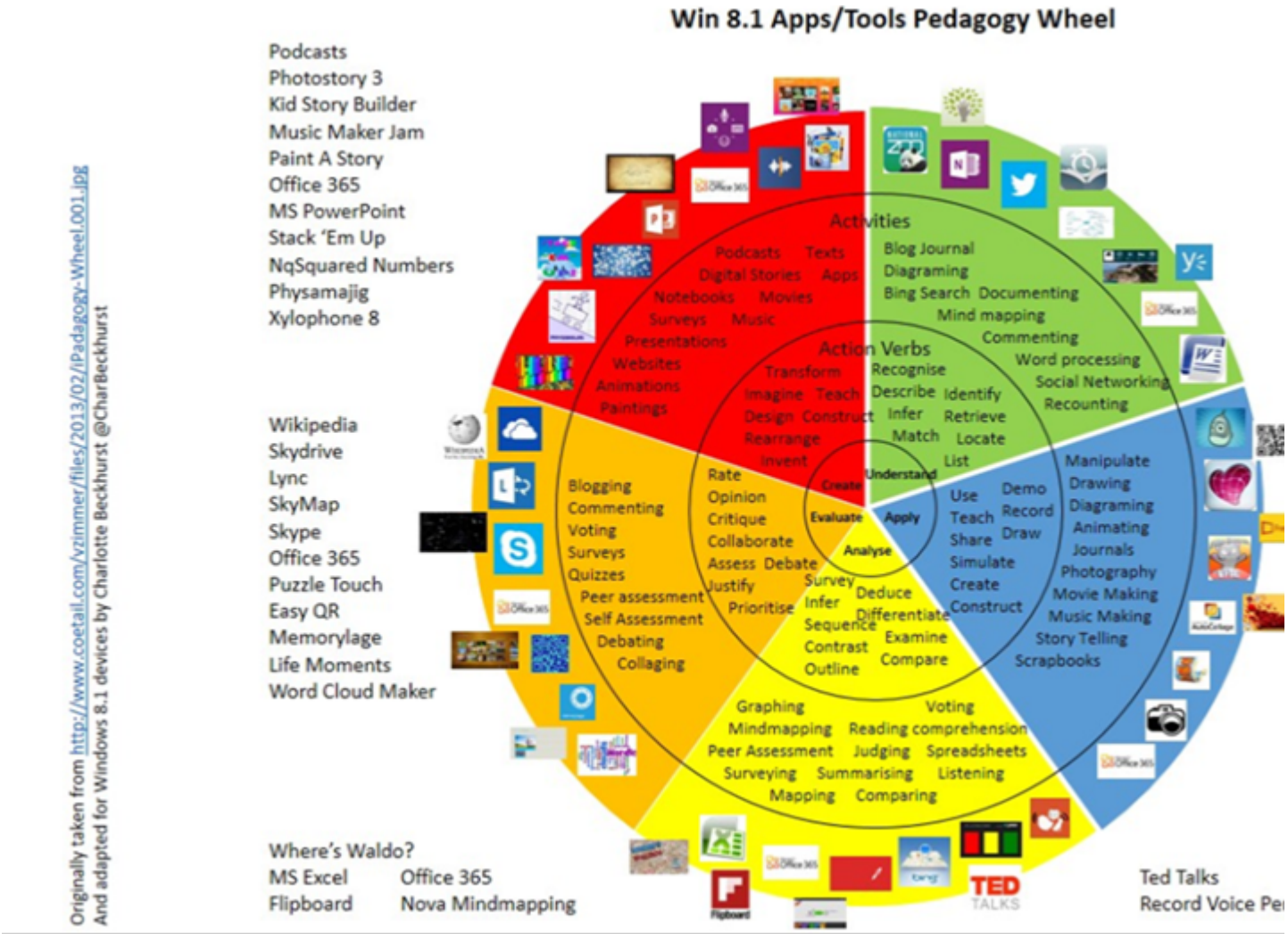
1. mysteryscience.com
2. superteacher.com
3. using a map and compass rose - nationalgeographic.com - https://www.nationalgeographic.org/activity/cardinal-directions-and-maps/
4. The Changing Earth Journal - https://www.sausd.us/cms/lib/CA01000471/Centricity/Domain/105/Changing%20Earth%20Learning%20Journalfinal.pdf

- vocabulary cards
- word wall
- posters and anchor charts

Technology Infusion

Technology available:

- SMART Technology
- Online Websites (youtube, Teachertube, discoveryed)
- Computer Access (i.e., use Google classroom to have students answer a question as an exit ticket or to share a slide show presentation about the subject)
- Online activities and assessments (listed above)



Alignment to 21st Century Skills & Technology

Mastery and infusion of **21st Century Skills & Technology** and their Alignment to the core content areas is essential to student learning. The core content areas include:

- English Language Arts;
- Mathematics;
- Science and Scientific Inquiry (Next Generation);
- Social Studies, including American History, World History, Geography, Government and Civics, and Economics;
- World languages;
- Technology;
- Visual and Performing Arts.

CRP.K-12.CRP5	Consider the environmental, social and economic impacts of decisions.
CRP.K-12.CRP6	Demonstrate creativity and innovation.
CAEP.9.2.4.A.4	Explain why knowledge and skills acquired in the elementary grades lay the foundation for future academic and career success.
TECH.8.1.2.B	Creativity and Innovation: Students demonstrate creative thinking, construct knowledge and develop innovative products and process using technology.
TECH.8.2.2.C	Design: The design process is a systematic approach to solving 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

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

Differentiation

- Have students label a compass rose and map key/legend OR have them draw and label their own compass rose and create their own map key/legend.

- Use different organizers for comparing and contrasting ponds, lakes, rivers, and oceans. Maybe for some students they will only be comparing two or three different bodies or water, instead of four.

Differentiations:

- Small group instruction
- Small group assignments
- Extra time to complete assignments
- Pairing oral instruction with visuals
- Repeat directions
- Use manipulatives
- Center-based instruction
- Token economy
- Study guides
- Teacher reads assessments allowed
- Scheduled breaks
- Rephrase written directions
- Multisensory approaches
- Additional time
- Preview vocabulary
- Preview content & concepts
- Story guides
- Behavior management plan
- Highlight text
- Student(s) work with assigned partner
- Visual presentation
- Assistive technology
- Auditory presentations
- Large print edition
- Dictation to scribe
- Small group setting

Hi-Prep Differentiations:

- Alternative formative and summative assessments
- Choice boards
- Games and tournaments
- Group investigations
- Guided Reading
- Independent research and projects
- Interest groups
- Learning contracts
- Leveled rubrics
- Literature circles
- Multiple intelligence options
- Multiple texts
- Personal agendas
- Project-based learning

- Problem-based learning
- Stations/centers
- Think-Tac-Toes
- Tiered activities/assignments
- Tiered products
- Varying organizers for instructions

Lo-Prep Differentiations

- Choice of books or activities
- Cubing activities
- Exploration by interest
- Flexible grouping
- Goal setting with students
- Jigsaw
- Mini workshops to re-teach or extend skills
- Open-ended activities
- Think-Pair-Share
- Reading buddies
- Varied journal prompts
- Varied supplemental materials

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

- When students are making a map, determine who might benefit from being provided with a map of the classroom with windows and door already marked to get them started or giving them a key to work with instead of requiring that they make their own from scratch.

- Students work with an assigned partner to work on a map together of someplace they are both familiar with - the classroom, the cafeteria, school playground, local park)

- additional time for skill mastery
- assistive technology
- behavior management plan
- center-based instruction
- check work frequently for understanding
- computer of electronic device utilized
- 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
- provide modificationsas dictated in the student's IEP/504 plan
- reduced/shortened reading 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)

- Have students label their map in their native language and then translate to English.

- Label the points on a compass rose using a word bank.

- using videos, illustrations, pictures, and drawings to explain or clarif
- 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 work presented 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

At Risk

- Give students a local map and have them show me and explain how they would walk home from school.

- allowing students to correct errors (looking for understanding)
- allowing products (projects, timelines, demonstrations, models, drawings, dioramas, poster boards, charts, graphs, slide shows, videos, etc.) to demonstrate student's learning
- 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 or work presented or required
- having peers take notes or providing a copy of the teacher's notes
- marking student's 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)

- Make a treasure map and "plant" a prize (buried treasure in the form of erasers, pencils, a homework pass, or other) which other students will win if they can read the map and follow the path laid out on the map.

- 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