

CURRICULUM GUIDE

SUBJECT: STEM

GRADE: 7TH/8TH GRADETIMELINE: 2ND Quarter

Standard	Kid Friendly Learning Objectives	Content (subject or topic covered in zSpace)	DOK Level	Skills (ability, practice, aptitude that will be learned)	Assessment	Academic Vocabulary
6.E2U1.7 Use ratios and proportions to analyze and interpret data related to scale, properties, and relationships among objects in our solar system.	The SWBAT make observations and compare the planets.	zSpace Studio: “Collection: Planets”	2	Use zSpace Studio to explore the planets to record the measurements, observations, and ask questions.	Collection Worksheet	Earth Jupiter Mars Mercury Neptune Saturn Uranus Venus
	The SWBAT analyze and interpret data to determine scale properties of objects in the solar system.	zSpace Studio: “Comparing Objects in our Solar System”	2	Use zSpace to dissect and calculate the measurements of the different parts of the solar system.	Comparing Objects in our Solar System Question Text Worksheet	Celestial body Composition Diameter Jovian Relative size Structure Surface feature Terrestrial
	The SWBAT demonstrate their learning on: - New vocabulary terms - Aerospace exploration of one of the planets in our solar system - Aerospace exploration provided by the Hubble Telescope.	zSpace Studio: “Comparing Objects in our Solar System” – Differentiation – Supports for All Learners	3	Materials and learning styles may include creating charts/graphs, PowerPoint, making 3D presentations, creating videos/movies, blogging, making posters, skits, creating a board game	Completed Project	
6.E2U1.8 Develop and use models to explain how constellations and other night sky patterns	The SWBAT explain why some constellations are seasonal whereas others are always visible in the	zSpace Studio: “Exploring Constellations”	2	Use zSpace Studio to learn about the history and uses of constellations.	Exploring Constellations Question Text	Asterism Astrolabe Astronomer Circumpolar

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appear to move due to Earth's rotation and revolution.	night sky.				Worksheet	Constellation Navigational Seasonal Sextant Star Telescope
	The SWBAT demonstrate their learning on: <ul style="list-style-type: none"> - New vocabulary terms - History of constellations - Create virtual tour of different constellations with their mythological stories 	zSpace Studio: "Exploring Constellations" – Differentiation – Supports for All Learners	3	Materials and learning styles may include creating charts/graphs, PowerPoint, making 3D presentations, creating videos/movies, blogging, making posters, skits, creating a board game	Completed Project	
6.E2U1.9 <u>Develop and use models to construct an explanation</u> of how eclipses, moon phases, and tides occur within the Sun-Earth-Moon system.	The SWBAT use models of the Sun, Moon, and Earth to set up a lunar and solar eclipse as they are seen from space.	zSpace Studio: "Lunar and Solar Eclipse"	2	Students will use models of the Sun, Moon, and Earth to set up a lunar and solar eclipse as they are seen from space.	Lunar and Solar Eclipse Question Text Worksheet	Earth Lunar eclipse Moon Penumbra Solar eclipse Sun Syzygy Umbra
	The SWBAT gather, graph, and make observations data on the dates and locations of lunar eclipses and solar eclipses over the last 50	zSpace Studio: "Lunar and Solar Eclipse" – Extension Activity	3	Gather data on the dates and locations of lunar eclipses and solar eclipses over the last 50 years. Graph this data and make observations on the frequency and patterns of eclipses on	Completed Data Table, Graph, Summary on observations on frequency and patterns	

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	years.			Earth.		
	The SWBAT use identified patterns to predict the Moon's future appearance in the sky.	zSpace Studio: "Moon Exploration"	2	Students will explore the physical characteristics of the Moon and compare them with those of Earth. They will also observe and identify the Moon's predictable patterns of motion in the sky.	Moon Exploration Question Text Worksheet	Astronaut Crater Crust Gravity Moon Moon phase Pattern Planet
	The SWBAT demonstrate their learning on: - New vocabulary terms - Moon phases calendar for one month with drawings and labels - Create a presentation on differences between the Earth and Moon	zSpace Studio: "Moon Exploration" – Differentiation – Supports for All Learners	3	Materials and learning styles may include creating charts/graphs, PowerPoint, making 3D presentations, creating videos/movies, blogging, making posters, skits, creating a board game	Completed Project	
6.E2U1.10 Use a model to show how the tilt of Earth's axis causes variations in the length of the day and gives rise to seasons.	The SWBAT use a model to describe the cyclic patterns of lunar phases, eclipses of the Sun and Moon, and seasons.	zSpace Studio: "Patterns of the Sun, Earth, and Moon"	2	Students will use zSpace to discover how the Sun, Earth, and Moon interact to create events such as eclipses, Moon phases, and seasons.	Patterns of the Sun, Earth, and Moon Question Text Worksheet	Hemisphere Lunar eclipse Moon phase Revolution Rotation Season Solar eclipse Synchronous rotation

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	The SWBAT demonstrate their learning on: - New vocabulary terms - Aerospace exploration of the Sun or Moon - Create a presentation about lunar and solar eclipses	zSpace Studio: "Patterns of the Sun, Earth, and Moon"- Differentiation – Supports for All Learners	3	Materials and learning styles may include creating charts/graphs, PowerPoint, making 3D presentations, creating videos/movies, blogging, making posters, skits, creating a board game	Completed Project	
	The SWBAT determine the seasons based on the orientation of the Earth on its axis as it revolves around the Sun.	zSpace Studio: "What Causes the Seasons?"	2	Students will identify different seasons around the world based on the orientation of Earth on its axis as it revolves around the Sun.	What Causes the Seasons Question Text Worksheet	Axis Earth Elliptical Hemisphere Orbit Revolution Rotation Season Solar energy Sun
	The SWBAT describe the Earth's movement and identify observable patterns.	zSpace Studio: "Earth's Movement in the Solar System"	2	Students will learn how the Earth moves through the solar system both around its own axis and around the Sun.	Earth's Movement in the Solar System Question Text Worksheet	Asterism Axis Constellation Earth Equator Hemisphere Horizon Orbit Season Sun
	The SWBAT build a physical or virtual model of Earth and the Sun, then	zSpace Studio: "Earth's Movement in the Solar System" – Extension	2	Materials and learning styles may include creating charts/graphs, PowerPoint,	Completed Project	

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	demonstrate the seasons by rotating and revolving the Earth model around the Sun model	Activitiy		making 3D presentations, creating videos/movies, blogging, making posters, skits, creating a board game		
6.L2U3.11 Use evidence to construct an argument regarding the impact of human activities on the environment and how they positively and negatively affect the competition for energy and resources in ecosystems.	The SWBAT identify the positive and negative environmental effects of using each natural resource.	zSpace Studio: "Human Impact on the Environment"	2	Students will gather information about the renewable and nonrenewable resources that humans use for energy. Then students will identify how our uses of these natural resources have impacted our environment in both positive and negative ways.	Human Impact on the Environment Question Text Worksheet	Atmosphere Environment Fertilizer Fossil fuels Herbicide Impact Natural resource Renewable Nonrenewable Solar panel Ozone layer Sustainable Pesticide Water wheel Pollution Wind turbine Population
	The SWBAT research one type of negative human impact on the environment and explore possible solutions for the problem.	zSpace Studio: "Human Impact on the Environment" – Closing – Human Impact Research and Presentations	3	Make a poster that clearly displays one way that humans have negatively impacted the environment, present their findings to the class, and share their recommendations on how to reduce this type of human impact going	Human Impact Research Poster	

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				forward.		
6.L2U3.12 Engage in argument from evidence to support a claim about the factors that cause species to change and how humans can impact those factors.	The SWBAT identify balanced and unbalanced ecosystems.	zSpace Studio: "Solution for an Environmental Problem"	2	Students will pretend to be ecologists who are presented with an environmental problem and asked to consider possible solutions to maintain the natural balance of an ecosystem.	Solution for an Environmental Problem Question Text Worksheet	Carnivores Consumers Energy Pyramid Environment Herbivores Omnivores Producers Solution
	The SWBAT research a real-world environmental problem involving the over- or under-population of a species and its effect on the environment.	zSpace Studio: "Solution for an Environmental Problem" – Extension Activity	3	Materials and learning styles may include creating charts/graphs, PowerPoint, making 3D presentations, creating videos/movies, blogging, making posters, skits, creating a board game	Completed project	
6.L2U1.13 Develop and use models to demonstrate the interdependence of organisms and their environment including biotic and abiotic factors.	The SWBAT predict consistent patterns of interactions in different ecosystems in terms of the relationships between organisms and abiotic components of ecosystems.	zSpace Studio: "Abiotic vs. Biotic Factors"	2	The goal of this activity is for students to identify biotic and abiotic factors in different ecosystems. Students will discover how these different factors interact and impact an ecosystem.	Abiotic vs. Biotic Factors Worksheet	Abiotic factors Biotic factors Community Ecosystem Photosynthesis Zooxanthellae
	The SWBAT demonstrate their learning on: - create a card sort	zSpace Studio: "Abiotic vs. Biotic Factors – Differentiation – Supports	3	Materials and learning styles may include creating charts/graphs, PowerPoint,	Completed Project	

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	activity using the following terms: Rock, Air, Water, Sand, Soil, Car, Chair, Insect, Tree, Worm, Butterfly, and Dog. They can sort their cards into living and nonliving groups to provide a reference for this activity. Provide a reference sheet on the characteristics of living things. - research STEM careers that focus on environmental conservation.	for All Learners		making 3D presentations, creating videos/movies, blogging, making posters, skits, creating a board game		
	The SWBAT develop and use a model to describe the cycling of matter among plants, animals, decomposers, and the environment.	zSpace Studio: "Food Chains in an Ecosystem"	2	Students will learn that each organism plays a significant role in the food chain and that relationships among members of a food web help to maintain a balanced ecosystem. They will discover how matter and energy moves within an ecosystem.	Food Chains in an Ecosystem Question Text Worksheet	Carnivore Consumer Decomposer Ecosystem Food chain Herbivore Omnivore Producer
	The SWBAT create their own unique food chain using models that represent producers and	Materials and learning styles may include creating charts/graphs, PowerPoint, making 3D presentations, creating videos/movies, blogging,	3	Assign students a specific biome. Have them create their own unique food chain using models that represent producers and consumers at each trophic level within that biome.	Completed project	

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	consumers	making posters, skits, creating a board game				
6.L2U1.14 <u>Construct a model</u> that shows the cycling of matter and flow of energy in ecosystems.	The SWBAT develop and use a model to describe the cycling of matter and flow of energy among the living and nonliving parts of an ecosystem.	zSpace Studio: "Energy Flow Through Ecosystems"	2	Students will analyze food chains and food webs. They will explore the interactions among producers, consumers, and decomposers to understand how matter and energy cycle among the living and nonliving parts of an ecosystem.	Energy Flow Through Ecosystems Question Text Worksheet	Carnivore Consumer Decomposer Ecosystem Energy pyramid Food chain Food web Herbivore Omnivore Producer