Over arching Question:

- **Why should humans care about what's in space?** Imagine you are asked to talk to the President of the United States about funding NASA. What if President Biden doesn't think the American people care about what's in space and what NASA does there. How will you convince him otherwise?

Standards Addressed:

- 4.1 Research to locate, summarize, synthesize and document information from print and digital sources, and communicate findings appropriately. (CCSS: W.5.7, CCSS: W.5.8 & CCSS: W.5.9)
- 3.2 Write informative/explanatory texts that provide a clear focus and the use of text features to group related information on a well-developed topic, using precise language and domain-specific vocabulary. (CCSS:W.5.2)

Useful lessons to be completed prior to starting the unit: Common Sense Media's Whose Is it, Anyway? Nearpod, Common Sense Media's How to Cite a Site Nearpod, and Common Sense Media's Key to Keywords Nearpod. These lessons are integral to the success of the unit because they ensure that students understand the importance of citing your sources, creating a bibliography, and how to effectively search for sources online, all skills that students will need through out the unit.

Unit Breakdown:

This is a research based unit, which is why I think G.I.D. will be a perfect fit. The prompt for this writing unit is, "Scientists continue to study and reveal new information about our solar system and the universe. Students will conduct short research projects that use several sources to build knowledge through investigation of different aspects of their topics. Students will use this research to create journal articles on new and exciting information on the universe." In addition to the procedure for research, because this prompt is more open ended and not linked to answering a specific question, this will allow for students to come up with their own inquiry questions and will help students create unique and interesting projects.

Throughout the unit, students will participate in a weekly reflection that will be turned in, and reflections after most lessons in their Inquiry Journals. The weekly reflections incorporate student choice, as we used this Weekly Reflection Choice Board. The daily, or bi-daily, reflections are less in depth and just ask students to connect to what they learned about that day,. Here are some example prompts that I used.

Stages of Guided Inquiry Project	What are we doing?	How will we show it?

Open ***Invitation to inquiry, Open minds, Stimulate curiosity***	Beginning our inquiry on Space!
	• Observing some items and images
	• Asking and discussing questions with a group of peers related to space
	• Taking notes of our conversation in an inquiry journal
	• Creating questions about what we would like to learn more about
		• Notes in our inquiry journal and/or poster paper
		  ○ Include
		  ■ Questions we discussed
		  ■ Interesting Ideas our group members came up with

Here is the lesson plan of what we did for an "Opening" lesson. In short, students asked as many questions as they could about space, we watched a video from the European Space Agency on why we should explore space, they asked more questions that were sparked from the video, and then talked in small groups about what they thought (without doing research) the answer to those questions may be. Before we started, I had the kiddos set up their Inquiry Journals so that they would be able to stay organized throughout the project.

Stages of Guided Inquiry Project	What are we doing?	How will we show it?
Immerse ***Build***	Building Background Knowledge! • Watching Videos and Exploring VR	• Notes in our inquiry journal • Being an active participant in both

background knowledge. Connect to content, Discover interesting ideas	Field Trips • Discussing with group members about what we saw • Talking as a class about what our group found to be most interesting!	small group and whole group discussions • Drawing/Sketch in IJ • IJ reflection

I used Seymour Simon's book, Our Solar System as the immersive experience for this unit. This book talks about each celestial body in our solar system, starting with the Sun, working its way out to Pluto and ending with meteors, comets, and asteroids. I followed the first ten lessons of the Fifth Grade ReadyGen Unit 3B guide so that we could dig deeper into the book.

Stages of Guided Inquiry Project	**What are we doing?**	**How will we show it?**
Explore ***Explore interesting ideas, Look around, Dip in***	Look more at ideas that are interesting • Reading, Watching, and Interacting with various materials (articles, books, videos, games, etc)	• Keeping a list of sources in our Inquiry Log • Stop and Jot Notes in our IJ • Sharing what I've found with a partner

Students simultaneously began their own research on eight space topics including The Solar System/Planets, Space Colonization, Our Moon, Asteroids, Meteors, and Comets, Space Technology, Space Pollution, The Sun, Stars, and Black Holes, and Galaxies and the Big Bang. Using these linked pages, students did research at their own pace and by their own choice. They had to read 1 article, watch one video, and then choose one "other" resource, like a podcast, game, or interactive site. Students took notes in their inquiry journals, shared what was interesting small groups, and often answered a reflection question.

Stages of Guided Inquiry Project	**What are we doing?**	**How will we show it?**

Identify ***Pause and ponder, Identify inquiry question, Decide direction***	Identify our direction for inquiry! • Reviewing our notes in the IJ to help us determine what is interesting • Charting our ideas to see how they connect • Discussing our questions with our group	• Reflection Check-in • Charting our ideas to see how they connect • Deciding a question to guide our research

We followed these two lesson plans, which took about 3 days. First, students thought about who they were as a questioner. Then, we did a Question Formulation Technique as a class. We used this Google Slides to help us through the process. Then, for our second question-focused lesson, I had students follow this Google Slides in order to find what was most interesting about what they had explored, organize their thinking, and share with a small group. From here they were able to create their own research questions, after discussing different levels of questioning.

Stages of Guided Inquiry Project	**What are we doing?**	**How will we show it?**

Gather
Gather important information, Go broad, Go deep
	Collect detailed information to help provide an answer to our question!
	• Write down what we find interesting in our own words and continue coming back to it.
	• Reading/Watching/Listening to gain an understanding, NOT just to find the right answer
		• Adding to our IJ
		  ◦ List of Sources in IL
		  ◦ Notes (in our own words) about what we remember or find important about what we read/listened to/watched
		• Reflection Check-in

Now that students had an inquiry question, students needed to gather information to help them find and create the answer to their question. I let students use more open resources at this point, allowing them to of course use the topic pages above, and showing them that there were "hidden" resources on those pages (using article's cited sources, or clicking on blue links, etc), but I also allowed them to do their own research using our

Key to Keywords skills. I also had students start tracking their sources in more than just their inquiry log by introducing them to Noodle Tools to help with their bibliographies. Students now met in groups that were more focused on a similar topic, whereas before the groups were more random. Most of my students were interested in space pollution, satellites, the moon, colonization, and one student even compared how planets smell!

Stages of Guided Inquiry Project	What are we doing?	How will we show it?
Create ***Reflect on learning, Go beyond facts to make meaning, create to communicate***	Preparing how to share what we have learned! • Reviewing our IJ • Organizing our thoughts and information • Connecting our ideas together • Creating something to show off our learning	• A final presentation (Book Creator, Clips, Slides, Green Screen Video, etc) • Bibliography of Sources • New Inquiry Chart to focus research • Modified TAG from Inquiry Circle

I let students create their project however they wanted. They had to include what their question was, evidence of their research, and evidence of their thinking, in addition to their bibliography. Many of my students chose to make a book creator, a few chose to make green screen videos, and I had some posters and clips style videos as well! When their projects were close to finished, I had them meet in their final groups to share and give feedback to each other. Students were to give TAG style feedback (Tell something you liked, Ask a question, Give a positive suggestion) on both their group member's projects and the content of their projects.

Stages of Guided Inquiry Project	What are we doing?	How will we show it?

Share ***Learning from each other, Share learning, Tell your story***	Presenting what we've been working on! • Sharing our learning • Presenting our product • Asking and answering questions from peers • Giving feedback to our peers.	• Glow and Grow (Powerful presentation, presentation style, and interest) (Two things I learned, One question I have)

Students then shared their projects in front of the class. They also gave Glow and Grow feedback to all of their peers after each presentation. Students enjoyed being able to share their projects, ask each other questions and give feedback

Here are a few student examples, Why does the moon follow the Earth?, What if pollution killed every planet in space?, What if we could live on the moon?

Stages of Guided Inquiry Project	**What are we doing?**	**How will we show it?**
Evaluate ***Evaluate achievement of learning goals, Reflect on content, Reflect on process***	Using a critical eye to assess our learning and reflecting on the process! • Doing a deep self reflection on what we learned, how we learned it, and the unit as a whole	• End of Unit Reflection Form • Science Journal Rubric • Five Kinds of Learning Rubric

To wrap up the unit, students would fill out the End of Unit Reflection form, which asked them questions about the whole inquiry process. How they felt about their inquiry skills, what ways they learned best, etc. I also graded their Inquiry Journals using this rubric, and as they presented and I got a chance to look at their Inquiry Journals, I graded their projects, their collaboration, and their research skills using this rubric. Here are the results of the final self reflection.

Throughout the unit i used these Formative Assessments, and a combination of these Summative Assessments to assess their progress.

Strengths:

- Freedom for the students and myself
- A new way to learn for my students
- I had a lot of resources that I'll be able to incorporate into other units, even if they aren't full-on inquiry units.
- Students got to be really creative and had a lot of choice and reflection

Weaknesses:

- Some students wished there was a little more guidance or some more check-ins. I agree with this as I wasn't able to provide as much formal teacher feedback.
- I did not do as many small group meetings at the end of the unit as I did in the beginning
- Some of my resources were maybe too advanced, even if they did give some guidance
- Students didn't understand why reflecting was important until the end of the unit.

Here is my reflection of the unit!