

**Background:**

Manhattan Bridges High School is a Bilingual and Dual-language school in the city. Our bilingual program accepts students who are newcomers and who have been in the country for less than 3 years; whereas our dual-language program, accepts students of Spanish heritage, whose main language is English, but have strong family ties with the Spanish language.

The Universe is a topic that fascinates my students, and people in general. When teaching the unit, I make sure that I provide my students with opportunities to explain the universe, make connections and ask questions. The major ideas I hope to address through this unit are:

- How did everything start?
- How do we know what we think we know about the universe?
- Is our Universe still expanding/ is it getting old?
- Are other Universe possible?
- Are we alone in the Universe?
- Could our star die as well?
- What would happen to our planet Earth in the future?
- Why do planets keep moving?
- Why do we have the need to keep exploring the Universe?
- How do Earth's motion and position relative to the rest of our solar system and universe determine what we see and experience?
- How have humans used the motion of the Earth and other celestial objects to develop a sense of time?
- What paradigm shifts have occurred thanks to our changing understanding of the universe?

The resources I plan to integrate into this unit are hands-on activities, group discussion, reading, white thinking boards, videos on the Universe, animations, and labs. By integrating all these elements I hope to engage my students, promote exploration and questioning in the classroom and help my students acquire the necessary content and academic vocabulary.

<b>UNIT PLAN:            EARTH IN THE UNIVERSE</b>		
<b>EARTH SCIENCE</b>	<b>10TH GRADE</b>	<b>BILINGUAL POPULATION (ENGLISH/SPANISH)</b>
<b>72 minute periods</b>	<b>18-20 days of instruction</b>	
Essential Questions:	How did everything start? How do we know? Is our Universe still expanding/ is it getting old? Are other Universe possible? Are we alone in the Universe? Could our star die as well? What would happen to our planet Earth in the future? Why do planets keep moving? How do Earth's motion and position relative to the rest of our solar system and universe determine what we see and experience? How have humans used the motion of the Earth and other celestial objects to develop a sense of time?	

	What paradigm shifts have occurred thanks to our changing understanding of the universe?	
<p><b>NY Regents Standards</b></p> <p>Key Idea 1: The Earth and celestial phenomena can be described by principles of relative motion and perspective.</p> <p>PI 1.1 - Explain complex phenomena, such as tides, variations in day length, solar insolation, apparent motion of the planets, and annual traverse of the constellations.</p> <p>PI 1.2 - Describe current theories about the origin of the universe and solar system.</p> <p><b>P-ESS2-1.</b> Ask questions, make observations, and collect and record data using simple instruments to recognize patterns about how local weather conditions change daily and seasonally.</p> <p>1-ESS1-1. Use observations of the Sun, moon, and stars to describe patterns that can be predicted.</p> <p>5-PS2-1. Support an argument that the gravitational force exerted by Earth on objects is directed down. Analyze data.</p> <p>5-ESS1-1. Support an argument that differences in the apparent brightness of the Sun compared to other stars is due to their relative distances from Earth</p>	<p><b>Common Core Standards Math</b></p> <ol style="list-style-type: none"> <li>1. Make sense of problems and persevere in solving them.</li> <li>2. Reason abstractly and quantitatively.</li> <li>3. Construct viable arguments and critique the reasoning of others.</li> <li>4. Model with mathematics.</li> <li>5. Use appropriate tools strategically.</li> <li>6. Attend to precision.</li> <li>7. Look for and make use of structure.</li> <li>8. Look for and express regularity in repeated reasoning</li> </ol>	<p>Common Core Standards English</p> <p><b>WHST 9-10. 1-</b> Write arguments focused on discipline-specific content.</p> <p><b>WHST 9-10. 4.</b> Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.</p> <p><b>WHST 9-10.5.</b> Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.</p> <p><b>WHST 9-10.6.</b> Use technology, including the Internet, to produce, publish and update individual or shared writing products, taking advantage of technology's capacity to link to other information and to display information flexibility and dynamically.</p> <p><b>WHST 9-10. 9.</b> Draw evidence from informational texts to support analysis, reflection and research.</p>
<p style="text-align: center;"><b><u>Vocabulary</u></b></p> <p>Big Bang Expansion Red-shift Cosmic background radiation Excentricity Elipse Foci/ focus Orbital velocity Gravity</p>	<p style="text-align: center;"><b><u>Vocabulary:</u></b></p> <p>Perihelion Kepler's laws Luminosity Mass Density Temperature Kelvin, Fahrenheit, Celsius Equatorial Diameter Period of Rotation</p>	<p style="text-align: center;"><b><u>Materials</u></b></p> <p>Ballons String Rulers Protractors Cardboard Pushpins Reference Table Graphing paper Calculators</p>

Nuclear Fusion Aphelion	Period of Revolution Distance Astronomical Units	Smartboard Whiteboards(thinking boards) Color pencils Erase markers Permanent markers Chromebooks Construction paper scissors
<b>STORYLINE:</b>	<b>GUIDING QUESTION/IDEA:</b>	<b>RESOURCE:</b>
DAY 1	HOW MUCH DO YOU KNOW ABOUT THE UNIVERSE?	COSMIC SURVEY <a href="https://drive.google.com/drive/u/0/search?q=BIG%20BANG">https://drive.google.com/drive/u/0/search?q=BIG%20BANG</a>
DAY 2	HOW DID EVERYTHING START?	BALLOON ACTIVITY
DAY 3	WHAT PIECES OF EVIDENCE SUPPORT THE BIG BANG?	READING-VIDEO WHITEBOARD- THINKING BOARD <a href="https://drive.google.com/drive/u/0/search?q=THE%20EXPANDING%20UNIVERSE">https://drive.google.com/drive/u/0/search?q=THE%20EXPANDING%20UNIVERSE</a>
DAY 4	HOW WERE THE STARS FORMED?	VIDEO- CYCLE OF LIFE OF THE STARS ACTIVITY HR DIAGRAM
DAY 5	HOW DID THE SOLAR SYSTEM FORMS?	SOLAR SYSTEM MODEL <a href="https://www.solarsystemscope.com/">https://www.solarsystemscope.com/</a>
DAY 6	HOW DID IDEAS ABOUT THE UNIVERSE EVOLVE?	GEOCENTRISM AND HELIOCENTRISM MODELS <a href="https://www.youtube.com/watch?v=CfgGm4xHkSk">https://www.youtube.com/watch?v=CfgGm4xHkSk</a>
DAY 7	DISTANCES AND SIZES IN THE SOLAR SYSTEM	SOLAR SYSTEM TO SCALELAB <a href="https://drive.google.com/drive/u/0/search?q=SOLAR%20SYSTEM%20LAB">https://drive.google.com/drive/u/0/search?q=SOLAR%20SYSTEM%20LAB</a>
DAY 8	MODELING THE SOLAR SYSTEM	MODELING A SOLAR SYSTEM TO SCALE

DAY 9	WHAT IS THE DIFFERENCE BETWEEN INNER AND OUTER PLANETS?	SOLAR SYSTEM PLANETS RESEARCH PROJECT <a href="https://docs.google.com/document/d/1VaAiP-1zv1iFq4QI5522n6QV_uzdHelDYi_3OldFEkk/edit">https://docs.google.com/document/d/1VaAiP-1zv1iFq4QI5522n6QV_uzdHelDYi_3OldFEkk/edit</a>
DAY 10	HOW DO PLANETS MOVE IN THE SPACE? KEPLER' S LAWS	ECCENTRICITY LAB-1 <a href="https://drive.google.com/drive/u/0/search?q=eccentricity">https://drive.google.com/drive/u/0/search?q=eccentricity</a>
DAY 11	HOW DO PLANETS MOVE IN THE SPACE?	GRAVITY, INERCIA AND ORBITAL VELOCITY
DAY 12	HOW DO PLANETS MOVE IN THE SPACE?. KEPLER' S LAWS	ECCENTRICITY LAB 2 <a href="https://drive.google.com/drive/u/0/search?q=eccentricity">https://drive.google.com/drive/u/0/search?q=eccentricity</a>
DAY 13	SPACE MISSIONS	LET'S GO TO MARS! CALCULATING LAUNCH WINDOWS <a href="https://docs.google.com/document/d/1hc2tK5EK2Uloevq7rDiw9mqLm01NaoBhWFDfDlyXlSk/edit">https://docs.google.com/document/d/1hc2tK5EK2Uloevq7rDiw9mqLm01NaoBhWFDfDlyXlSk/edit</a>
DAY 14-16	FINAL PROJECT: ARGUMENTATIVE ESSAY: SPACE EXPLORATION: INVESTMENT OR MONEY DOWN THE DRAIN?	ARTICLES DEBATE GRAPHIC ORGANIZER SENTENCE STARTERS
DAY 17	VISIT THE PLANETARIUM	MUSEUM OF NATURAL HISTORY PACKAGE <a href="https://docs.google.com/document/d/17PH51RuabMWcWTpJloestT85X8bPB3uYE4Utb_xlFcl/edit">https://docs.google.com/document/d/17PH51RuabMWcWTpJloestT85X8bPB3uYE4Utb_xlFcl/edit</a>
EXTRA CREDIT	COSMIC POETRY: WORDS AND IDEAS BRING THE COSMOS TO LIFE.	COSMIC POETRY file:///Users/admin/Downloads/SEUCosmicPoetry.pdf
ASSESSMENTS	<b>FORMATIVE</b> DISCUSSIONS GRAPHIC ORGANIZERS READING ANNOTATIONS CORNEL NOTES LAUNCH TO MARS ACTIVITY QUIZZES	<b>SUMMATIVE</b> FINAL EXAM FINAL PROJECT SOLAR SYSTEM LAB ECCENTRICITY LAB 1 ECCENTRICITY LAB 2 ARGUMENTATIVE ESSAY

	ARGUMENTATIVE ESSAY DRAFT	
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**END OF UNIT TASK:**

**Is Space Exploration Investment or Money Down the Drain?** After reading at least 3 articles, write an argumentative essay that addresses the question and support your position with evidence from the articles.

Length of instruction: 3 days

<b><u>LESSON PLAN day 14, 15 and 16</u></b>	<b>Subject/Course:</b> Earth Science
<b>Title:</b> Your mission: Write an essay about whether space exploration is worthy or not. Your audience: Young people Your style: formal	<b>Grade Level:</b> <b>10th grade</b>
<b>Estimated Amount of Instructional Time:</b> 1period of 72 minutes	
<b>☞Stage 1: Desired Results</b>	
<b>My students:</b> 34 students, of which, 6 students are dual language 28 students are bilingual Spanish-English	
<b>Standards:</b>	
<b>WHST 9-10. 1-</b> Write arguments focused on discipline-specific content.	
<b>WHST 9-10. 4.</b> Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose and audience.	
<b>WHST 9-10.5.</b> Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on addressing what is most significant for a specific purpose and audience.	
<b>WHST 9-10.6.</b> Use technology, including the Internet, to produce, publish and update individual or shared writing products, taking advantage of technology’s capacity to link to other information and to display information flexibility and dynamically.	
<b>WHST 9-10. 9.</b> Draw evidence from informational texts to support analysis, reflection and research.	

<b>Purpose:</b>	
Students are provided with different scientific articles on Space Exploration. Students will create an argumentative essay supported by evidence from at least three different articles.	
<b>Task:</b>	
Is Space Exploration Investment or Money Down the Drain?. After reading at least 3 articles, write an argumentative essay that addresses the question and support your position with evidence from the articles.	
<p><b>Students will understand that:</b></p> <ul style="list-style-type: none"> <li>• Accurate background information is needed in order to write an essay that is evidence-based.</li> <li>• Discussion promotes understanding</li> <li>• Peer-reviewing provides an opportunity to improve a document based on a peer expertise.</li> <li>• To be able to finalize an essay, multiple drafts are necessary.</li> </ul>	<p><b>Essential Questions:</b></p> <p>What are the main characteristics of an argumentative essay?</p> <p>What strategies can help me improve my writing?</p> <p>How do we ensure our essay contains information that relevant and pertaining to the topic ?</p> <p>How do I select information that is relevant to my essay?</p> <p>Why should I care about a “hook” and a “conclusion”?</p> <p>Are references necessary in an argumentative essay?</p>
<p><b>Students will know that:</b></p> <ul style="list-style-type: none"> <li>• They can improve their writing by following a paragraph outline</li> <li>• They can improve their writing by sharing and taking into consideration other peers’ ideas</li> <li>• Editing and rewriting is necessary to finalize an argumentative essay</li> <li>• Feedback allows us to revisit our ideas from a different point of view. It is also an opportunity for peer editing.</li> </ul>	<p><b>Students will be able to:</b></p> <ul style="list-style-type: none"> <li>• Use the “Focus and Gather” strategy to write a paragraph that contains the main idea or topic sentence, evidence, explanation of that evidence and examples and a concluding sentence.</li> <li>• Use scaffolds such as Venn diagrams and graphic organizers to select and organize ideas</li> <li>• Use peer-coaching and peer feedback as a tool to improve writing.</li> </ul>
<b>↪Stage 2: Assessment Evidence</b>	
<p><b>Performance Tasks:</b> (Summative Assessments)</p> <ul style="list-style-type: none"> <li>• Final product</li> </ul> <p><b><u>DIFFERENTIATIONS:</u></b></p> <p>Scaffolds: Venn Diagram, guided questions, MEAL paragraph sentence starters, hands-out in Spanish for Spanish speakers, think aloud modeling of the strategies.</p>	<p><b>Formative Assessments:</b></p> <ul style="list-style-type: none"> <li>• Text annotations</li> <li>• Reading comprehension questions</li> <li>• MEAL paragraph</li> <li>• Venn diagram</li> <li>• Graphic organizer</li> <li>• Group discussion in Socratic Seminar</li> <li>• Draft</li> </ul>
<p><b>Key Criteria: MEAL PARAGRAPH Rubric</b> <a href="https://docs.google.com/document/d/1iPoSJP1_lk_eQ7kl3ayP1nBjaiSafC6r2SQaRoF5VP2M/edit">https://docs.google.com/document/d/1iPoSJP1_lk_eQ7kl3ayP1nBjaiSafC6r2SQaRoF5VP2M/edit</a></p> <p style="text-align: center;"><b>ARGUMENTATIVE ESSAY RUBRIC</b></p>	

<a href="https://drive.google.com/drive/u/0/folders/1hSMPI-UBBJHIVO2fBmyKtx11dlnU7f3F">https://drive.google.com/drive/u/0/folders/1hSMPI-UBBJHIVO2fBmyKtx11dlnU7f3F</a>	
<b>↳ Stage 3: Learning Plan</b>	
<p>DAY 1</p> <p><b>Opening activity:</b>  <b>DO NOW:</b>  Turn and Talk- What is the key for a great argumentative essay?</p> <p><b>Main activity 1:</b>  Fishbowl debate: Is space research necessary or not?</p> <p>In a Fishbowl discussion, students are seated in two concentric circles. The students who are seated in the inner circle (or inside the "fishbowl") actively participate in a discussion by asking questions and sharing their opinions. The students who are seated in the outer circle listen carefully and actively to the ideas presented by their peers in the inner circle. At the end of an allotted period of time, the students in each circle switch roles, so that they practice being both contributors and listeners in a group discussion</p> <p><b>Assessment:</b>  Gather both supportive and against arguments from the Debate. Fill out the graphic organizer.</p> <p><b>Differentiations:</b>  Establish roles, sentence starters and expectations.</p>	<p><b>Gathering</b>  Students have 20 minutes to gather information about the Topic in the internet. Some interesting sites can be:  <a href="https://www.debate.org/opinions/is-space-exploration-wor">https://www.debate.org/opinions/is-space-exploration-wor</a>  <a href="https://www.nasa.gov/exploration/home/why_moon.html">https://www.nasa.gov/exploration/home/why_moon.html</a>  <a href="https://www.nasa.gov/missions/solarsystem/Why_We_01p">https://www.nasa.gov/missions/solarsystem/Why_We_01p</a>  <a href="https://www.nasa.gov/missions/">https://www.nasa.gov/missions/</a></p> <p><b>Writing</b>  Students write their ideas in preparation for the socratic Circle or Fishbowl</p> <p><b>Group discussion</b>  Students annotate ideas other students bring to the table. Students will have roles:  -facilitator  -note taker  -time keeper  -skeptic</p> <p><b>Closure:</b>  Activity feedback and Meta Reflection</p> <p><b>Exit ticket</b>  Are you leaning towards a supportive position of space Space exploration or not? List 3 supportive or Unsupportive ideas that you might use in your essay.</p>

Day 2

**Opening activity:**

**DO NOW:**

Word Splash activity to activate prior knowledge.

**Main Activity:**

Read the article #1 as a class and take notes using the Cornell note-taking organizer. Read article #2 individually and take Cornell notes. Teach students how to get the important meaning and not focusing on the words they don't know.

Complete Venn Diagram comparing and contrasting both articles.

Answer to the questions

**Homework:**

Further research. Read and pull out another article about space exploration different from the ones we have seen in the classroom that contains relevant information about the topic. Do further research at home. Take notes of interesting data that you might want to use later when you write your essay. Do not forget to add the source the data comes from.

Students choose 6 words from the board and write Everything they know about those words. The Purpose of this activity is to activate prior knowledge As well as pre-teach some words that students Encounter in the reading.

**Words are: space, missions, research, wealth, Expenses, benefits.**

**Modeling of the "Focus and Gather" strategy.**

Differentiation:

Think alouds,  
Sentence starters,  
Turn and talk

**Formative assessment:**

In groups, students share their ideas from their Venn Diagrams and the answer to the questions.

First graphic organizer is due (exit ticket)

**Exit ticket:**

**Complete the essay organizer:**

What will be your position in your essay (circle one)  
IN FAVOR      AGAINST

What two ideas are you going to develop to support your essay?

Idea 1 \_\_\_\_\_

Idea 2 \_\_\_\_\_

For each of these ideas, you will need an evidence from the Reading and at least one example.

Evidence found on the Reading for idea  
1 \_\_\_\_\_ what article 1 or 2?

Example 1 \_\_\_\_\_

Evidence for idea 2 \_\_\_\_\_ what article? 1 or 2?

Example for idea 2 \_\_\_\_\_

Day 3

**DO NOW:** How do we produce a great argumentative essay? Students look at an argumentative essay to determine its sequencing.

Students decide if the argumentative essay presented is a good example or not of an argumentative essay Based on their idea of great argumentative essay (Do now 1)

**Main Activity:** Once students have read and annotated the reading, students turn and talk to uncover the main structure of the argumentative essay.

Students will analyze the hook, the main ideas, evidence and examples of the essay "Research exploration money down the drain"?

Students will turn and talk to agree in the counter argument of this essay and they will analyze how this essay is being supported with evidence and examples.

Students will fill out the charts in groups and they will discuss the main paragraphs of an argumentative essay.

Based on their vision of a great argumentative essay (do now, DAY 1), students will determine if the presented essay can be considered a great argumentative essay or not, and why.

Students will analyze the essay sample to determine if it makes a great argumentative essay or not.

Differentiation:

- guided questions
- worksheet in Spanish for bilingual students
- pair work/group work
- scaffolded

1. Answer to these questions
  - a. What characteristics should an essay present to be considered a great essay?
  - b. Is the example you just read a good essay? Why or why not? Is there anything missing?
  - c. What is the author's position: in favor or against space exploration?
  - d. In what paragraph does the author state his/ her position? What is the evidence?

Paragraph\_\_\_\_\_ Evidence\_\_\_\_\_

- e. A good introduction must count on a good hook. What kind of hook does the author use in this example?
- f. What main ideas is the author developing in this example?
- a. What is the idea the author is refuting?

Idea	Evidence	Example
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<p>DAY 4</p> <p>DO NOW: What hook will you use to capture the readers attention?</p> <p>Which one will be your counterargument? Counterargument idea: Evidence: Example:</p> <p>Students have time to work on heir first draft.</p>	<p>b. How did the author conclude his/her essay?</p> <p>c. What are references? How do they have to be written?</p> <p><b>Materials:</b> Computers are needed for students to work on their first Draft.</p> <p><b>Differentiation:</b> -sentence starters -graphic organizers -Translanguaging -Writing can be in Spanish -Peer-coaching- Each student will work with a partner that Will act as a writing coach.</p> <p><b>Assessment: Draft</b></p> <p><b>Peer-coach feedback</b> <b>Teacher feedback</b></p>		
<p><b>Resources and materials:</b></p> <p><a href="https://docs.google.com/document/d/1-fENKtAp6jz3JVE_JWebZQLNGaQgGvMp34TQib6OmmU/edit">https://docs.google.com/document/d/1-fENKtAp6jz3JVE_JWebZQLNGaQgGvMp34TQib6OmmU/edit</a></p> <p><a href="https://docs.google.com/document/d/0BwuqmCxtUJdqbK5rQmQ5YmhKUnM/edit">https://docs.google.com/document/d/0BwuqmCxtUJdqbK5rQmQ5YmhKUnM/edit</a></p>			
<b>↪Stage 4: Reflection</b>			
<p style="text-align: center;"><b>Reflect on Student Learning: (After the Lesson)</b></p> <ul style="list-style-type: none"> <li>What was the effectiveness of instructional design? How do I know or how will I know?</li> </ul> <p>The instructional Design allows flexible grouping, scaffold, differentiation and cooperative learning. These elements math my students prefered-type of learning.</p> <p>Students will be able to establish what makes a great essay great. By doing it, they are setting high expectations for their own work.</p> <p>Students will have the opportunity of working in writing during 4 days in the class. Through the debate students will brainstorm ideas they might be able to use when writing their own essay. Through the analysis of two essays, students will be exposed to two contrary opinions and through the analysis of an argumentative essay, students will be able to establish patterns, determine format and analyze the logical sequencing of the essay.</p>			

At the end, students will be prepared to write the first draft of their own argumentative essay, supporting it with strong evidence and adding examples, a hook and a strong conclusion that make their essay a great argumentative essay. Through peer coaching and pari/group activities, students find support in other members of the class.

**Focus & Gather**

Reading for purpose

A cognitive strategy to support writing coherence

<a href="#"><u>Goal</u></a>	<a href="#"><u>Summary</u></a>	<a href="#"><u>Process</u></a>	<a href="#"><u>Tips for MLs</u></a>
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**Instructional Goal:** This reading strategy is intended to support students’ abilities to gather ideas or information in a systematic way and - most importantly - identify why they are gathering information before they examine sources and effectively and coherently carry out a writing task.

**Summary:** The activity begins with you modeling the cognitive strategy used through a read aloud/think aloud. Students then practice the strategy in pairs with scaffolds (sentence stems). At the end of the whole activity, students reflect on what they did and how it was helpful to their learning. When students are first introduced to this strategy, it will be the teacher who sets the note-taking/information gathering goal. Over time, students should take on this responsibility. An intermediate goal of this activity is for students to use the strategy to support the coherence of their writing. Achieving this goal requires explicit, repeated, and systematic instruction of the cognitive strategy. The ultimate goal is for students to autonomously and routinely use the strategy to support their own idea or information gathering and writing tasks.

**Best fit:** This strategy fits any content presented in text or diverse formats and media in which students are expected to produce a written product. This strategy can be used in any discipline.

**Timing:** The five steps can be done within one class period. Choose your text or text portion and the independent task according to the time you have available. To calculate the time you need for steps 2, 3 and 4, *carefully read the text you'll be modeling ahead of time. Plan how you'll use the sentence stems, and decide what you expect to see in students' work as evidence they're using the strategy.*

**Process**

Rationale and Description	What Teachers and Students Say and Do
<p>1. <b>Launch: What is the Thinking goal?</b></p>  <p>The launch helps students understand <b>why</b> they are doing this activity and <b>how</b> the activity will run.</p>	<p><i>“Our thinking goal for today is to establish a purpose for gathering information <b>because</b> it helps us use our time efficiently and prepare well for our writing task.</i></p>

<p>In this section, a teacher announces the purpose of note-taking, the topic, and how notes will be taken. (1-2 minutes)</p>	<p><b>“First, I’ll model how to set my purpose and gather information by making my thinking visible as I do it. Next, you’ll work together to practice, then you’ll work individually.”</b></p>
<p><b>2. Modeling through Read Aloud/Think Aloud</b></p>  <p>During a think aloud, you model the strategy by <b>narrating what is going on in your head as you’re</b> reading the text for different purposes. You make your <b>thinking visible</b> by <b>using the sentence stems</b> and <b>annotating</b> in the text, on a post-it, on the board, etc.</p> <p>During this step, (1) information is generated from some source (e.g. from a short-film, a mini-lecture, slides, a class discussion, etc.) and (2) you model how to take notes.</p> <p>When <b>modeling</b>, the you are <b>“in character”</b> as a reader, using the <b>first person</b> voice, engaging with the text rather than with students.</p>	<p><b>SETTING A PURPOSE TO GATHER INFORMATION</b></p> <ul style="list-style-type: none"> <li>• Model note-taking for a purpose, stating what the purpose/focus of gathering is.</li> <li>• Talk about the source/resource from which you’ll be gathering information and how that affects your gathering process.</li> <li>• Use the sentence stems to identify the difference between facts that are related to the gathering/writing purpose and ideas that are unrelated. For example: <ul style="list-style-type: none"> <li>○ “I know <b>my purpose is</b> ____, so as I read, I’ll <b>prioritize</b> gathering information only on that topic.”</li> <li>○ This piece of information is interesting, <b>but doesn’t fit my topic</b>, so I’m <b>not going to copy</b> it in my notes.”</li> </ul> </li> </ul> <p>(When students are first exposed to this strategy, they will first watch the teacher model the decision-making and note-taking processes. As they become more familiar with how to do it themselves, they can also take notes as the you are modeling.)</p>
<p><b>3. Partner/Small Group Discussion with Scaffolds</b></p>  <p>A partner share provides students an opportunity to process what they are learning, learn from others, and repair misunderstandings.</p> <p>In this step, students use the <b>sentence stems</b> to practice the cognitive strategy together, orally. They annotate their thinking process as they practice what you modeled and move through the text.</p> <p>Pairs can work with new text or continue with the modeled text and can use English or home language. A teacher may want to toggle back and forth between the partner share and information gathering/sharing.</p>	<p>“As I go around the room, I’m going to listening for the same language I used when I was modeling. I’ll know you’re using the strategy when I hear....”</p> <p>“Compare your notes with a partner to see what they got that you did not get. Help each other clarify info and make sure everything is connected to the purpose of gathering and the writing task.”</p> <p><b>Setting a purpose to gather information sentence stems</b></p> <ul style="list-style-type: none"> <li>• <i>My purpose is...so I am looking for...</i></li> <li>• <i>My top priority is...</i></li> <li>• <i>This information fits my purpose because/by...</i></li> <li>• <i>This information is [is not] relevant because...</i></li> <li>• <i>I’m [not] going to copy down...because</i></li> <li>• <i>(any other stems that get at the same idea using language accessible to students)</i></li> </ul>
<p><b>4. Independent Work Time</b></p>  <p>This step gives students an opportunity to practice the cognitive skill on their own and for you to informally assess each student’s progress.</p>	<p>Students begin transferring their notes and annotations to organize their ideas, consistent with the writing task for which they gathered notes. They can use any note-taking form you have designated (e.g. single paragraph outline, graphic organizer, etc.)</p>

### **5. Meta-reflection**



This step helps students internalize **why** this cognitive strategy is **beneficial to** their language development, and **how to independently activate** the strategy as they are reading or writing.

- A. Individual writing: (2-5 minutes)
- B. Pair: (2-5 minutes)
- C. Share (if time allows): (5 minutes)

Students write using these reflection prompts:

- When taking notes (for a purpose), I should ...
- *Something I can tell that's different about reading without this strategy and using the strategy is....*
- *One good thing I noticed about using the strategy was...*
- *One question I still have about what we did today is...*

[Circulate to select meta-reflections to share. Ask specific students to share their meta-reflections with the class.]

### **Tips for working with Multilingual Learners:**

- Allow students to take notes in English and home language.
- Allow students to use dictionary to translate content into home language.
- Set writing goal in home language.
- Group students with partner of same language groups. Encourage them to discuss the material in their home language and complete the sentence stems in English.
- Allow the students to write the meta-reflection in their home language.

## **Earth Science Project:**

**Your mission: Write an essay about whether space exploration is an investment of money down the drain.**

Your audience: Young people

Your style: formal

### **INSTRUCTIONS**

- 1) DEBATE IN THE CLASSROOM ABOUT THE TOPIC
- 2) ANALYZE THE ARGUMENTATIVE ESSAY EXAMPLE
- 3) READ ARTICLE 1. TAKE NOTES IN THE MARGIN AND WRITE A SUMMARY.
- 4) READ ARTICLE 2. TAKE NOTES IN THE MARGIN AND WRITE A SUMMARY
- 5) COMPLETE THE VENN DIAGRAM

6) THINK ABOUT YOUR POSITION AND WHAT MAIN IDEAS YOU WILL LIKE TO INCLUDE IN YOUR ESSAY.

7) WRITE YOUR ESSAY FOLLOWING THE OUTLINE

**DUE DATE:** \_\_\_\_\_

**YOU ARE EXPECTED TO BRING:**

- **ALL PACKAGE COMPLETED**
- **THE FIRST DRAFT OF YOUR ESSAY**

**Day 1**

**Debate**

<p>Ideas and examples <b>SUPPORTING SPACE EXPLORATION</b></p>	<p>Ideas y ejemplos <b>AGAINST SPACE EXPLORATION</b></p>
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**DAY 2**

<p><b>Article 1</b>  <b>Earthly benefits of space exploration</b></p> <p>Very recently, the BBC reported that, in conjunction with Imperial College of the University of London, a concept mission to land astronauts on the planet Mars, using known technology, had been developed. Of course, this will more than likely fuel the long-running debate about devoting resources to space exploration when so many of the earth's some seven billion inhabitants, from both the developed and developing world, live in poverty.</p> <p>There is no simple solution or clear-cut answer to this issue as the standard cost-benefit analysis would not suffice. However, if the benefits derived from space exploration technology positively affect the average global citizen, and in particular can improve the lives of the less fortunate in the developing world, then it can stand muster on the ethical test.</p> <p>Food production, worldwide, is still very dependent on natural weather cycles. Thus monitoring and predicting the weather is critical. The use of satellite technology plays an indispensable and integral role; not only for agricultural purposes but also to save lives by giving advance warnings of impending natural disasters like hurricanes and tsunamis. These advance warnings have resulted in citizens outside the developed world being able to mitigate the adverse effects of extreme weather events.</p> <p>Technology derived from the space exploration effort also affects our everyday, routine activities. The cameras found in cell phones are based on the miniaturised technology developed by the Jet Propulsion Lab (JPL) in California for use on spacecraft.</p> <p>In order to meet the payload/weight requirements, recording equipment had to be miniature, as light as possible, and digital. The development of high-resolution digital cameras to photograph space and transmit back to earth for recording, storage and analysis has now become the backbone of social media technology.</p> <p>What was once a high-tech tool, for what was perceived as an esoteric and costly venture, is being used for the most mundane of human endeavours: being updated by and updating family and friends with photos and videos through postings on Facebook, etc. Another essential requirement for space technology was reliability. The Mars Exploration Rover which NASA launched</p>	<p><b>Notes</b></p>
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ten years ago is still sending back pictures of stunning details from Mars to earth. The cameras found in cell phones are similar in that regard.

The practice of medicine relies heavily on diagnostic tests like radiography, microscopy and CAT scans. All of these now use digital imaging, which is another byproduct of space exploration technology.

Digital imaging allows for easy transmission, storage and analysis. This has resulted in patients' x-rays, scans and files being stored digitally. This allows for fast retrieval and transmission. One hopes that in the not-too-distant future such systems will be implemented in our public hospitals. This would allow, for instance, a doctor in the Sangre Grande Hospital being able to instantly access a patient's record at the San Fernando Hospital, not having to wait for days or possibly weeks for the paper file to be physically brought.

There are many Web sites that list the many benefits of space exploration. These include the Web site of NASA and [www.care2.com](http://www.care2.com) and [www.stars4space.org](http://www.stars4space.org). They provide useful information and make interesting reading, and schoolkids should be encouraged to visit them.

In addition, progress only comes about when humans dream and are inspired to aspire to attain what may seem, at the time, the impossible. Space exploration and travel still fire the imagination of the young and old, the scientist and non-scientist alike. From that point of view alone, space travel is a worthy human endeavour.

Source: The Guardian. July 31<sup>st</sup>, 2013  
 By: Prakash Persad, Columnist

**abstract**

Article 2

**Space Exploration: At What Cost?**  
 Apr 9, 2011 03:00 AM ET // by [Mark Thompson](#)

It's been a humbling few weeks for many of us. Devastating scenes in Japan **from the earthquake, tsunami and now the nuclear crisis** serve as a reminder how lucky many of us are.

For me, this was followed by watching Comic Relief charity event in the UK on March 18 and seeing the poverty in Uganda on the TV — it was nothing short of shocking. In the same period, I was closely following NASA's MESSENGER space probe as it dropped into orbit around Mercury, the nearest planet to the sun.

I found myself wondering if it's right that we are spending all this money on space exploration when people on our own planet are suffering so horribly, either at the hands of Mother Nature or poor governments.

<p><b>Mission to Mercury</b>  Mercury itself has actually had quite a lot of press of late, as the last few weeks have been a great opportunity to try and observe this tiny elusive planet. When inner planets (Mercury and Venus) orbit around the sun and reach the extremes of their orbit as viewed from Earth, they are at their easiest to spot.  For Mercury, it's been on the eastern side of the sun so is said to be at "greatest eastern elongation," a mouthful that means it's worth trying to spot it low in the western sky after sunset.  It's been great to see the nearest planet to the sun, up close, and amazing to know that we've sent a tiny space probe there to study it. But for me, even more spectacular was watching Discovery dock with the International Space Station a few weeks ago.  That question about funding still nags at me though.</p> <p><b>Big Numbers</b>  The MESSENGER mission cost \$280 million (which, in reality, isn't a vast amount for a space mission). The launch of a space shuttle costs \$450 million and there have been about 130 of them. It cost \$1.7 billion to build just one of the five-strong fleet.  Finally, the International Space Station has, over the years of its existence, cost an estimated \$142 billion and that's not including the plethora of smaller space missions, other space agencies and other expenses involved in space exploration.  As you can see, these are big numbers. Yet there's an urgent need for funding to save lives down here on Earth, too.  Although space exploration certainly isn't over-funded, should we keep throwing money into space exploration when there are so many examples of human suffering?</p> <p><b>More Money, Less Suffering?</b>  I have very special and fond memories of space exploration; watching the images come back of Halley's Comet from Giotto, seeing the surface of Titan (Saturn's moon) from the Huygens lander and incredible footage of the surface of Mars from Pathfinder.  Great memories are one thing, but many people are greatly suffering. Maybe all the money alone can't simply get rid of world suffering, but we can put our effort in developing a plan for that money to reach the people who need it the most.</p>	
	abstract

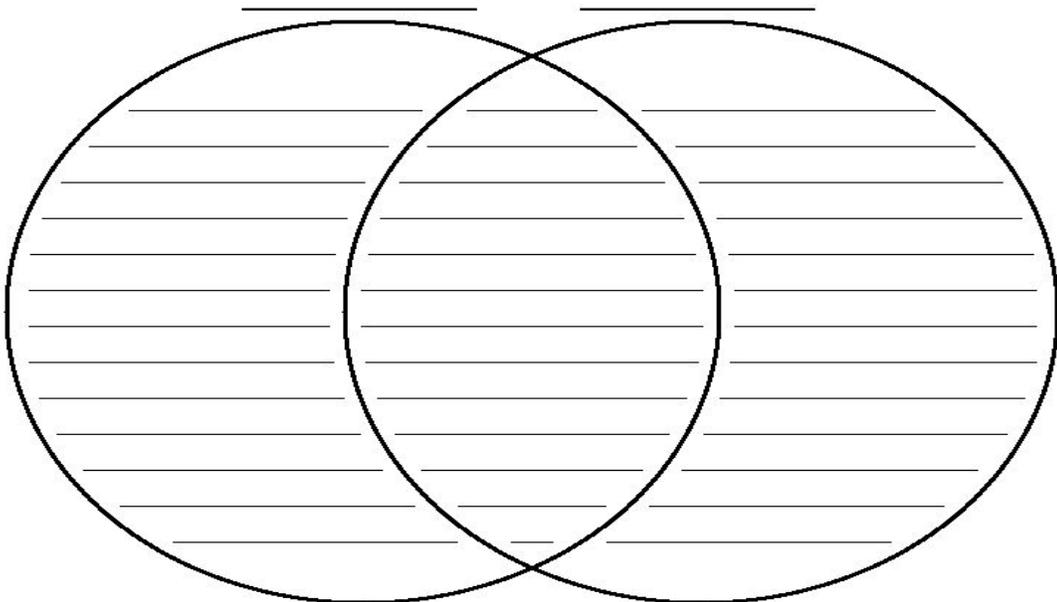
Complete the following graphic organizer based on the information that you can retrieved from the articles.

Article	Is the author pro or against?	Evidences found in the article	Examples found in the article

1			
2			

Venn diagram. Compare and contrast both articles

Name : \_\_\_\_\_ **Venn Diagram**



**Now you are going to write your essay**

What will be your position in your essay (circle one)    IN FAVOR    AGAINST

What two ideas are you going to develop to support your essay?

Idea 1 \_\_\_\_\_

Idea 2 \_\_\_\_\_

For each of these ideas, you will need an evidence from the Reading and at least one example (the example can be from the reading or from your own knowledge). You can cite the evidence from the reading using “\_” or you can re write it on your own words.

Evidence found on the Reading for idea 1 \_\_\_\_\_ what article 1 or 2?

Example 1 \_\_\_\_\_

Evidence for idea 2 \_\_\_\_\_ what article? 1 or 2?

Example for idea 2 \_\_\_\_\_

What idea are you going to use as your counter argument?

Counter argument \_\_\_\_\_

What is the evidence and the examples you are going to use to refute that idea?

Evidence \_\_\_\_\_

Example \_\_\_\_\_

To write your introduction, do not forget a hook that makes the reader interested in what you are Reading.

In your conclusion, don't forget to bring back all your ideas and finish your article with a though provoking sentence or question.

## DAY 3

### Example of an argumentative essay.

#### Space Exploration: Investment, or Money Down the Drain?

*“Space, the final frontier.”* Any avid fan of the series, *Star Trek*, would know about this line. It is how they see space as the final destination of all living things. But it is not only they who see space in this light; scientists, and idealists, too, think that it is through the exploration of space and other celestial beings that we can truly discover the answers to life’s questions. But space exploration is very costly; about seven billion dollars a year alone is spent on space flight in the U.S. (Space Exploration, nd.). A contributing factor to the high costs of space exploration would be the errors in flight tests and experiments being done, which leads to a loss in effort, money, and time. Although space exploration does seem to be a waste in resources, space exploration is not a waste of money because: (1) exploration is man’s nature; (2) new discoveries are made through space exploration.

Exploration is man’s nature. Ever since the time of Christopher Columbus, Ferdinand Magellan, and other great explorers, man has sought to discover his world and what lies within it. It is natural of man to be curious, to ask questions, to constantly search for answers to his questions. And so man explored the seas and discovered/unearthed/made known to others their findings. Now, in the 21<sup>st</sup> century, space is being explored by man. But why explore space, when the earth itself is not yet fully explored? One incident would be about a “lost tribe”, which highlights the fact that we are not in contact with every indigenous tribe in our planet, and in a greater sense, with our own world (Space Exploration is a Waste of Money, nd.). This “discovery” is sufficient enough to show that we have to check again what we have overlooked in our planet. But space exploration would not be a waste of money since organisms found in space offer the same value to the scientific community (Space Exploration is a Waste of Money, nd.). We only have to look at it in a different perspective, and see that what is out there is equally important to what we have in earth. Money is not really wasted in the process of exploration; rather, it is invested into discovering new things, for the benefit of mankind.

New discoveries are made through space exploration. The space exploration program has been around since the Cold War and it continues until now. Discoveries have been made that benefit man in a lot of ways. One major discovery would be GPS (Global Positioning System) that helps man navigate through land, air, and sea. Another would be in medicine. Nitinol is an alloy used to make braces. This alloy is used in space crafts. The benefits of exploration and are limitless, and all of which are beneficial to us all (Kanade, nd.).

Some people may think that we should use our money for things that really matter because space exploration is very expensive. However, It is not expensive, actually. How much is seven billion dollars compared to the other expenses of the U.S government? How much is seven billion dollars, compared to the GDP of the U.S? Each year, 22 times the amount for space exploration is spent on alcohol, and over ten million dollars is spent in Iraq by the government each month. Compared to these two, the budget spent for space exploration is small, considering the fact that the U.S government earns trillions of dollars a year (Space Exploration, nd.). Is war and alcohol, then, a better way of spending/ investing the taxpayer’s money? Is space exploration, then, really a waste of money?

#### Annotate

Space is a mystery, being big and borderless. No one knows how long we will be exploring space; all that we know is that we will be benefiting from it. It is not a waste of money because we ourselves reap its benefits. It is not a waste of money we can learn a lot from it, which the future generations will benefit from.

Reference List:

1. Kanade, S. (nd.), Space Exploration Benefits, Retrieval Date: August 18, 2010; [http://www.buzzle.com/articles/space\\_exploration\\_benefits.html](http://www.buzzle.com/articles/space_exploration_benefits.html)
2. Space Exploration (nd.), Retrieval Date: August 18, 2010; [http://wiki.answers.com/Q/Is\\_space\\_exploration\\_a\\_waste\\_of\\_money](http://wiki.answers.com/Q/Is_space_exploration_a_waste_of_money)
3. Space Exploration is a Waste of Money (nd.), Retrieval Date: Aug. 18, 2010; [http://debatewise.org/debates/137-space-exploration-is-a-waste-of-money#point\\_694\\_headline](http://debatewise.org/debates/137-space-exploration-is-a-waste-of-money#point_694_headline)

**Summary**

2. Uncover the essay structure. Connect with an arrow the paragraph and the essay part:

- |             |                                       |
|-------------|---------------------------------------|
| Paragraph 1 | Conclusion                            |
| Paragraph 2 | Introduction                          |
| Paragraph 3 | Body Paragraph that supports the idea |
| Paragraph 4 | Body Paragraph that supports the idea |
| Paragraph 5 | Counterargument                       |

3. Now revisit the example and organize the ideas the author has expressed in each of the paragraphs. The idea in the first paragraph has been done for you as an example.

Lines		
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	Introduction	s, and idealists, too, think that it is through the exploration of space and other celestial beings that we can truly discover the answers to life's questions.

4. Answer to these questions

a. What characteristics should an essay present to be considered a great essay?

b. Is the example you just read a good essay? Why or why not? Is there anything missing?

c. What is the author's position: in favor or against space exploration?

d. In what paragraph does the author state his/ her position? What is the evidence?

Paragraph\_\_\_\_\_ Evidence\_\_\_\_\_

e. A good introduction must count on a good hook. What kind of hook does the author use in this example?

f. What main ideas is the author developing in this example?

Idea	Evidence	Example

d. What is the idea the author is refuting?

Idea	Evidence	Example

e. How did the author conclude his/her essay?

f. What are references? How do they have to be written?

## **Day 4**

**Title of Argumentative Essay:** \_\_\_\_\_

### **Introduction**

<b><i>Hook</i></b>	You can start with a fact or something hypothetical to grab the reader's attention. <ul style="list-style-type: none"><li>● Imagine if ...</li><li>● Do you know that ...</li><li>● What if ....</li></ul>
<b><i>Background</i></b>	Explanation of the topic or problem you will be talking about. Explain how the problem began or became a controversy.
<b><i>Thesis</i></b>	This is your opinion about the topic. You must find evidence to support it.

### **Body Paragraph 1 & 2**

(They both have the same format)

<b>Main idea</b>	Claim or Position. One sentence that expresses support FOR your argument. It must be written <u>in your own words</u> .
<b>Evidence</b>	<ul style="list-style-type: none"> <li>• The text states, “_____.” This means _____.</li> <li>• For example, _____.</li> <li>• According to the text, “_____.” This shows _____.</li> </ul>
<b>Analysis</b>	<ul style="list-style-type: none"> <li>• This is important because (express a universal truth).</li> <li>• This means (express a universal truth).</li> <li>• (Rephrase your evidence using other words) shows that (express a universal truth) because _____.</li> </ul>
<b>Link to argument</b>	<ul style="list-style-type: none"> <li>• This proves that (argument) because _____.</li> <li>• The argument that (argument) must be true because _____.</li> <li>• The most logical conclusion we can draw from this is that (argument) because _____.</li> </ul>

**Argument:** A statement, reason, or fact that persuades others that an action or idea is right or wrong.



**Body Paragraph 3 (Counterclaim)**

<b>Main idea</b> (Your counterclaim)	<ul style="list-style-type: none"> <li>• Others may say _____, but I would argue that _____.</li> </ul>
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	<ul style="list-style-type: none"> <li>• Some people may say _____, however, I disagree because__.</li> <li>• Some people think that _____, but I would argue that _____.</li> </ul>
<b><i>Evidence</i></b>	<ul style="list-style-type: none"> <li>• The text states, “_____.” This means _____.</li> <li>• For example, _____.</li> <li>• According to the text, “_____.” This shows _____.</li> </ul>
<b><i>Analysis</i></b>	<ul style="list-style-type: none"> <li>• This is important because (express a universal truth).</li> <li>• This means (express a universal truth).</li> <li>• (Rephrase your evidence using other words) shows that (express a universal truth) because_____.</li> </ul>
<b><i>Link to argument</i></b>	<ul style="list-style-type: none"> <li>• This proves that (argument) because_____.</li> <li>• The argument that (argument) must be true because _____.</li> <li>• The most logical conclusion we can draw from this is that (argument) because _____.</li> </ul>

**Conclusion (Paragraph 5)**

<b><i>Restate claim</i></b> (1 sentence)	
<b><i>Summarize main points</i></b> (2-3 sentences)	Look at main ideas of each body paragraph for ideas.
<b><i>Call to action</i></b> (1 sentence)	Call to action to inspire your readers to form their own opinions.





