Unit 3: Space Science (Module H) - Earth and Space Science

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Department of Curriculum and Instruction

Belleville Public Schools

Curriculum Guide

Earth Science Honors, Grade 7

HMH Space Science (Module H)

Belleville Board of Education

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Unit Overview

Patterns in the Solar System

- The Earth-Sun-Moon System
- Seasons

ESS1.B: Earth and the Solar System

- The solar system consists of the sun and a collection of objects, including planets, their moons, and asteroids that are held in orbit around the sun by its gravitational pull on them. (MS-ESS1-2),(MSESS1-3)
- This model of the solar system can explain eclipses of the sun and the moon. Earth's spin axis is fixed in direction over the short-term but tilted relative to its orbit around the sun. The seasons are a result of that tilt and are caused by the differential intensity of sunlight on different areas of Earth across the year. (MS-ESS1-1)

The Solar System and Universe

- Formation of the Solar System
- Earth and the Solar System
- Earth's Place in the Solar System
- Gravity in the Universe

ESS1.A: The Universe and Its Stars

- Patterns of the apparent motion of the sun, the moon, and stars in the sky can be observed, described, predicted, and explained with models. (MS-ESS1-1)
- Earth and its solar system are part of the Milky Way galaxy, which is one of many galaxies in the universe. (MS-ESS1-2)

ESS1.B: Earth and the Solar System

- The solar system consists of the sun and a collection of objects, including planets, their moons, and asteroids that are held in orbit around the sun by its gravitational pull on them. (MS-ESS1-2),(MSESS1-3)
- This model of the solar system can explain eclipses of the sun and the moon. Earth's spin axis is fixed in direction over the short-term but tilted relative to its orbit around the sun.
- The solar system appears to have formed from a disk of dust and gas, drawn together by gravity. (MS-ESS1-2)

ESS1.C: The History of Planet Earth

- The geologic time scale interpreted from rock strata provides a way to organize Earth's history. Analyses of rock strata and the fossil record provide only relative dates, not an absolute scale. (MS-ESS1- 4)

Space and Human Activities

- The Space Race
- Objects from space that impact Earth

ETS1.A: Defining and Delimiting Engineering Problems

The more precisely a design task's criteria and constraints can be defined, the more likely it is that the designed solution will be successful. Specification of constraints includes consideration of scientific principles and other relevant knowledge that are likely to limit possible solutions. (MS-ETS1-1)

ETS1.B: Developing Possible Solutions

- A solution needs to be tested, and then modified on the basis of the test results, in order to improve it. (MS-ETS1-4)
- There are systematic processes for evaluating solutions with respect to how well they meet the criteria and constraints of a problem. (MS-ETS1-2), (MS-ETS1-3) Sometimes parts of different solutions can be combined to create a solution that is better than any of its predecessors. (MS-ETS1-3)
- Models of all kinds are important for testing solutions. (MS-ETS1-4)

ETS1.C: Optimizing the Design Solution

- Although one design may not perform the best across all tests, identifying the characteristics of the design that performed the best in each test can provide useful information for the redesign process—that is, some of those characteristics may be incorporated into the new design. (MS-ETS1-3)
- The iterative process of testing the most promising solutions and modifying what is proposed on the basis of the test results leads to greater refinement and ultimately to an optimal solution. (MSETS1-4)
- Objects that impact Earth

ESS1.B: Earth and the Solar System

- The solar system consists of the sun and a collection of objects, including planets, their moons, and asteroids that are held in orbit around the sun by its gravitational pull on them. (MS-ESS1-2),(MSESS1-3)

Enduring Understanding

- Earth not only rotates on its axis, but it also orbits around the sun
- The moon rotates on its own axis while orbiting around Earth, takes about 27 days
- Both Earth and Moon revolve around a barycenter, the center of mass between two objects
- The consequences of the interactions between the objects in this system are significant
- Earth's rotation, which takes 24 hours to complete, causes day and night as one half of the earth is always facing either toward (day) or away (night) from the sun
- The orbit around the sun, as well as, earth's tilt causes seasons
- The moon stabilizes the earth's rotation
- The most widely accepted explanation of how our solar system was formed is the solar nebula theory
- The basis of this theory is that the solar system was formed approximately 5 billion years ago from a solar nebula that collapsed on itself and formed the sun at its center
- The sun's gravitational pull kept the left over atoms in its orbit; these accumulated until they formed planets
- Over time, the geocentric (earth is the center of the universe) view of the universe evolved to heliocentric (sun is the center of the solar system)
- Earth and its solar system are part of the Milky Way galaxy, which itself is one of many galaxies in the universe
- Gravity is a force of attraction that affects all matter in the universe and causes orbiting masses to move along an elliptical path
- The impacts of space debris on Earth and its lasting effects
- Human's place in the universe

Essential Questions

- What causes seasons?
- Why does the moon's shape and brightness appear to change?
- What causes eclipses?
- What is the relationship between ocean tides and the moon
- How is a new moon the same as or different from a total lunar eclipse?
- How does the sun affect weather and climate?
- How does the Earth-Sun-Moon system affect life on earth?
- How is earth similar to and different from other objects in space?
- What evidence do scientists use to study and understand the Universe?
- What makes up the universe?
- How did the solar system form?
- How can the universe be described as a system?
- What role does gravity play in Earth's place in the universe?
- How do astronomers classify objects from space that impact planets?
- What are the benefits of human space travel?

Exit Skills

By the end of module H, students should be able to:

- Recognize patterns in order to better understand the cause and effect relationships within the Earth-Sun-Moon system
- Describe the patterns of lunar phases, eclipses of the sun and moon
- Identify the four seasons and their characteristics and formulate ideas as to why they vary
- Compare the motions of earth to the apparent motion of the stars in the sky
- Explain why different stars can be observed throughout the year
- Explain the arrangement of objects in the solar system
- Describe how the solar system was formed
- Distinguish the differences between geocentric and heliocentric models of the solar system
- Recognize the spatial relationships between objects in the solar system
- Identify where earth fits into the Milky Way galaxy and the entire universe
- Explain how the attractive force of gravity accounts for the motions of Earth and other objects in the universe and to explain how gravity affects motion of objects on earth
- Compare impact sites by size and explain that size determines the amount of damged incurred (extinction)
- Explain how space technology spin-offs have benefited humans in the past, present, and future

New Jersey Student Learning Standards (NJSLS-S)

NextGen Science Standards

6-8.MS-ESS1	Earth's Place in the Universe
6-8.MS-ESS1-3	Analyze and interpret data to determine scale properties of objects in the solar system.
6-8.MS-ESS1-2	Develop and use a model to describe the role of gravity in the motions within galaxies and the solar system.
6-8.MS-ESS1-1	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.

6-8.MS-ESS1-4	Construct a scientific explanation based on evidence from rock strata for how the geologic time scale is used to organize Earth's 4.6-billion-year-old history.
6-8.MS-ESS1-1.1.1	Patterns can be used to identify cause-and- effect relationships.
6-8.MS-ESS1-1.2	Developing and Using Models
6-8.MS-ESS1-3.3	Scale, Proportion, and Quantity
6-8.MS-ESS1-4.3.1	students observe time, space, and energy phenomena at various scales using models to study systems that are too large or too small. They understand phenomena observed at one scale may not be observable at another scale, and the function of natural and designed systems may change with scale. They use proportional relationships (e.g., speed as the ratio of distance traveled to time taken) to gather information about the magnitude of properties and processes. They represent scientific relationships through the use of algebraic expressions and equations.
6-8.MS-ESS1-3.3.1	students observe time, space, and energy phenomena at various scales using models to study systems that are too large or too small. They understand phenomena observed at one scale may not be observable at another scale, and the function of natural and designed systems may change with scale. They use proportional relationships (e.g., speed as the ratio of distance traveled to time taken) to gather information about the magnitude of properties and processes. They represent scientific relationships through the use of algebraic expressions and equations.
6-8.MS-ESS1-2.4	Systems and system models.
6-8.MS-ESS1-3.4	Analyzing and Interpreting Data
6-8.MS-ESS1-3.4.1	Analyze and interpret data to determine similarities and differences in findings.
6-8.MS-ESS1-2.4.1	Models can be used to represent systems and their interactions.
6-8.MS-ESS1-4.6	Constructing explanations and designing solutions in 6– 8 builds on K–5 experiences and progresses to include constructing explanations and designing solutions supported by multiple sources of evidence consistent with scientific ideas, principles, and theories.
6-8.MS-ESS1-4.6.1	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-ESS1-2.ESS1.A	The Universe and Its Stars
6-8.MS-ESS1-1.ESS1.A	The Universe and Its Stars
6-8.MS-ESS1-2.ESS1.A.1	Earth and its solar system are part of the Milky Way galaxy, which is one of many galaxies in the universe.
6-8.MS-ESS1-1.ESS1.A.1	Patterns of the apparent motion of the sun, the moon, and stars in the sky can be observed, described, predicted, and explained with models.
6-8.MS-ESS1-1.ESS1.B	Earth and the Solar System
6-8.MS-ESS1-2.ESS1.B	Earth and the Solar System
6-8.MS-ESS1-3.ESS1.B.1	The solar system consists of the sun and a collection of objects, including planets, their moons, and asteroids that are held in orbit around the sun by its gravitational pull on them.
6-8.MS-ESS1-1.ESS1.B.1	This model of the solar system can explain eclipses of the sun and the moon. Earth's spin axis is fixed in direction over the short-term but tilted relative to its orbit around the sun. The seasons are a result of that tilt and are caused by the differential intensity of sunlight on different areas of Earth across the year.
6-8.MS-ESS1-2.ESS1.B.1	The solar system appears to have formed from a disk of dust and gas, drawn together by gravity.
6-8.MS-ESS1-4.ESS1.C.1	The geologic time scale interpreted from rock strata provides a way to organize Earth's

history. Analyses of rock strata and the fossil record provide only relative dates, not an absolute scale.

Interdisciplinary Connections

LA.RST.6-8.1	Cite specific textual evidence to support analysis of science and technical texts.
LA.RST.6-8.3	Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.
LA.RST.6-8.7	Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
MA.7.7.2	Students develop a unified understanding of number, recognizing fractions, decimals (that have a finite or a repeating decimal representation), and percents as different representations of rational numbers. Students extend addition, subtraction, multiplication, and division to all rational numbers, maintaining the properties of operations and the relationships between addition and subtraction, and multiplication and division. By applying these properties, and by viewing negative numbers in terms of everyday contexts (e.g., amounts owed or temperatures below zero), students explain and interpret the rules for adding, subtracting, multiplying, and dividing with negative numbers. They use the arithmetic of rational numbers as they formulate expressions and equations in one variable and use these equations to solve problems.
MA.7.7.3	Students continue their work with area from Grade 6, solving problems involving the area and circumference of a circle and surface area of three-dimensional objects. In preparation for work on congruence and similarity in Grade 8 they reason about relationships among two-dimensional figures using scale drawings and informal geometric constructions, and they gain familiarity with the relationships between angles formed by intersecting lines. Students work with three-dimensional figures, relating them to two-dimensional figures by examining cross-sections. They solve real-world and mathematical problems involving area, surface area, and volume of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes and right prisms.
MA.7.7.4	Students build on their previous work with single data distributions to compare two data distributions and address questions about differences between populations. They begin informal work with random sampling to generate data sets and learn about the importance of representative samples for drawing inferences.
SOC.6.1.8.B	Geography, People, and the Environment
SOC.6.3.8	Active Citizenship in the 21st Century: All students will acquire the skills needed to be active, informed citizens who value diversity and promote cultural understanding by working collaboratively to address the challenges that are inherent in living in an interconnected world.

Learning Objectives

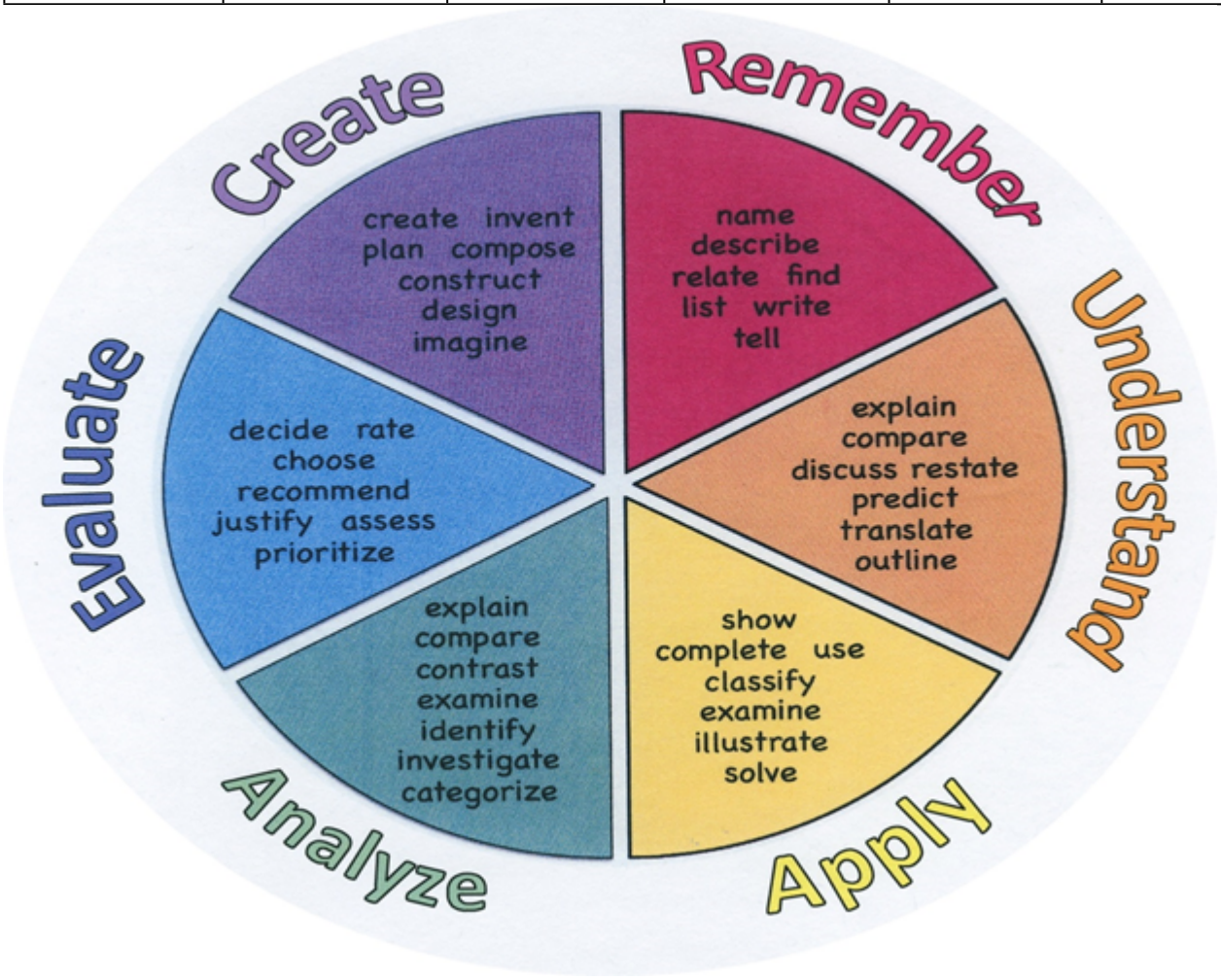
- Students will be able to explore patterns in order to better understand the causes and effect relationships within the Earth-

sun-moon system.

- Students will be able to develop and use models to describe patterns of the apparent motion of objects in this system and to explain eclipses of the sun and the moon.
- Students will be able to relate the motions of Earth to the apparent motion of the stars in the sky to explain why different stars can be observed throughout the year.
- Students will be able to construct the arrangement of objects in the solar system and understand the vast distances and periods of time related to the solar system.
- Students will be able to compare the geocentric and heliocentric models of the solar system.
- Students will be able to create a scale model of the solar system, which helps to understands spatial relationships between objects in the solar system.
- Students will be able to conclude that Earth fits into the Milky Way Galaxy.
- Students will be able to investigate how the attractive forces of gravity accounts for the motions of Earth and other objects in the Universe and to explain how gravity affects motion of objects on Earth.

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

	Generalize Predict				



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:

- Aircraft Designer
- Industrial Aerospace Designer
- Mars Transportation Consultant: Creating a Spaceport
- NASA Engineering Consultant: Crew Vehicle

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

Utilization of **Google Applications**:

- Create line, bar, and/or circle graphs representing the sunrise & sunset
- Create line, bar, and/or circle graphs representing the atmospheric gases of the planets of the solar system

Assessment Evidence - Checking for Understanding (CFU)

Summative Module H 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 H (Summative)

Newsela Article/Quiz covering Module H (Summative)

HMH Workbook Highlights & Questions (Formative)

Notebook Entries & Diagrams (Alternate)

Oncourse Assessment Tools (Formative)

"Do Now/Exit Ticket" Activity (Formative)

- 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
- Illustration
- Journals
- KWL Chart
- Learning Center Activities
- Multimedia Reports
- Newspaper Headline
- Outline
- Question Stems
- Quickwrite
- Quizzes
- Red Light, Green Light
- Self- assessments
- Socratic Seminar
- Study Guide
- Surveys
- Teacher Observation Checklist
- Think, Pair, Share
- Think, Write, Pair, Share
- Top 10 List
- Unit review/Test prep
- Unit tests
- Web-Based Assessments
- Written Reports

Primary Resources & Materials

- HMH workbook series: H and G and supplementary materials (lab kits)
- Internet resources

- 1:1 Google classroom platform: Docs, Sheet, Forms, Slides, Sites
- Video streaming: YouTube, BrainPOP, etc.

Ancillary Resources

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

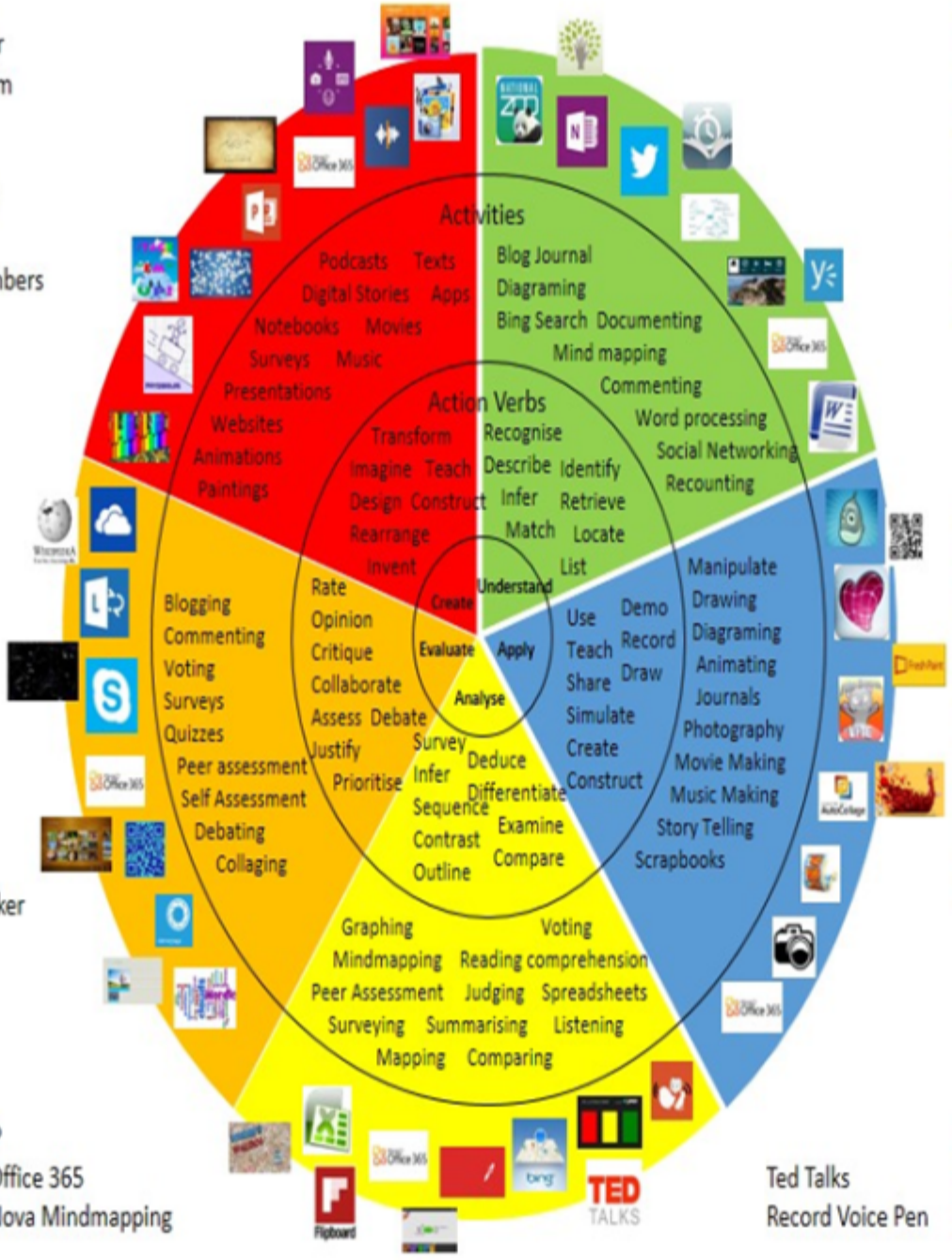
Technology Infusion

- Smart TV
- DefinedStem.com
- Pod-casts video streams
- Discovery Education video streams
- YouTube video streams
- Brain-pop video streams
- Laptops
- Khan Academy
- Power Point presentation
- Flipgrid
- MS Word
- Goggle 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

Mastery of key subjects and 21st century themes is essential for all students in the 21st century. Key subjects include:

- English Language Arts
- Reading
- World Languages
- Arts
- Mathematics
- Economics
- Science
- Geography
- History
- Government and Civics
- 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.
CRP.K-12.CRP11	Use technology to enhance productivity.
CAEP.9.2.8.B.1	Research careers within the 16 Career Clusters ® and determine attributes of career success.
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.
TECH.8.1.8.A	Technology Operations and Concepts: Students demonstrate a sound understanding of technology concepts, systems and operations.
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.CS1	Understand and use technology systems.
TECH.8.1.8.A.CS2	Select and use applications effectively and productively.
TECH.8.1.8.B	Creativity and Innovation: Students demonstrate creative thinking, construct knowledge and develop innovative products and process using technology.
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.D.4	Assess the credibility and accuracy of digital content.
TECH.8.1.8.E.CS1	Plan strategies to guide inquiry.
TECH.8.1.8.E.CS2	Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media.
TECH.8.1.8.E.CS3	Evaluate and select information sources and digital tools based on the appropriateness for specific tasks.

21st Century Skills/Interdisciplinary Themes

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

- 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

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

Differentiation

HMH Module H - "Take it Further" informational text readings:

1. Land of the Midnight Sun
2. Exploring Ways Organisms Adjust to the Seasons
3. Structure of Other Star Systems
4. Engineering it: Reflecting and Refracting Telescopes
5. The Kepler Project
6. Other Galaxies

Hands-On Activities:

- Have students use an online lunar eclipse calculator to determine when in the next century a total lunar and solar eclipse will be visible in their area
- Have students take pictures of the moon at the same angle at the same time every night outside to observe the moon phases
- Have students have develop an interactive game that allows players to search for and identify objects in the solar system
- Have students create Venn diagram to compare and contrast Aristotle's geocentric model with Ptolemy's model
- Have students complete a timeline of humans in space from its initial start to the current day

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)

- printed copy of board work/notes provided
- 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
- 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)

- teaching key aspects of a topic. Eliminate nonessential information
- 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 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
- 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

- allowing students to correct errors (looking for understanding)
- teaching key aspects of a topic. Eliminate nonessential information
- 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 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
- 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: *The Formation of the Solar System*

NJSLS: See Link

Interdisciplinary Connection: See Link

Statement of Objective:

Via DefinedStem.com, SWBAT design and consult on a proposed first Martian spaceport.

Anticipatory Set/Do Now:

View the career video on building spaceports & respond to the guided questions via Google Docs

Learning Activity:

Student groups will brainstorm ideas and further analyze and decide which one of five products they will complete:

- *Commercial*
- *Artist Rendering*
- *Drawing or Model*
- *Photostory*
- *Research Proposal*

Student Assessment/CFU's: *Completed product*

Materials:

- *1:1 Chromebooks*
- *Google Applications: docs, slides, sites*
- *Access to DefineStem website*

21st Century Themes and Skills: See Link

Differentiation/Modifications:

- *Small group instruction*
- *Repeat directions*

- *Highlighted text*
- *Students work with assigned partner*
- *Visual presentation*
- *View Spanish version*

Integration of Technology:

- *Smart TV*
- *Chromebooks*
- *Access to assigned website*

Full Task Plan: https://images.definedstem.com/PDF/performance-task-guide.pdf