

Teacher(s)	Kristy Maxwell, Robbie Porter, Billyjo Crabtree	Subject discipline	group and	6th Grade Science	
Unit title	Relative Distances in Space	MYP year	1	Unit duration (wks)	1 wk

Inquiry: Establishing the purpose of the unit

Key concept	Related concept(s)	Global context
Time, Place, & Space	Models & Movement	Orientation of Time & Space
Statement of inquiry		
Models can be created to demonstrate the relationships of time, space, and place.		
Inquiry questions		
Factual—What is the average distance from Earth to the sun in miles/km? Conceptual—How can a model be created to represent the relative distances between the objects in our solar system? Debatable—Is it possible for humans to travel to the edge of our solar system or beyond?		
Objectives	Summative assessment	

<p>A: Knowing and Understanding</p> <p>i. explain scientific knowledge</p> <p>ii. apply scientific knowledge and understanding to solve problems set in familiar and unfamiliar situations.</p> <p>iii. analyze and evaluate information to make scientifically supported judgements.</p> <p>D: Reflecting on the impacts of science</p> <p>i. explain the ways in which science is applied and used to address a specific problem or issue</p> <p>ii. discuss and evaluate the various implications of the use of science and its application in solving a specific problem or issue</p> <p>iii. apply scientific language effectively</p> <p>iv. document the work of others and sources of information used.</p>	<p>Outline of summative assessment task(s) including assessment criteria:</p> <p>Task:</p> <p>-Students will work in groups of 4-5 students. Groups will be responsible for using selected materials to create a scale model of the solar system using relative distance and Astronomical Units.</p> <p>-Teacher will move around from group to group assisting and assessing group progress.</p> <p>Criteria:</p> <p>A: Knowing and Understanding</p> <p>i. explain the distances within the solar system using Astronomical Units</p> <p>ii. use Astronomical Units to make a scale model of the objects in the solar system in relation to their distance from earth</p> <p>iii. make determinations of why some objects in the night sky may look bigger or smaller than they are in reality due to their closeness to earth</p> <p>D. Reflecting on the impacts of science</p> <p>i. summarize the ways in which science applies and uses relative distances in space to determine trajectory and course of space probes</p> <p>ii. describe and summarize the implications of using relative distances from earth to send probes to other</p>	<p>Relationship between summative assessment task(s) and statement of inquiry:</p> <p>Through this activity students will produce to-scale models of the solar system to show understanding of movement, size, and relative distance of these objects from earth demonstrating the dimensions of time and space.</p> <p>Middle Years Programme Unit planner</p>
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	planets or objects in our solar system to collect data and samples iii. consistently apply scientific language to communicate understanding of the appearance of objects seen in the night sky compared to their actual size and distance from earth clearly and precisely iv. document sources completely	
Approaches to learning (ATL)		
Communication skills : Use appropriate visual representations of relative distance data to produce a model of the components our solar system in relation to earth.		

Action: Teaching and learning through inquiry

Content	Learning process
Universe State Curriculum Standards: <ul style="list-style-type: none"> ● GLE 0607.6.1 Analyze information about the major components of the universe. <ul style="list-style-type: none"> ○ SPI 0607.6.1 Use data to draw conclusions about the major components of the universe ● GLE 0607.6.2 Describe the relative distance of objects in the solar system from earth. <ul style="list-style-type: none"> ○ SPI 0607.6.2 Explain how the relative distance of objects from the earth affects how they appear. <u>Classroom/Sub-Objectives</u> <ul style="list-style-type: none"> ● TLW create a foldable illustrating and describing the 8 major components of the universe. 	Learning Experiences: <ul style="list-style-type: none"> ● Students will be given rubrics for the summative assessment ahead of time. ● Students will draw on prior knowledge of the planets in the solar system and their order from the sun to create to scale models in both size and distance. ● Students will be guided by the teacher in creating the first two scale models (one in size and one in distance) before they are required to create their own model comparing both size and distance. Teaching strategies: <ul style="list-style-type: none"> ● Teacher will use songs, videos, animations, and space photos to introduce the various components of the universe. ● Teacher will direct students in completing Components of the Universe foldable, to-scale models of the solar system (one in size and one in distance). ● Teaching Methodologies will include inquiry, investigation, self-guided, peer tutoring, group learning, facilitating, etc. ● Teaching will be differentiated by providing students with various options within the project, ELL students will be given only core vocabulary, special ed. needs students will have abbreviated rubrics and tasks.

<ul style="list-style-type: none"> • TLW make a to-scale model of the objects in the solar system comparing the size of the sun to 15 cm. • TLW make a pocket solar system demonstrating a to-scale model of the solar system compared to the length of one meter. • TLW create a to-scale model of the solar system in both size and distance. 	<p>Formative assessment</p> <ul style="list-style-type: none"> • Task specific criteria and objectives will be issued. • Structured support will provide clear instructions and assistance to achieve desired outcomes. • Peer relationships will be used to assist learners. • Flexible deadlines and extended time will provide adequate opportunities for student success. • Adjusting pace of learning based on student needs • Simplified instructions <p>Differentiation</p> <ul style="list-style-type: none"> • Structured support will provide clear instructions and assistance to achieve desired outcomes. • Peer relationships will be used to assist learners. • Flexible deadlines and extended time will provide adequate opportunities for student success. • Adjusting pace of learning based on student needs • Simplified instruction
<p>Resources</p>	
<p>-paper, meter sticks, cereal, popcorn kernels, mustard seeds, poppy seeds, ground pepper, balloons, adding machine tape. yarn, marbles, ping pong balls, beans, basketballs, golf balls, tennis balls, bbs, toilet paper rolls, index cards, construction paper, glue, scissors, markers</p>	

Reflection: Considering the planning, process and impact of the inquiry

Prior to teaching the unit	During teaching	After teaching the unit
<ul style="list-style-type: none"> • 5th Grade Universe standards that identify the order of and descriptions of planets in the solar system. • Introduction of scale models 	<ul style="list-style-type: none"> • Students are able to identify various components of the Universe and their roles. They identify that the sun is the center of our solar system and the 	<ul style="list-style-type: none"> • Instead of having the students try to do both a to scale model in size and distance, it will be more realistic to just have them do one in distance using the AUs to help them. There just isn't enough room

<ul style="list-style-type: none"> • Proper utilization of using meter sticks and the metric system to record and analyze data 	<p>components that make up the solar system and their movements in relation to the sun..</p> <ul style="list-style-type: none"> • By identifying the order of the planets in our solar system from the sun, students will be able to recognize the location of each planet from the earth.. • By making individual scale models (in first size and then distance) of objects within the solar system with guidance from the teacher, they will be able to work in groups to create a to-scale model in both distance and size of the planets in the solar system in relation to both the sun and the earth.. • Students are using measurement instruments and manipulatives responsibly and are working cooperatively within their groups.. 	<p>to do both models in the building. To do one in size and distance in the building, the size of the inner planets would be almost invisible.</p>
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