

Physical (Earth) Science

7-12 Science Constructing Meaning Functions Scope and Sequence

This chart reflects the dominant and supportive language functions for production

	Elaboration/ Description*	Compare and Contrast*	Sequencing*	Proposition and Support* (Problem/Solution)	Cause and Effect*
7 Life Science	Introduced Q1 & 3, Q2 & 4	Introduced Q 1 & 3, Q2 & 4	Introduced Q1 & 3, Q2 & 4	Introduced Q2 & 4	Introduced Q2 & 4
8 Physical Science	Continued Practice Q1, Q2, Q3, Q4	Continued Practice Q1, Q2, Q4	Continued Practice Q1	Continued Practice Q1	Continued Practice Q1, Q2, Q3, Q4
Biology	Mastery Q1, Q2, Q3, Q4	Continued Practice Q1, Q2	Continued Practice Q1, Q2, Q3	Continued Practice Q1, Q3	Continued Practice Q1, Q3, Q4
Physical Science (Earth)	Mastery Q1, Q2, Q3, Q4	Mastery Q1, Q2, Q3, Q4	Mastery Q2, Q3, Q4	Continued Practice Q2, Q3	Mastery Q1, Q2, Q3, Q4
Chemistry	Mastery Q1, Q2, Q3, Q4	Mastery Q1, Q2, Q3, Q4	Mastery Q1, Q2, Q3, Q4	Continued Practice Q2, Q3	Mastery Q1, Q3, Q4
Physics	Mastery Q1, Q2, Q3, Q4	Mastery Q1, Q2, Q3	Mastery Q1, Q2, Q3, Q4	Mastery Q1, Q2, Q3	Mastery Q1, Q2, Q3, Q4

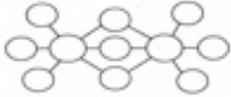
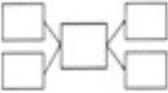
* The language function of summarizing is to be used throughout the curriculum in conjunction with the other language functions.

Garden Grove Unified School District
Office of Secondary Education
Department of 7-12 Instructional Services

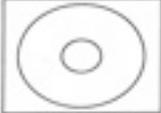
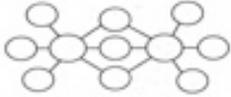
CM Functions - Year At-A-Glance

Physical Science (Earth)	
Quarter	Dominant and Supportive Functions
1	Elaboration/Description Cause and Effect Compare and Contrast
2	Cause and Effect Elaboration/Description Compare and Contrast Sequencing Proposition and Support
3	Cause and Effect Elaboration/Description Compare and Contrast Sequencing Proposition and Support
4	Elaboration/Description Compare and Contrast Sequencing Cause and Effect

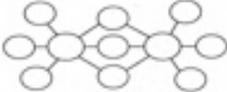
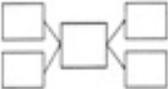
Physical Science (Earth): English Learner Support Supplement to Pacing

Quarter 1 Standards	Functions for Production (Bold denotes dominant function)	Sample Products (Items with a double asterisk are accessible on SharePoint with "EL Support." 7-12 Instruction SharePoint Site http://k12sp.ggusd.us)	Sentence Frames	Structured Oral Language Practice Routine(s) (CM Binder Tab 3)	Correlating Thinking Map(s)
I&E I b. Identify and communicate sources of unavoidable experimental error.	Does the textbook provide language of dominant function for production? YES or <input type="radio"/> NO Elaboration/ Description	<ul style="list-style-type: none"> • Conduct an experiment in class and have students compare their results. • Conduct classroom discussion on the sources of unavoidable experimental error. 	<ul style="list-style-type: none"> • One error was caused by _____. • As a result of _____, _____ happened. • _____ can be identified by _____. 	<ul style="list-style-type: none"> • Talking Stick Prompt: What is one source of error in this experiment? (CM Binder p 3.4) 	Circle Map 
I & b E 1 c. Identify possible reasons for inconsistent results, such as sources of error or uncontrolled conditions.	Does the textbook provide language of dominant function for production? YES or <input type="radio"/> NO Elaboration/ Description	<ul style="list-style-type: none"> • Conduct an experiment in class and have students compare their results. • Conduct classroom discussion on the reasons for inconsistent results and sources of error. 	<ul style="list-style-type: none"> • _____ suggests that _____. • _____ is associated with _____. • In essence _____ causes _____. 	<ul style="list-style-type: none"> • Think (write) - Pair - Share <i>Prompt:</i> Why do you think your group had different results than the other groups in class? (CM Binder p 3.5) 	Circle Map 
I & E 1 f. Distinguish between hypothesis and theory as scientific terms.	Does the textbook provide language of dominant function for production? YES or <input type="radio"/> NO Compare and Contrast Sequencing	<ul style="list-style-type: none"> • Venn diagram/double bubble to create a paragraph. • Theory Sequence Chart and Summary Template** 	<ul style="list-style-type: none"> • A hypothesis and a theory are different because _____ is _____ and _____ is _____. • The differences between a hypothesis and theory are _____. • The primary distinction between a hypothesis and a theory is _____. 	<ul style="list-style-type: none"> • Think (write) – Pair – Share <i>Prompt:</i> How does a hypothesis become a theory? (CM Binder p 3.7) 	Double Bubble Map 
I & E 1 j. Recognize the issues of statistical variability and the need for controlled tests.	Does the textbook provide language of dominant function for production? YES or <input type="radio"/> NO Cause and Effect	<ul style="list-style-type: none"> • Conduct an experiment in class and have students compare their results. Conduct classroom discussion on the variability of the results. 	<ul style="list-style-type: none"> • If _____, then _____. • _____ has been caused by _____. Which in turn results in _____. • Due to _____, _____ occurred. 	<ul style="list-style-type: none"> • Give One Get One <i>Prompt:</i> What is one reason why we need to do controlled experiments? 	Multi-Flow Map 

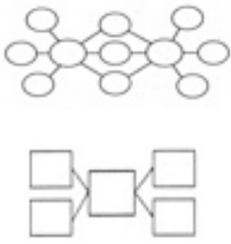
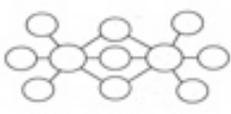
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I & E 1 h. Read and interpret topographic and geologic maps.	Does the textbook provide language of dominant function for production? <input checked="" type="radio"/> YES or NO Elaboration/ Description Summary	<ul style="list-style-type: none"> • Write a summary paragraph from a topographic map using a summary template. • Reading a topographic Map** <ul style="list-style-type: none"> ○ Use sentence frames to describe areas on a topographic map 	<ul style="list-style-type: none"> • One example of a steep slope/flat area/river valley is ____. • An indicator of the highest elevation is ____. 	<ul style="list-style-type: none"> • Talking Chips <i>Prompt:</i> What do you find on a topographic map/geologic maps? 	Circle Map 
3. c. Know how to explain the properties of rocks based on the physical and chemical conditions in which they formed.	Does the textbook provide language of dominant function for production? YES or <input checked="" type="radio"/> NO Compare and Contrast	<ul style="list-style-type: none"> • Create a triple Venn diagram/triple bubble map. • Igneous Rock Concept Map** • Sedimentary Rock Concept Map** • Metamorphic Rock Concept Map** 	<ul style="list-style-type: none"> • ____ and ____ are similar because they are both ____. • ____ and ____ are different because ____ is ____ and ____ is ____. • The primary distinction between ____ and ____ can be described as ____. • The ____ and ____ are similar in that ____. 	<ul style="list-style-type: none"> • Whip Around <i>Prompt:</i> Several Questions about the Rock Cycle. Each student has a card with an answer to a question and a different question. 	Double Bubble Map 

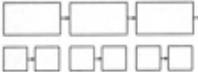
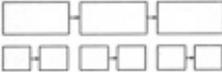
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Quarter 2 Standards	Functions for Production (Bold denotes dominant function)	Sample Products <small>(Items with a double asterisk are accessible on SharePoint with "EL Support." 7-12 Instruction SharePoint Site http://k12sp.ggusd.us)</small>	Sentence Frames	Structured Oral Language Practice Routine(s) (CM Binder Tab 3)	Correlating Thinking Map(s)
3. a. Know features of the ocean floor (magnetic patterns, age, and sea-floor topography) provide evidence of plate tectonics.	Does the textbook provide language of dominant function for production? YES or NO Proposition and Support	<ul style="list-style-type: none"> • Layered book (pg 815) with: magnetic patterns, sea floor topography, age, sediment thickness showing description and evidence for plate tectonics. • Sea Floor Spreading and Paleomagnetism Animations** Download animations and use sentence frames with oral language practice routines. 	<ul style="list-style-type: none"> • ____ suggests that ____. • Indicator of ____ are ____. • Characteristics of ____ include ____. 	<ul style="list-style-type: none"> • Think (write) – Pair – Share <i>Prompt:</i> How does magnetic patterns/sea floor topography/age/ sediment thickness provide evidence of plate tectonics? Use each piece of evidence to ask each partner. 	Multi-Flow Map 
3. b. Know the principle structures that form at the three different plate boundaries.	Does the textbook provide language of dominant function for production? YES or NO Compare and Contrast Summary	<ul style="list-style-type: none"> • Use three-Panel Flip Chart (pg 816) to write a summary using a summary template. • Types of Plate Boundaries Chart** to review types of structures at each plate boundary • 2 slide PowerPoint with animation illustrating the three types of plate boundaries** to reinforce the understanding of plate movements 	<ul style="list-style-type: none"> • At a convergent/divergent/transform plate boundary, ____ will occur, but at a convergent/divergent/transform plate boundary ____ will occur. • ____ and ____ are different because ____ is ____ and ____ is ____. • The primary distinction between ____ and ____ are ____. 	<ul style="list-style-type: none"> • Give One Get One <i>Prompt:</i> Features found at each plate boundary • Think/Write/Oral-pair share <i>Prompt:</i> Describe the movement of one of the three plate boundaries. 	Double Bubble Map 
3. c. Know how to explain the properties of rocks based on the conditions under which they formed, including plate tectonics .	Does the textbook provide language of dominant function for production? YES or NO Cause and Effect	<ul style="list-style-type: none"> • Plate Tectonics and the Rock Cycle** Label a plate tectonics diagram showing where rocks are forming. Write a paragraph explanation for each rock type. 	<ul style="list-style-type: none"> • One reason igneous/sedimentary/meta morphic rocks are forming here is ____. • As a result of _____, _____ is occurring. 	<ul style="list-style-type: none"> • Talking Stick Prompt: Location of each type of rock in subduction zone. Use the talking stick in a small group 	Multi-Flow Map 

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3. d. Know how and why earthquakes occur and the scales used to measure their intensity and magnitude.	Does the textbook provide language of dominant function for production? YES or NO Sequencing	<ul style="list-style-type: none"> • Chain of Events Chart (Textbook pg 818)/Sequence Map/Flow chart • Flow Chart for the Elastic Rebound Theory** 	<ul style="list-style-type: none"> • First, ___, Then, ___. • Next, ___. • Initially ___, then ___. • As a result of ___, ___ occurred. • Simultaneously ___ and ___ are happening. 	<ul style="list-style-type: none"> • Think (write) – Pair – Share <i>Prompt:</i> Each partner explains a step to the other partner. 	Flow Map 
3. d. Know how and why earthquakes occur and the scales used to measure their intensity and magnitude.	Does the textbook provide language of dominant function for production? YES or NO Compare and Contrast	<ul style="list-style-type: none"> • Venn diagram** with sentence frames to compare and contrast Mercalli and Moment magnitude scales • Seismic Waves Thinking Map ** 	<ul style="list-style-type: none"> • ___ and ___ are similar because they both ___. • The differences between ___ and ___ are ___. • One of the key characteristics of ___ is ___. 	<ul style="list-style-type: none"> • Give One Get One <i>Prompt:</i> Compare and contrast Mercalli and Richter/Moment Magnitude 	Double Bubble Map 
3. e. Know there are two kinds of volcanoes: one kind with violent eruptions producing steep slopes and other kind with voluminous lava flow producing gentle slope.	Does the textbook provide language of dominant function for production? YES or NO Compare and Contrast	<ul style="list-style-type: none"> • Types of Volcanoes** Use a comparison table with compare and contrast sentence frames • Summary Template** <ul style="list-style-type: none"> ○ Volcano lesson 	<ul style="list-style-type: none"> • Volcanoes with ___ slopes will have ___ eruptions, but volcanoes with ___ slopes will have violent eruptions. • The differences between ___ and ___ are ___. • While ___ volcanoes will ___, ___ volcanoes will ___. 	<ul style="list-style-type: none"> • Numbered Heads Together <i>Prompt:</i> Compare and contrast shield and composite volcanoes. 	Double Bubble Map 

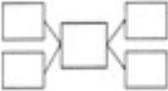
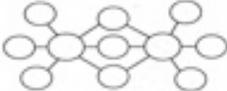
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8 a. Know the thermal structure and chemical composition of the atmosphere.	Does the textbook provide language of dominant function for production?  or NO Elaboration/ Description	<ul style="list-style-type: none"> • Layered book (Textbook pg 815). • Layers of the Atmosphere Thinking Map** 	<ul style="list-style-type: none"> • _____ contains _____ and tends to _____. • The characteristics of _____ include _____ and _____. • _____ is known for having _____. 	Lines of Communication <i>Prompts:</i> What is an important feature of the troposphere? Repeat for each layer.	Circle Map  Flow Map 
8. b. Know how the composition of Earth's atmosphere has evolved over geologic time, and know the effect of outgassing, the variations of carbon dioxide concentration, and the origin of atmospheric oxygen.	Does the textbook provide language of dominant function for production?  or NO Sequencing	<ul style="list-style-type: none"> • Chain of Events Chart (Textbook pg 818)/ Flow Chart/ Sequence Map 	<ul style="list-style-type: none"> • First, _____. Then, _____. • Next, _____. • In the beginning, _____. • Now, _____. • Initially _____ then, _____. 	<ul style="list-style-type: none"> • Think (write) – Pair – Share <i>Prompt:</i> What happened after Earth lost its first atmosphere that was made of H and He?	Flow Map 
8. c. Know the location of the ozone layer in the upper atmosphere, its role in absorbing ultraviolet radiation, and the way in which this layer varies both naturally and in response to human activities.	Does the textbook provide language of dominant function for production?  or NO Elaboration/ Description	<ul style="list-style-type: none"> • Concept map (Textbook pg. 819)/Bubble map/Webb 	<ul style="list-style-type: none"> • Characteristics of _____ include _____ and _____. • _____ contains _____. 	<ul style="list-style-type: none"> • Give One Get One <i>Prompt:</i> What are the roles and characteristics of the ozone layer?	Circle Map 

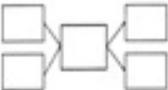
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8. c. Know the location of the ozone layer in the upper atmosphere, its role in absorbing ultraviolet radiation, and the way in which this layer varies both naturally and in response to human activities.	Does the textbook provide language of dominant function for production?  or NO Yes but not completely in the text. Cause and Effect	<ul style="list-style-type: none"> • Multi flow map illustrating all the causes of ozone variation. 	<ul style="list-style-type: none"> • Because of the ____, ____ happens. • ____ has lead to ____. • Without ____ we have ____. 	<ul style="list-style-type: none"> • Clock Appointments <i>Prompt:</i> Meet with your first appointment and discuss the natural causes of variations in ozone concentration. Meet with your second appointment and discuss the ways humans affect the concentration of ozone 	Multi-Flow Map 

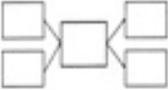
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5. d. Know properties of ocean water, such as temperature and salinity, can be used to explain the layered structure of the oceans, the generation of horizontal and vertical ocean currents, and the geographic distribution of marine organisms.	Does the textbook provide language of dominant function for production? <div style="text-align: center;"> YES or NO </div> <p>Cause and Effect</p>	<ul style="list-style-type: none"> • Lab showing density determines layering. • Cause and effect map. 	<ul style="list-style-type: none"> • ___ is affected by ___. • I predict ___ because I observed ___. 	<ul style="list-style-type: none"> • Talking Chips <i>Prompt:</i> What causes the layered structure of the ocean? 	<p>Multi-Flow Map</p> 						
4. a. Know the relative amount of incoming solar energy compared with Earth's internal energy and the energy used by society.	Does the textbook provide language of dominant function for production? <div style="text-align: center;"> YES or NO </div> <p>Compare and Contrast</p>	<ul style="list-style-type: none"> • Comparison Chart <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="padding: 5px;">Incoming Solar Energy</th> <th style="padding: 5px;">Society Use</th> <th style="padding: 5px;">Internal Energy</th> </tr> </thead> <tbody> <tr> <td style="height: 30px;"></td> <td></td> <td></td> </tr> </tbody> </table>	Incoming Solar Energy	Society Use	Internal Energy				<ul style="list-style-type: none"> • The primary distinction between _____ and _____ is _____. • The differences/similarities between _____ and _____ are _____. 	<ul style="list-style-type: none"> • Numbered Heads Together <i>Prompt:</i> Which quantity of energy is greatest, the amount used by society, the amount inside the Earth or the amount that comes to Earth from sunlight? Why? 	<p>Double Bubble Map</p> 
Incoming Solar Energy	Society Use	Internal Energy									

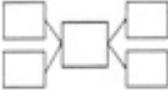
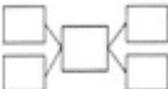
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4. b. Know the fate of incoming solar radiation in terms of reflection, absorption, and photosynthesis.	Does the textbook provide language of dominant function for production? <input checked="" type="radio"/> YES or NO Cause and Effect	<ul style="list-style-type: none"> • Diagram showing interaction of solar radiation with clouds/atmosphere/surface (pg 34). • Create a flow chart using the diagram. 	<ul style="list-style-type: none"> • If ____, then ____. • When (cause), then (effect). • Solar radiation absorbed/reflected by ____ leads to ____. • Absorption/reflection of radiation by ____ results in ____. 	<ul style="list-style-type: none"> • Think (write) – Pair – Share <i>Prompt:</i> What happens to solar radiation as it travels through Earth's atmosphere? 	Multi-Flow Map 
4. c. Know the different atmospheric gases that absorb the Earth's thermal radiation and the mechanism and significance of the greenhouse effect.	Does the textbook provide language of dominant function for production? <input checked="" type="radio"/> YES or NO Elaboration/ Description	<ul style="list-style-type: none"> • Key-Term Fold (text pg 816). 	<ul style="list-style-type: none"> • One example of ____ is ____. • ____ has ____ and is known for ____. • Components of ____ include ____ and ____. 	<ul style="list-style-type: none"> • Talking Stick Prompt: Name a gas that absorbs energy from sunlight. 	Circle Map 
4. c. Know the different atmospheric gases that absorb the Earth's thermal radiation and the mechanism and significance of the greenhouse effect.	Does the textbook provide language of dominant function for production? YES or <input checked="" type="radio"/> NO Sequencing	<ul style="list-style-type: none"> • Chain of Events Chart (text pg 818). 	<ul style="list-style-type: none"> • First, ____. Next, ____. • Then, ____. • Initially, ____. • Following ____, ____ happens. • Eventually, ____ happens. 	<ul style="list-style-type: none"> • Three Step Interview <i>Prompt:</i> What are possible effects of global warming? Why? 	Flow Map 
5. a. Know how differential heating of Earth results in circulation patterns in the atmosphere and oceans that globally distribute the heat.	Does the textbook provide language of dominant function for production? <input checked="" type="radio"/> YES or NO Cause and Effect	<ul style="list-style-type: none"> • Chain of Events Chart (text pg 818) showing sequential cause and effects. 	<ul style="list-style-type: none"> • Since ____, then ____. • ____, hence ____. • Due to ____, ____ occurs. • ____ leads to ____. • When ____ occurs, ____ results. 	<ul style="list-style-type: none"> • Think (write) – Pair – Share <i>Prompt:</i> How is the energy absorbed at the Earth's surface distributed? 	Multi-Flow Map 

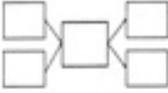
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5. b. Know the relationship between the rotation of Earth and the circular motions of ocean currents and air in pressure centers.	Does the textbook provide language of dominant function for production? YES or NO Cause and Effect	<ul style="list-style-type: none"> • Cause and Effect Map (text pg 818). Cause = rotation of the earth. Effects = circular ocean currents, circular wind currents. Add additional effects. 	<ul style="list-style-type: none"> • _____ has been caused by _____. • _____ leads to _____. • The _____ consequently leads to _____. 	<ul style="list-style-type: none"> • Clock Appointments <i>Prompt:</i> 1st appointment: How does the rotation of Earth affect ocean currents? 2nd –atmosphere 	Multi-Flow Map 
5. c. Know the origin and effects of temperature inversions.	Does the textbook provide language of dominant function for production? YES or NO Cause and Effect	<ul style="list-style-type: none"> • Double Door Fold -top fold: show normal conditions (list as cause and effect how atmosphere is warmed by ground) -bottom fold: show conditions that lead to a temperature inversion (list cause and effect for how ground cools the atmosphere) 	<ul style="list-style-type: none"> • During _____, _____ is caused by _____. • If _____, then _____ results. • _____ is caused by _____. 	<ul style="list-style-type: none"> • Think (write) – Pair – Share <i>Prompt:</i> What conditions lead to a temperature inversion? 	Multi-Flow Map 
6. a. Know weather (in the short run) and climate (in the long run) involve the transfer of energy into and out of the atmosphere.	Does the textbook provide language of dominant function for production? YES or NO Elaboration/ Description	<ul style="list-style-type: none"> • Bubble Map/Concept Map (text pg 819) 	<ul style="list-style-type: none"> • _____ can be described as _____. • _____ can be explained as _____. • _____ exhibits _____ and _____. 	<ul style="list-style-type: none"> • Think (write) – Pair – Share <i>Prompt:</i> What is the difference between weather and climate? 	Circle Map 

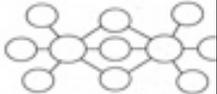
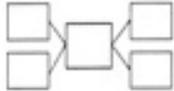
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6. b. Know the effects on climate of latitude, elevation, topography, and proximity to large bodies of water and cold and warm ocean currents.	Does the textbook provide language of dominant function for production? YES or NO Cause and Effect	<ul style="list-style-type: none"> • Latitude example: Demonstration of how angle affects energy received at each latitude (text pg 559) • Topography example: Flow map showing sequential cause and effect (wind hits mountain and must rise->adiabatic cooling->condensation->rain->air is forced down back side->adiabatic warming->rain shadow. Use a summary template to write a summary of the steps. • Bodies of Water example: Lab-Factors that affect Climate (text pg 652) 	<ul style="list-style-type: none"> • A ____ leads to ____. • ____ causes ____. • If ____, then ____. • As a result of ____, then ____. • ____ is followed by ____. • Therefore ____ is ____. • Finally, ____ happens. • ____ is heated differently by the sun than ____ because ____. • Due to ____, ____ happens. 	<ul style="list-style-type: none"> • Lines of Communication <i>Prompts:</i> First students will discuss how latitude affects climate, then switch to elevation, topography, bodies of water, ocean currents. Do as a test review. 	Multi-Flow Map 
5. e. Know rain forests and deserts on Earth are distributed in bands at specific latitudes.	Does the textbook provide language of dominant function for production? YES or NO Cause and Effect	<ul style="list-style-type: none"> • Use diagram on pg 562, pg 633, and pg 637 to help create a Chain of Events Chart (text pg 818) showing how differential heating causes circulation patterns in the atmosphere that create rain forests and deserts. 	<ul style="list-style-type: none"> • Initially ____, then ____. • Immediately after ____, then ____. • When ____ happens, ____ occurs. • If ____ results in ____, then ____. • First the air will ____ then ____. • When water is ____, then ____ occurs. 	<ul style="list-style-type: none"> • Clock Appointments <i>Prompt:</i> Go to 1st appointment: At what latitude do you find rainforest. Why are rainforest found at this latitude? Go to 2nd appointment: At what latitude do you find deserts? Why are deserts found at this latitude? 	Multi-Flow Map 

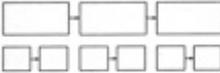
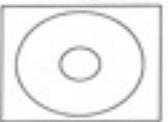
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6. c. Know how Earth's climate has changed over time, corresponding to changes in Earth's geography, atmospheric composition, and factors, such as solar radiation and plate movement.	Does the textbook provide language of dominant function for production? YES or NO Cause and Effect	<ul style="list-style-type: none"> • Time Line-show the cause and effect for how the atmospheric composition changed over time. • Show different models for how the contents are arranged and hypothesize how this would affect climates (i.e. all contents at the poles vs all continents at the equator). 	<ul style="list-style-type: none"> • First the Earth was _____. Then _____ happened, causing _____. • Due to the fact that _____, then _____. • _____ led to _____. • If _____ happened, then _____ would happen. • Due to _____, _____ would have occurred. 	<ul style="list-style-type: none"> • Lines of Communication <i>Prompts:</i> How does a change in the location of continents affect climate? How did a change in atmospheric gases over time affect climate? Solar radiation has decreased over time, how does this affect climate? 	Multi-Flow Map 
1. a. Know the differences and similarities among the sun, the terrestrial planets, and the gas planets may have been established during the formation of the solar system.	Does the textbook provide language of dominant function for production? YES or NO Compare and Contrast	<ul style="list-style-type: none"> • Triple Bubble/Triple Venn Diagram (text pg 818). • Formation of the Solar System Flow Chart ** 	<ul style="list-style-type: none"> • Both _____ and _____ are _____. • The differences/similarities between _____ and _____ are _____. • The most notable difference between _____ and _____ is _____. 	<ul style="list-style-type: none"> • Clock Appointments <i>Prompt:</i> Go to 3 different appointments. What are characteristics of a gas planet/terrestrial/sun planet? 	Double Bubble Map 
1. a. Know the differences and similarities among the sun, the terrestrial planets, and the gas planets may have been established during the formation of the solar system.	Does the textbook provide language of dominant function for production? YES or NO Sequencing	<ul style="list-style-type: none"> • Chain of Events Chart (pg 818)- draw a diagram and use sentence frames to describe each step. 	<ul style="list-style-type: none"> • Initially, _____. • After _____, the _____. • Simultaneously, _____ and _____ were taking place. • Now, _____. 	<ul style="list-style-type: none"> • Think (write) – Pair – Share <i>Prompt:</i> Why are terrestrial planets and gas giants different? 	Flow Map 

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1b. Know the evidence form Earth and moon rocks indicates that the solar system was formed from a nebular cloud of dust and gas approximately 4.6 billion years ago.	Does the textbook provide language of dominant function for production? YES or NO Elaboration/ Description	• Bubble Map/ Concept Map (text pg 819).	<ul style="list-style-type: none"> • ____ shows that ____ occurred. • The evidence from ____ shows ____. • ____ suggests ____. 	<ul style="list-style-type: none"> • Think (write) – Pair – Share <i>Prompt:</i> What is one piece of evidence to show that the solar system is 4.6 billion years old? 	Circle Map 
1. c. Know the evidence form geological studies of Earth and other planets suggest that the early Earth was very difference from Earth today.	Does the textbook provide language of dominant function for production? YES or NO Compare and Contrast	• Double Bubble/Venn Diagram comparing early Earth and modern Earth	<ul style="list-style-type: none"> • Early and modern Earth are similar in that they are both ____. • A distinction between early and modern Earth is ____. • Early and modern Earth are different because ____. 	<ul style="list-style-type: none"> • Give One Get One <i>Prompt:</i> What is one difference between early Earth and Earth today? 	Double Bubble Map 
1. f. Know the evidence for the dramatic effects that asteroid impacts have had in shaping the surface of planets and their moons and in mass extinctions of life on Earth	Does the textbook provide language of dominant function for production? YES or NO Proposition and Support Summary	• Write a summary using a summary template.	<ul style="list-style-type: none"> • According to ____, ____ happened. • In sum, the evidence suggest that ____. • ____ suggests that the planets were hit by asteroids. • ____ shows that mass extinctions occurred. 	<ul style="list-style-type: none"> • Lines of Communication <i>Prompts:</i> How have asteroid impacts caused extinctions? How have asteroids affected the surface of planets/Earth/moons? 	Multi-Flow Map 

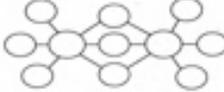
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Quarter 4 Standards	Functions for Production (Bold denotes dominant function)	Sample Products <small>(Items with a double asterisk are accessible on SharePoint with "EL Support." 7-12 Instruction SharePoint Site http://k12sp.ggusd.us)</small>	Sentence Frames	Structured Oral Language Practice Routine(s) <small>(CM Binder Tab 3)</small>	Correlating Thinking Map(s)
1. e. Know the sun is a typical star and is powered by nuclear reactions, primarily the fusion of hydrogen into helium.	Does the textbook provide language of dominant function for production? YES or NO Elaboration/ Description	• Bubble Map/Concept Map (text pg 819)	<ul style="list-style-type: none"> • The sun exhibits _____. • The sun is known for _____. • Characteristics of the sun include _____. 	<ul style="list-style-type: none"> • Talking Chips <i>Prompt:</i> What are the characteristics of the sun? 	Circle Map 
1. e. Know the sun is a typical star and is powered by nuclear reactions, primarily the fusion of hydrogen into helium.	Does the textbook provide language of dominant function for production? YES or NO Sequencing	• Chain of Events Chart (text pg 818)/Flow Chart	<ul style="list-style-type: none"> • First, _____. Next, _____. • Then, _____. Last, _____. • Initially _____, then _____. • After _____, _____. • Finally, _____. 	<ul style="list-style-type: none"> • Think (write) – Pair – Share <i>Prompt:</i> Describe the process of nuclear fusion in the sun. 	Flow Map 
1. d. Know the evidence indicating that the planets are much closer to Earth than the stars are.	Does the textbook provide language of dominant function for production? YES or NO Elaboration/ Description	• Write a summary using a summary template.	<ul style="list-style-type: none"> • Indicators that the planets are close to Earth include _____. • Parallax shows _____. • Since _____, then _____. 	<ul style="list-style-type: none"> • Think (write) – Pair – Share <i>Prompt:</i> How do we know that the planets are closer to Earth than stars are? 	Circle Map 
2. c. Know the evidence indicating that all elements with an atomic number greater than that of lithium have been formed by nuclear fusion in stars.	Does the textbook provide language of dominant function for production? YES or NO Elaboration/ Description	• Write a summary using a summary template.	<ul style="list-style-type: none"> • _____ can be described as _____. • _____ occurs during nuclear fusion. • Indicators of _____ are defined by _____. 	<ul style="list-style-type: none"> • Think (write) – Pair – Share <i>Prompt:</i> How did nuclear fusion in stars change the chemical composition of the Universe? 	Circle Map 

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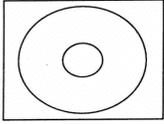
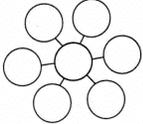
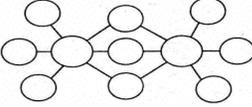
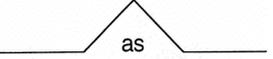
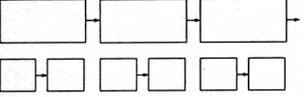
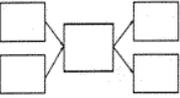
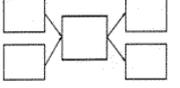
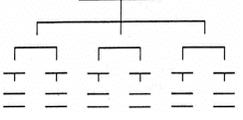
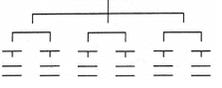
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2. d. Know that stars differ in their life cycles and that visual, radio, and X-ray telescopes may be used to collect data that reveal those differences.	Does the textbook provide language of dominant function for production?  or NO Cause and Effect	<ul style="list-style-type: none"> • Use diagram on text pg 786-7 (chart showing stellar evolution). Describe what causes a star moves to the next step in the star cycle. (ex: hydrogen fusion ends/helium fusion begins to change a main sequence star into a red giant) 	<ul style="list-style-type: none"> • A ____ star will become a ____, when ____. • If ____ happens to a ____ star, then ____. 	<ul style="list-style-type: none"> • Clock Appointments <i>Prompt:</i> 1st appointment Discuss the evolution of a low mass star. 2nd appointment: Discuss the evolution of a large mass star. 	Multi-Flow Map 
2. d. Know that stars differ in their life cycles and that visual, radio, and X-ray telescopes may be used to collect data that reveal those differences.	Does the textbook provide language of dominant function for production?  or NO Elaboration/ Description	<ul style="list-style-type: none"> • Comparison Table (pg 817) showing information gained from each type of telescope. 	<ul style="list-style-type: none"> • ____ telescopes show ____. • ____ can be seen with ____. • ____ displays ____. 	<ul style="list-style-type: none"> • Clock Appointments <i>Prompt:</i> 1st-What do visual telescopes show about stars? 2nd-x-ray 3rd-radio. 	Circle Map 
2 a. Students know the solar system is located in an outer edge of the disc-shaped Milky Way galaxy, which spans 100,000 light years.	Does the textbook provide language of dominant function for production?  or NO Elaboration/ Description	<ul style="list-style-type: none"> • Label a diagram of a spiral galaxy with the size of the Milky Way. Label the possible location of our solar system within the galaxy. • Write a summary paragraph about the Milky Way. 	<ul style="list-style-type: none"> • ____ displays ____. • ____ consists of ____. • ____ belongs ____. • In other words ____. 	<ul style="list-style-type: none"> • Think (write) – Pair – Share <i>Prompt:</i> Describe the Milky Way galaxy. 	Circle Map 

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2. b. Know how galaxies are made of billions of stars and comprise most of the visible mass of the universe.	Does the textbook provide language of dominant function for production? YES or NO Compare and Contrast	• Venn Diagram/Double bubble comparing types of galaxies	<ul style="list-style-type: none"> • ____ and ____ are similar because they are both ____. • Both are ____. • Although ____ and ____ have ____, they are different because ____. 	<ul style="list-style-type: none"> • Talking Chips <i>Prompt:</i> List the characteristics of a galaxy. 	Double Bubble Map 
9. a. Know the resources of major economic importance in California and their relation to California Geology.	Does the textbook provide language of dominant function for production? YES or NO Elaboration/ Description	• Label a map of California with the locations of our major resources.	<ul style="list-style-type: none"> • ____ is characterized by several features such as ____. • ____ consists of ____. • ____ is known for ____. 	<ul style="list-style-type: none"> • Give One Get One <i>Prompt:</i> What is the most important resource in California? Why? 	Circle Map 
9. b. Know the principal natural hazards in different California regions and the geologic basis of those hazards.	Does the textbook provide language of dominant function for production? YES or NO Elaboration/ Description	• Google Earth tour** of natural hazards in California including a summary of each hazard location.	<ul style="list-style-type: none"> • ____ is widely acknowledged as ____ and exhibits ____. • ____ is known for ____. • ____ contains ____ and is known for ____. 	<ul style="list-style-type: none"> • Talking Stick <i>Prompt:</i> What are the principal natural hazards in California? Where are they located? 	Circle Map 
9. c. Know the importance of water to society, the origins of California's fresh water, and the relationship between supply the need.	Does the textbook provide language of dominant function for production? YES or NO Elaboration/ Description	• Make a brochure showing the importance of water in California.	<ul style="list-style-type: none"> • One example of ____ is ____. • ____ is widely acknowledged as ____. • ____ reflects ____. • ____ can be described as ____. 	<ul style="list-style-type: none"> • Clock Appointments <i>Prompt:</i> 1st-What are the origins of California's fresh water? 2nd-Why is water important to society? 3rd-Why is water scarce in California? 	Circle Map 

Garden Grove Unified School District
Office of Secondary Education
Department of 7-12 Instructional Services
Constructing Meaning Functions and Thinking Maps

The chart below shows the alignment between the dominant language functions (Systematic ELD and Constructing Meaning) and the eight Thinking maps. Aligning the two will support English Learners in their receptive and expressive language acquisition.

Language Function	Language Function	Thinking Map
Elaboration/ Description	Defining content and text Describes attributes, qualities, characteristics and properties Explain relationships of objects in space Comparing whole to parts Analysis of text	Circle Map  Bubble Map  Brace Map 
Compare/ Contrast	Compare and Contrast Understand and express how two or more things are similar and how they are different Understand and express the relationship between two ideas, concepts, or things	Double-Bubble Map  Bridge Map 
Sequencing	Sequencing and ordering Relate steps in a process Express time relationships and actions within a larger event	Flow- Map 
Cause-Effect	Cause and Effect Explain the cause of an outcome Explain why something occurred	Multi-Flow Map 
Proposition and Support	Defend an opinion Explain reasoning, or justify a position Classifying and sorting	Multi-Flow Map  Tree Map 
Summarizing	Express main ideas and significant details	Tree Map  Brace Map  Circle Map 