



by Lainie S. Clowers and Lynn R. Mederos

Students will research and write about the accomplishments of the Voyager I space probe. Students will learn the discoveries made and about the significance of the Golden Record.

Note: there is a full "Writer's Notebook" for students in Word DOC format attached in the "Texts" section.

GRADES

7

DISCIPLINE

COURSE

PACING

 $\Theta N/A$

▲ Science

Earth Space Honors

Literacy Design Collaborative

Section 1: What Task?

Teaching Task

Task Template 14 - Informational or Explanatory

What makes the Voyager I space mission special? After reading the information provided from the NASA.gov website about the Voyager I mission, write a report in which you describe the mission and discoveries. Support your discussion with evidence from the text(s).

Standards

Common Core State Standards for English Language Arts & Literacy in History/Social Studies, Science, and Technical Subjects

RST.6-8.1

Cite specific textual evidence to support analysis of science and technical texts.

RST.6-8.2

Focus

Focus

Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.

RST.6-8.4

Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to grades 6—8 texts and topics.

RST.6-8.6

Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text.

RST.6-8.10

By the end of grade 8, read and comprehend science/technical texts in the grades 6—8 text complexity band independently and proficiently.

WHST.6-8.2

Write informative/explanatory texts, including the narration of historical events, scientific procedures/experiments, or technical processes.

WHST.6-8.4

Produce clear and coherent writing in which the development, organization, and style are appropriate to task, purpose, and audience.

WHST.6-8.5

With some guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach, focusing on how well purpose and audience have been addressed.

WHST.6-8.9

Draw evidence from informational texts to support analysis, reflection, and research.

WHST.6-8.10

Write routinely over extended time frames (time for reflection and revision) and shorter time frames (a single sitting or a day or two) for a range of discipline-specific tasks, purposes, and audiences.

Science Next Generation Sunshine State Standards

SC.8.E.5.1

Voyager I

Recognize that there are enormous distances between objects in space and apply our knowledge of light and space travel to understand this distance.

SC.8.E.5.2

Recognize that the universe contains many billions of galaxies and that each galaxy contains many billions of stars.

SC.8.E.5.3

Distinguish the hierarchical relationships between planets and other astronomical bodies relative to solar system, galaxy, and universe, including distance, size, and composition.

SC.8.E.5.4

Explore the Law of Universal Gravitation by explaining the role that gravity plays in the formation of planets, stars, and solar systems and in determining their motions.

SC.8.E.5.5

Describe and classify specific physical properties of stars: apparent magnitude (brightness), temperature (color), size, and luminosity (absolute brightness).

SC.8.E.5.6

Create models of solar properties including: rotation, structure of the Sun, convection, sunspots, solar flares, and prominences.

SC.8.E.5.7

Compare and contrast the properties of objects in the Solar System including the Sun, planets, and moons to those of Earth, such as gravitational force, distance from the Sun, speed, movement, temperature, and atmospheric conditions.

SC.8.E.5.8

Compare various historical models of the Solar System, including geocentric and heliocentric.

SC.8.E.5.9

Explain the impact of objects in space on each other including:

- the Sun on the Earth including seasons and gravitational attraction
- the Moon on the Earth, including phases, tides, and eclipses, and the relative position of each body.

Texts

Voyager I Writer's Notebook

% NASA.gov

% Mission Overview Article

% "What is the Golden Record?" (Golden Records Article)

% "How are the Voyager Spacecraft Able to Transmit Radio Messages So Far?" (Voyager Radio Article)

Student Work Rubric - Informational or Explanatory Task - Grades 6-8

Approaches Expectations

Meets Expectations

Advanced

	1	2	3	4
Controlling Idea	Presents an unclear or unfocused controlling idea.	Presents a general controlling idea that addresses the prompt , with an uneven focus .	Presents and maintains a clear controlling idea that addresses all aspects of the prompt.	Presents and maintains a clear and specific controlling idea that addresses all aspects of the prompt and takes into account the complexity of the topic.
Selection & Citation of Evidence	Includes minimal details from sources. Sources are used without citation.	Includes details, examples, and/or quotations from sources that arerelevant to the controlling idea. Inconsistently cites sources.	Includes details, examples, and/or quotations from sources that are relevant to the controlling and supporting ideas . Consistently cites sources with minor formatting errors .	Includes well-chosen details, examples, and/or quotations from sources that support the controlling and supporting ideas. Consistently cites sources using appropriate format.
Development / Explanation of Sources	Explanation of ideas and source material is irrelevant, incomplete, or inaccurate.	Explanation of ideas and source material is minimal or contains minor errors .	Accurately explains ideas and source material and how they support the controlling idea.	Thoroughly and accurately explains ideas and source material, using reasoning to support and develop the controlling idea.
Organization	Lacks an evident structure. Makes unclear connections among ideas, concepts, and information.	Groups ideas and uses some transitions to connect ideas, with some lapses in coherence or organization.	Groups and sequences ideas to develop the controlling idea. Uses transitions to clarify the relationships among ideas, concepts, and information.	Groups and sequences ideas logically to develop the controlling idea and create cohesion . Uses varied transitions to clarify the relationships among ideas, concepts, and information.
Conventions	Major errors in standard English conventions interfere with the clarity of the writing. Language or tone is inappropriate.	Errors in standard English conventions sometimes interfere with the clarity of the writing. Uses language and tone that are sometimes inappropriate to the audience and purpose.	Consistently applies standard English conventions; minor errors, while noticeable, do not interfere with the clarity of the writing. Uses language and tone appropriate to the audience and purpose.	Consistently applies standard English conventions, with few errors. Demonstrates varied syntax and precise word choice. Consistently uses language and tone appropriate to the audience and purpose.
Content Understanding (Generic)	Attempts to include disciplinary content in explanation or argument but understanding of content is weak; content is irrelevant, inappropriate, or inaccurate.	Briefly notes disciplinary content relevant to the prompt; shows basic or uneven understanding of content; minor errors in explanation.	Accurately presents disciplinary content relevant to the prompt with sufficient explanations that demonstrate understanding.	Integrates relevant and accurate disciplinary content with thorough explanations that demonstrate in-depth understanding.

Background for Students

This module will be part of the Space Exploration unit that is included in the OCPS curriculum. You all will already have background knowledge about the formation of our universe and will have studied Hubble's discoveries. After the 'hook' part of the module, I will share with you information about Carl Sagan and the committee of scientists who worked together, just as they just had, to decide what should go on the Golden Record.

Extension

Not provided

Section 2: What Skills?

Preparing for the Task

TASK ENGAGEMENT: Ability to connect the task and new content to existing knowledge, skills, experiences, interests, and concerns.

TASK ANALYSIS: Ability to understand and explain the task's prompt and rubric.

Reading Process

ACTIVE READING: Ability to identify the central point and main supporting elements of a text. ESSENTIAL VOCABULARY: Ability to identify and master terms essential to understanding a text. ACADEMIC INTEGRITY: Ability to use and credit sources appropriately. NOTE-TAKING: Ability to select important facts and passages for use in one's own writing.

Transition to Writing

BRIDGING: Ability to begin linking reading results to writing task.

Writing Process

CONTROLLING IDEA: Ability to establish a claim and consolidate information relevant to task.

PLANNING: Ability to develop a line of thought and text structure appropriate to an informational/explanatory task.

DEVELOPMENT: Ability to construct an initial draft with an emerging line of thought and structure.

REVISION: Ability to refine text, including line of thought, language usage, and tone as appropriate to audience and purpose.

EDITING: Ability to proofread and format a piece to make it more effective.

COMPLETION: Ability to submit final piece that meets expectations.

Section 3: What Instruction?

PACING	SKILL AND DEFINITION	PRODUCT AND PROMPT	SCORING GUIDE	INSTRUCTIONAL STRATEGIES
Preparin	ng for the Task			
1 hr and 15 mins	TASK ENGAGEMENT: Ability to connect the task and new content to existing knowledge, skills, experiences, interests, and concerns.	CLASS LIST: WHAT WOULD YOU PACK TO REPRESENT EARTH? You are a member of a NASA committee making plans to send a probe to Andromeda in search of ET life. You may take a very small container (shoe box size) of objects representing Earth. What will you pack?	 Work meets expectations if: Students participate in our class discussion to decide the categories needed to represent earth The group members collaboratively decide upon the item to put in the container. 	 Give students the prompt: "You are a member of a NASA committee making plans to send a probe to Andromeda in search of ET life. You may take a very small container (shoe box size) of objects representing Earth. What will you pack?" After students have had time to write their list, as a class, come up with six categories for the items going in the box Write the categories on an index card and each table will draw one from a hat. The table must them come up with the one ultimate item to go in the shoebox that fully represents their category. Each period's final list will be posted and then all periods will vote on the best list. Final list from each period will be hung on a large piece or banner poster paper outside the classroom door. On day two, students will be given a colored dot to vote for the period's list they feel is the best. When the activity is complete, the teacher will explain to them that this same process was actually already done, for real, by a group of scientists from NASA, headed by Carl Sagan. The team worked together to compile a list of item to be placed on the Golden Record which is aboard the Voyager 1 Space Probe today!
	Additional Attachments:			
	List for Andromeda to F	Represent Earth		
25 mins	TASK ANALYSIS: Ability to understand and explain the task's prompt and rubric.	RUBRIC ANALYSIS WORKSHEET Complete the Rubric Analysis Worksheet.	 Work meets expectations if: Students fill out the Rubric Analysis worksheet Students participate in a class discussion. 	 At the beginning of the period, the teacher will go over the Task Prompt, which will be written on large chart paper and hung in the front of the room. Each student will complete the Rubric Analysis worksheee Once the students are finished, they will share their notes with the other 3 people at their table and add additional notes they find important. The teacher will collect one paper from each of the 6 tables and show them on the Smart board. Each element will be explained aloud.
	Additional Attachments:	neet		
Reading	Process			
50 mins		VOYAGER I WEBQUEST	Work meets	Teacher will assist while students complete a teacher create
	Ability to identify the central point and main supporting elements of a text.	Complete a webquest on the NASA.gov website. Record additional notes in Writer's Notebook.	 Work meets expectations if: Web-quest is completed and correct. Accurate notes from the webquest are recorded in Writer's Notebook. 	web-quest about Voyager 1.

Voyager I

	Additional Attachments: She Golden Record Mission Overview Voyager I Webquest Ha	ndout			
50 mins	ACTIVE READING: Ability to identify the central point and main supporting elements of a text.	CLOSE READING WITH PROBING QUESTIONS Answer essential probing questions about the texts.	 Work meets expectations if: Essential probing questions are complete after the read alouds. 	 Students will switch papers for peer-review of the webquest. Teacher will provide the students with a close read packet that contains two articles from NASA.gov website, a text-coding chart, vocabulary table, essential probing questions, and a space for creation of a timeline. Teacher will lead the class in a close read using two informational texts printed off the NASA.gov website. After reading the students will begin answering the essential probing questions, which they will have to refer to the texts to find the answers. Links to the articles are provided in the "Texts" section, as well as in the Voyager I Writer's Notebook (found in the "Texts" section) and below as an attchment. The handouts are also in the Writer's Notebook and attached below. 	
	Additional Attachments:				
	 Mission Overview The Golden Record Close Reading Articles Vocab Table for Use With 	th Close Reading			
50 mins	ESSENTIAL VOCABULARY: Ability to identify and master terms essential to understanding a text.	VOCABULARY TABLE Use netbooks to find the meanings of seven words you don't know in the assigned texts. Record in vocabulary table in Writer's Notebook.	 Work meets expectations if: Vocabulary table is completed with correct definitions 	 Teacher will read through the text and instruct students to circle words they do not know. The students will then share their words with their shoulde partner and work together to find the meanings of the words using their netbooks. While words are being written on large chart paper, teachwill add to discussion any additional information the students may need to know in order to fully understand th texts. Once all pairs are done, pairs will list the words on chart paper. As pairs add words to the list, they will also share the definitions with the class. Handout is attached below and is also found in the Writer's Handbook in the "Texts" section. 	
	Additional Attachments: Vocabulary Table				
50 mins	ESSENTIAL VOCABULARY: Ability to identify and master terms essential to understanding a text.	"KICK ME" VOCABULARY STRATEGY Match vocabulary terms with their definitions.	 Work meets expectations if: Students participate in the vocabulary Kick Me review 	 To review the vocabulary words, students will participate in a variation to the Kick Me strategy. The teacher will place a vocabulary word sticker on half of the class' foreheads and the other half will receive vocabulary definition cards. Students will walk around the classroom to find their match. Once the matches are made, they will stand in the front of the class. Each pair will read their word and definition out loud. 	
1 hr and 15 mins	ACADEMIC INTEGRITY: Ability to use and credit sources appropriately.	PLAGIARISM COMMERCIALS Research and then create a video commercial to help the other groups in the class	Work meets expectations if the video commercial: • States an accurate	 Students will be divided into four groups based on ability and then assigned one of the following words: plagiarism, ethics, source reliability, and proper source citations. Thei assignment will be to research and then create a video commercial to help the other groups in the class better 	

		better understand plagiarism, ethics, source reliability, and proper source citations. Product: Videos about plagiarism, ethics, source reliability, and proper source citations.	 definition/description of their word Shows at least one example and one non-example Gives tips on helping students be successful Each group must also provide audience feedback for the other three groups after viewing the videos 	 understand their topic. Students will have the entire period to plan, research and begin recording their commercial. Day 2: The students will sit with their groups. The group's videos will be shown one at a time. As the students watch, they will record notes in their interactive notebooks. They will also discuss with their groups and provide audience feedback to each group. (positive feedback only-how to make it better next time) Notes: Teacher will use differentiated instruction and collaborative learning to teach the students about plagiarism, ethics, source reliability and proper source citations. Students will be placed in groups according to ability and then assigned one of the four topics. Teacher will post the criteria that should be included in the video commercial. On day 2, teacher will play the four videos created by the students and discuss the importance of each topic. Handout is attached below and also included in the Writer's Handbook in the "Texts" section.
	Additional Attachments:	dent Video Commercials Hand	out	
s	NOTE-TAKING: Ability to select important facts and bassages for use in one's own writing.	 CLOSE READING (ANNOTATION) AND CORNELL NOTES 1. Read texts for a second time and highlight information needed to answer the prompt, using one color for information about the Voyager Mission and another color for information about the Golden Record. 2. Read the Voyager Radio article and take Cornell notes. 	 Work meets expectations if: Students text code the two passages Students participate in a class discussion after text coding Cornell notes for the third text is completed for homework 	 Students will go back and read the passages for a second time. This time, they will highlight information that they feel will help them answer the prompt. Students will use text coding to classify the texts. Two different colored highlighters will also be used. VM will be used for information about the Voyager Mission and GR will be used to identify notes for the Golden Record. Students will assign VM one color and GR another color. After highlighting, students will lead a discussion and identify items they highlighted and give evidence on why they assigned it the code they did. For homework, students will be given a third text: Voyager Radio Article, How are the Voyager spacecraft able to transmit radio messages so far? (link below and in the "texts" section) The students will record notes on the text using the 'skeleton' Cornell notes worksheet. (attached below) Notes Teacher will explain to the class the purpose and importance of text coding. Teacher will show how text coding helps students organize notes and ideas which in turn will make writing the report much easier. Teacher will help students learn how to correctly create Cornell notes by providing them with a teaching tool she calls 'skeleton' Cornell notes, but leaves out some of the information. Students have to go back to the text to find the missing information. Not only are they more closing analyzing the text and find main ideas, but they are also learning how to create Cornell Notes.

% Cornell "skeleton" Notes

50 mins	BRIDGING : Ability to begin linking reading results to writing task.	TIMELINE Create a time-line of critical events discovered by the missions.	 Work meets expectations if: Each table creates a timeline including all important dates from the space mission Students help peer- edit another timeline 	 Using their web-quest and the NASA.gov website, students will work with their table to create a time-line of critical event discovered by the missions. They will create a large time-line on chart paper. Once everyone is finished, students will rotate to another table and peer-edit their time-line. They will use mini-sticky notes to post comments or suggestions on how to improve their time lines. After, students will return, read their comments and finalize their timeline for grading. Notes Teacher will introduce peer-editing to the students and provide examples and nonexamples of possible comments. (This is being done now so that when we pee edit the rough draft reports later, the students will have already had exposure to this type of activity). 		
Writing	Process					
1 hr and 40 mins	CONTROLLING IDEA: Ability to establish a claim and consolidate information relevant to task.	 VIDEO NOTES & SOCRATIC SEMINAR Complete an exit ticket by answering two questions: 1. During the discussion, what was the most interesting idea you heard? 2. Is there any additional information you need before we begin writing? 	 Work meets expectations if: Students record notes in their interactive notebook Participate in the Socratic seminar Complete and hand in an Exit Ticket 	 Teacher will show two short videos from YouTube: (links below) 3 Things You Didn't Know About Voyager Voyager 1 & the Golden Record Overview As students watch, they will record notes in their interactive notebook on the Video Notes page. (Attached below and in Writer's Notebook.) After the short video clips, students have a few minutes to first collaborate with their table groups about guided questions posted by the teacher. Then will participate in a Socratic Seminar to discuss the Voyager 1 space mission. Each of the six tables will send up one student representativ at a time. Students can 'tap out' and join in the discussion. If necessary, the teacher will ask probing questions. After Socratic Seminar, students will complete an Exit Ticket (attached below and in Writer's Notebook) to be handed in before leaving. They will answer the following: During the discussion, what was the most interesting idea you heard? Is there any additional information you need before we begin writing? Notes Teacher will explain that by now, students should be establishing their controlling ideas for the Voyager report. Teacher will facilitate during both the table discussions and the Socratic Seminar. 		
	Additional Attachments: S 3 Things You Didn't Know About Voyager Voyager I & The Gloden Record Overview					
	Voyager 1 & The Gloden Record Overview Video Notes & Socratic Seminar Questions Socratic Seminar Exit Ticket					
50 mins	PLANNING : Ability to develop a line of thought and text structure appropriate to an	GRAPHIC ORGANIZER Complete graphic organizer to be used as your writing plan.	Work meets expectations if: • Students work with	At the start of the period, using an ActivInspire flip chart, the teacher will go over the basics of the report: the length, how to present evidence, the number of citations needed, and the difference between an informational writing piece and an		

	informational/explanatory task.		their shoulder partner to complete the graphic organizerStudents collaborate with their tables	 argumentative piece. Next, students will be given a graphic organizer. (attached below and in Writer's Handbook in "Texts" section) They will work with their shoulder partners to fill in their opening statements, decide the paragraph topics and then list supporting details from the texts, videos, and website under the appropriate paragraph topic. When shoulder partners are done, they will switch with their face partners and the entire table will compare their plans. Students can make adjustments to their plan if necessary. Notes: Teacher will explain the basics of the report using an ActivInspire flip chart. Teacher will provide the graphic organizer to the students and state that when completed, will be used as their writing plan or outline for their report.
	Additional Attachments:			
50 mins	Pre-Writing Graphic Org DEVELOPMENT: Ability to construct an initial draft with an emerging line of thought and structure.	ROUGH DRAFT Write first draft	 Work meets expectations if: Students participate in the examining of the grading rubric activity Students create the first draft of their report 	 Before beginning our writing, the students will take a closer look at the rubric. (In Writer's Notebook and attached below) After reviewing and discussing the grading rubric with their table, students will post sticky notes on the scoring elements they do not fully understand. (A larger, poster size rubric will be posted at the front of the class.) Tables will be asked to go up one at a time and place the post-it sticky notes. After all groups have gone up, I will give the students an opportunity, to explain to their peers, the parts that have been marked. If needed, I will assist. Next, with all resources in front of them, the students will construct the first draft of their report. Those not completed in class, will be done at home. Notes Teacher will explain the scoring elements to the students to ensure that the grading rubric is understood. While students are writing, the teacher will circulate and help students get started if necessary. Teacher will be on hand to assist in the writing process.
	Additional Attachments:			
	Rubric			
50 mins	REVISION: Ability to refine text, including line of thought, language usage, and tone as appropriate to audience and purpose.	PEER REVISION CHECK- LIST Use the Revision Checklist to peer-revise a classmate's first draft.	 Work meets expectations if: Students revise and sign at least one other paper Students complete their second draft of their report 	Students will be given a Revision Checklist to fill out and use when peer-revising. They will be instructed to switch papers with another student and using a different colored pen, begin revisions. For this first round of revisions, students will be looking at the paper as a whole. They will make corrections and suggestions on the organization of the writing, how the writing supports their opening statement and the clarification of ideas. After proof-reading and making suggestions, students will sign their name to the bottom of the paper. Once the student receives their paper back, they will begin
				writing the second draft of their report. The second draft should be completed for homework if not done in class.
				Notes
				• Teacher will provide the students with a Revision Check- list to use when peer-editing the first draft reports.

	Additional Attachments: Revision Checklist			 Before the revising begins, the teacher will show sample revised paragraphs to provide examples of the proper way to revise. Teacher will sit one on one with struggling writers and assist them with revising their own papers.
50 mins	EDITING: Ability to proofread and format a piece to make it more effective.	PEER EDITING Use the Editing Checklist to peer-edit a classmate's second draft.	 Work meets expectations if: Students edit and sign at least one other paper Students complete the final draft of their report addressing all scoring elements from the rubric 	 Now the students will be given an Editing Checklist to use when peer-editing a different classmate's second draft paper. They will make comments and suggestions for spelling, grammar, punctuation and word choice. Students will use a different colored pen to make corrections and sign their name at the bottom of the report. After this second editing session, students will make their final revisions and write their final reports, to be turned in the following day. Notes Teacher will provide the students with an Editing Checklist to use when peer-editing the second draft reports. Teacher will sit one on one with struggling writers and assist them with editing their own papers.
	Additional Attachments:			
5 mins	COMPLETION: Ability to submit final piece that meets expectations.	FINAL DRAFT Submit a final draft that addresses all areas of the prompt, as well as reflects peer revisions and edits.	Use the LDC Rubric to score the final draft.	• Students complete the final draft of their report addressing all scoring elements from the rubric for homework and submit in class.

Instructional Resources

No resources specified

Section 4: What Results?

Student Work Samples

Emerging

Sample 1

Sample 2

Approaches Expectations

Sample 3

Meets Expectations

Sample 5

Advanced

Sample 7

Teacher Reflection

Not provided

All Attachments

- Voyager I Writer's Notebook : https://s.ldc.org/u/a84f7p4flceupisgrrfbkmdm7
- % NASA.gov : https://s.ldc.org/u/19b1ew3bc2yq6qzqnj6zxqp3z
- % Mission Overview Article : https://s.ldc.org/u/9taf6vInvafnpwbzkv6041jl3
- % "What is the Golden Record?" (Golden Records Article): https://s.ldc.org/u/7snxst22bxwjhztqrlb57abi4

% "How are the Voyager Spacecraft Able to Transmit Radio Messages So Far?" (Voyager Radio Article): https://s.ldc.org/u/dk0u1pm0vz910t01oqcdg0ad5

- Sample 1 : https://s.ldc.org/u/393b56by8kx5gwy931zf70trs
- Sample 2 : https://s.ldc.org/u/3zds6h3pdnozr3oczvdztrvht
- Sample 3 : https://s.ldc.org/u/3twk3liokpg072gb26mmb195s
- Sample 4 : https://s.ldc.org/u/7s1mxs4zrzcl6bt3xb6o6dau2
- Sample 5 : https://s.ldc.org/u/53r6hbe6hcghvokxs1iw0nlh4
- Sample 6 : https://s.ldc.org/u/4I0wwevadn2sbl84vgyjs2540
- Sample 7 : https://s.ldc.org/u/c9gxrxqkngz36mdk7w22y1ycc
- Sample 8 : https://s.ldc.org/u/5q6jgmvgn75qyd8m86vmdm3bn