

## *How Do You Burp in Space?*

### *And Other Tips Every Space Tourist Needs to Know*

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**Using this nonfiction book for grades 3-8 Literacy in ELA, History/ Social Studies, and Science for:** key ideas and details; determining central ideas or information of a primary or secondary source; providing an accurate summary of the source distinct from opinion; identifying steps in a text’s description of a process; building knowledge through content; grounding writing in textual evidence; investigating, analyzing and writing a range of informational and fiction texts; identifying aspects of a text that reveal an author’s purpose or point of view; integrating visual and other information in charts, photographs, maps and print/digital sources; analyzing the relationship between a primary and secondary source on a topic; distinguishing between fact, opinion, and reasoned judgment in a text; fostering study of academic and science special domain language; researching space topics; referencing and critiquing space travel multimedia; reading and comprehending history/social studies, science informational and literature texts in a 3-8 grade text complexity band.

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## GETTING STARTED: ASSESSMENT #1

### Step Right Up and Test Your Space Travel FIQ (Fact Information Quotient)

1. This survey (on the print-out page below) should be administered before and after students read the book.

2. After completing the survey for a second time, lead a class discussion focusing on how reading *How to You Burp in Space?* and completing any of these suggested activities have enhanced students' impression of space travel. Which correct answers to the survey's questions surprised them? How did the book change their factual understanding, interest, and feelings about traveling to space and learning about space itself? Have them back up their observations with specific points and reasons.

**ANSWERS FOR TEACHER REFERENCE ONLY: 1. Fact p. 17, 2. Fiction p. 9, 3. Fiction p. 20, 4. Fiction p. 31, 5. Fact p. 10, 6. Fact p. 23, 7. Fiction p. 39, 8. Fiction p. 30, 9. Fact p. 21, 10. Fact p.51**

**FURTHER ENRICHMENT:** Students in grades 7- 8 and advanced 6<sup>th</sup> graders can practice data citation skills by annotating each question with the page number where the correct information is presented. Students in grades 6-8 could also design a graphic or PowerPoint version of the survey complete with a section that presents the answers and the science behind them. Then, perhaps they'd like to survey some adults to score their Space FIQ.

#### **Common Core State Standards for English Language Arts (CCSS ELA):**

Reading Informational Text #1: Key Ideas and Details

Reading Informational Text #4: Craft and Structure

Writing #7 and 8: Research to Build and Present Knowledge

Language # 6: Vocabulary Acquisition and Use

Speaking and Listening #1 and 2: Comprehension and Collaboration

Speaking and Listening #4: Presentation of Knowledge and Ideas

#### **Common Core Standards in for Literacy in History/Social Studies (RH)**

RH #7 and 9: Integration of Knowledge and Ideas

#### **Common Core State Standards for Literacy in Science and Technical Subjects (RST)**

RST #1 and 2: Key Ideas and Details

**ASSESSMENT SURVEY**

Name \_\_\_\_\_ Grade \_\_\_\_\_

First Look: Date \_\_\_\_\_

Second Look: Date \_\_\_\_\_

Read through this survey and mark the following statements either Fact or Fiction, or check the space that says you don't know.

1. There is no such thing as zero gravity in space.  
Fact \_\_\_\_\_ Fiction \_\_\_\_\_ I don't know \_\_\_\_\_
  
2. The best time to vacation in space is during its summer season.  
Fact \_\_\_\_\_ Fiction \_\_\_\_\_ I don't know \_\_\_\_\_
  
3. Be sure to pay for roaming charges on your cell, so you can stay in touch with family and friends.  
Fact \_\_\_\_\_ Fiction \_\_\_\_\_ I don't know \_\_\_\_\_
  
4. Pack your favorite shampoo so your hairstyle will look the same on your trip.  
Fact \_\_\_\_\_ Fiction \_\_\_\_\_ I don't know \_\_\_\_\_
  
5. Just before your scheduled space trip, you break your arm. Your cast fits well and you aren't in any pain, but you still must cancel your space flight.  
Fact \_\_\_\_\_ Fiction \_\_\_\_\_ I don't know \_\_\_\_\_
  
6. You will get taller in space, your legs will get skinnier and your face will get a little puffy.  
Fact \_\_\_\_\_ Fiction \_\_\_\_\_ I don't know \_\_\_\_\_
  
7. Room in a spaceship is limited, there will only be a few types of soda on board.  
Fact \_\_\_\_\_ Fiction \_\_\_\_\_ I don't know \_\_\_\_\_
  
8. Bring your favorite pillow from Earth so you sleep really well.  
Fact \_\_\_\_\_ Fiction \_\_\_\_\_ I don't know \_\_\_\_\_
  
9. When you're on a spacewalk, you're orbiting the Earth at five miles a second but you don't feel like you're moving at all.  
Fact \_\_\_\_\_ Fiction \_\_\_\_\_ I don't know \_\_\_\_\_
  
10. Indoors on the Moon, you'll be able to strap on wings and fly.  
Fact \_\_\_\_\_ Fiction \_\_\_\_\_ I don't know \_\_\_\_\_

## GETTING STARTED: ASSESSMENT #2

### Image-ing Space Travel

This pre/post assessment is especially apt for ESL/ELL and visual learners as well as a good general lesson in visual literacy because of its graphic-based predictions.

1. Keeping your students' ability and attention span in mind, pick at least 5 to 7 visual texts from *Burp in Space's* array of illustrations, photographs, infographics, visualizations and graphic charts that you think will help synopsise the book. Make sure to include the cover design and the illustration on p 56. Then arrange the visual texts in the order in which they appear in the book.

2. If necessary, support your students in identifying and explaining the topics and key scientific ideas the book will cover based on the visual evidence of your selected graphics. As you record their ideas, help them make sure their comments refer to evidence in the visual texts. Encourage discussion among the students about parts of the graphics that support their statements.

3. Keep the illustrations and your lists of their responses. After they finish reading and studying *How Do You Burp in Space?*, have your students reflect on how accurate their predictions were based on the graphics they were given from the book.

4. Ask your students to pick 3 other graphics /illustrations /photos important for understanding space travel that could be included in the next IMAGE-ing book discussion for peers. Have them explain why each graphic suggested should be used.

#### **Common Core State Standards for English Language Arts (CCSS ELA):**

Reading Informational Text #1 and 2: Key Ideas and Details

Reading Informational Text #4: Craft and Structure

Writing #8 and 9: Research to Build and Present Knowledge

Language #3: Knowledge of Language

Language # 6: Vocabulary Acquisition and Use

Speaking and Listening #1 and 2: Comprehension and Collaboration

Speaking and Listening #4: Presentation of Knowledge and Ideas

#### **Common Core Standards in for Literacy in History/Social Studies (RH)**

RH #7: Integration of Knowledge and Ideas

#### **Common Core State Standards for Literacy in Science and Technical Subjects (RST)**

RST #1 and 2: Key Ideas and Details

## Activity #1: Pack up and Blast Off

Packing for space is a lot different than stuffing your clothes in a suitcase to go to Disneyland. Have your students compare, contrast, and engage in critical thinking as they consider what to bring into microgravity.

1. After your students have finished reading Chapter 1: *Planning Your Trip*, remind them it's truly possible that, as adults, they could go into space as employees of a space tourist company, some other business, or as private citizens. What would they bring with them?
2. Have students summarize and record/display suggested items along with other packing tips provided in the first chapter.
3. Then ask them to list the things they usually pack for a sleepover or a trip to camp.
4. Now have them compare and contrast packing tips for space with how they've packed for trips on Earth. Ask which listed Earth-trip items could not go into space and why. If a student mentions something that contradicts space-packing criteria, encourage other students to refute the item by referring to the text.
5. Are there other things students would like to bring with them? List their suggestions, then have the class decide if these items do or do not meet the criteria by referencing the text.
6. For some multi-media fun, have students create an audio file with packing instructions or a short video (with props) explaining how to pack for space. Share the results on a school website and send to the author to possibly post on her site's student projects page ([susan@susangoodmanbooks.com](mailto:susan@susangoodmanbooks.com)).
7. For ESL/ELL, newcomer or visual learners, suggest a three to six panel storyboard with a traveler packing and discarding items for a space trip. ESL/ELL learners can add packaging instructions in their native language.
8. For 5-8 graders, ask students to suggest, justify, and sketch new products for the developing space market, such as a light pack or Velcro straps or tabs for eyeglasses.

### **Common Core State Standards for English Language Arts (CCSS ELA):**

Reading Informational Text #1, 2, and 3: Identifying Key Ideas and Details

Reading Informational Text #4: Craft and Structure

Writing # 3\*: Text Types and Purposes

Writing # 6: Production and Distribution of Writing

Writing # 9: Research to Build and Present Knowledge

Speaking and Listening #1 and 2: Comprehension and Collaboration

Speaking and Listening #4 and 5\*: Presentation of Knowledge and Ideas

Language #1: Conventions of Standard English  
Language #4 and 6: Vocabulary Acquisition and Use

**Common Core State Standards for Literacy in Science and Technical Subjects (RST):**

RST #1 and 2: Key Ideas and Details

RST #4: Craft and Structure

RST #8: Integration of Knowledge and Ideas

\*Starred standards apply to Steps 6-8.

## Activity #2: Cosmic Conversations

Have your students sound like real space travelers by learning and using special domain vocabulary and expressions.

1. Help your students work as a class to review the space slang and jargon in *Space Speak for Travelers* on page 8. Then have them focus on starting a short conversation in which two space tourists are talking to an earth-based friend about the sights they see as they look out the window.
2. To help the dialogue along, select two students to play the tourists and one to play the Earth-based contact. Encourage them to use at least 3-4 of the expressions listed on the page. If possible, consider displaying or recording this and subsequent conversations using an audio or video recorder for further use in Steps 7, 9 and/or 10.
3. Have a different group enact a Space Speak discussion between two space tourists and a ship's crew member. If appropriate for your class, have them step up their language acquisition by including some glossary words (pages 58-59). Give them a few minutes to craft this chat.
4. Once these two whole-class cosmic conversations have been performed and perhaps recorded, students can work in teams of no more than 4 to develop other conversations using the Space Speak page, the Glossary and other pages throughout the book. Encourage creativity by suggesting they find new, dramatic situations that their travelers can fold these special domain words into (spacewalks, going to the moon, dealing with weightlessness, for example).
5. Visual learners can contribute to these conversations by adding graphic narrative illustrations for some keywords and expressions.
6. Students who are ESL/ELL or auditory learners can absorb Space Speak vocabulary listening to or watching actual astronaut videos on the NASA site, [www.nasa.gov](http://www.nasa.gov). Students from ESL/ELL backgrounds may be able to provide or find foreign language Space Speak expressions and add a needed multilingual dimension to the study.
7. The activity can culminate in an exhibit or PowerPoint presentation studded with an array of audio/video files of student space tourist conversations.
8. If desired, students from grades 4-8 can add to written or recorded conversations by independently using *How Do You Burp in Space?'s Further Reading and Surfing* resources (pages 84-86), especially [www.nasa.gov](http://www.nasa.gov), books by the astronauts themselves, and the author, Susan E. Goodman's *Ultimate Field Trip 5: Blasting Off to Space Academy*. Children's nonfiction books about space are on pages 85-86. This assignment will address CCSS ELA and History/SS standards for short research

- projects as well as improve students' integration of special domain and academic science vocabulary.
9. Some class members or the class as a whole can submit a student-styled Space Speak conversation or set of expressions to the author at [www.susangoodmanbooks.com](http://www.susangoodmanbooks.com).
  10. Note: This activity can nicely showcase special domain science and general academic vocabulary at ELA and Literacy in History/Social Studies Expos or Science Fairs.

**Common Core State Standards for English Language Arts (CCSS ELA):**

Writing #2: Text Types and Purposes

Writing #6.7 and 6.8: Research to Build and Present Knowledge\*

Language #6: Vocabulary Acquisition and Use

**Common Core Standards in for Literacy in History/Social Studies (RH)**

RH #4: Craft and Structure

**Common Core State Standards for Literacy in Science and Technical Subjects (RST)**

RST #4: Craft and Structure

\*Starred standards apply to project in Step 8.

## Activity #3: Space Sports

In this activity, students mount an ad campaign to encourage families to take space vacations. Creating their campaign will make the wonderful idea of being in microgravity feel real as students explore the fun food games and expanded athletic abilities they'd have in space.

1. Have your students review the sections in *How Do You Burp in Space?* devoted to dining (pages 35-39) and sports and exercise (pages 23-25, 47-51).
2. Divide the class into groups of 3-4 kids. Tell them they've been hired to help future space tourist companies attract families with children to sign up for vacations. Their job is to create a series of "print ads" (poster or bulletin board illustrations) and/or 45-60 second audio commercials. Their goal is to sell space travel and fun, emphasizing that microgravity makes playing with your food an entirely different activity while expanded physical skills make sports a whole other ballgame.
3. Have each team list the microgravity-enhanced food games and sports mentioned on the targeted pages above.
4. If appropriate for the class level and grade, have students increase their knowledge by researching on the student section of [www.nasa.gov](http://www.nasa.gov) for addition activities in space. Have them collect photographs, quotations, or videos to use in their ads. Have teams create a few new games that would work safely in microgravity as well.
5. Have each team share their list of food and sports games they want to use on their posters or commercials. If there are any inaccuracies, you or their peers can refer them to corrections from the text.
6. Once the fact checking is done, allot sufficient time in class to develop a print, video, or audio sound bite. Allow students to use props and, if possible, download video footage to support their presentations. Students can also use PowerPoint skills if they are already learned them.
7. Audio film the spoken presentations and/or digitally capture their commercials for use as podcasts or videos on the school site. If possible, create a place for peer and adult commentary.
8. These commercials can be shared with the author by sending them to [susan@susangoodmanbooks.com](mailto:susan@susangoodmanbooks.com).
9. If students are involved in advanced 6-8 grade argument formation, challenge them to create counter commercials suggesting that space travel is a waste of time and money for family trips.
10. ESL/ELL students can contribute to this project by sharing cultural reactions to food games and the type of sports possible in space.

**ELA Common Core Shifts emphasized:** text complexity, rigorous student-centered discussion, text-based answers, balancing literary and informational texts

**Common Core State Standards for English Language Arts (CCSS ELA):**

Reading Informational Text #4 and 6: Craft and Structure

Reading Informational Text #8 and 9: Integration of Knowledge and Ideas

Writing #1, 2 and 3: Text Types and Purposes

Writing #4 and 6: Production and Distribution of Writing

Writing #7\* and 9: Research to Build and Present Knowledge

Speaking and Listening #2 and 3\*: Comprehension and Collaboration

Speaking and Listening #4 and 5: Presentation of Knowledge and Ideas

\*Starred standards apply to parts of Step 6, 7, and 9.

## Activity #4: Takin' about Talk about Space

This activity uses the collection of quotations about space threaded through *How Do You Burp in Space?* as a springboard for engaging students in critical reading, analysis, and discussion of primary informational resources. An option for explanatory and reflective writing and visual learning is included.

1. Choose a quotation from one of the many *Space Story* sections sprinkled through book. Pick one that appeals to you or might particularly speak to your students. For the sake of running through the exercise, we'll use the Michael Collins quotation on page 58: "To go places and do things that have never been done before--that's what living is all about."
2. First ask students to restate in their own words what Collins' main idea is. Then ask whether they agree or disagree with it. Stress that this is not a factual question. It is an idea that many informed adults may agree or disagree with, but there should always be good reasons to back up opinions.
3. Give students opportunities to make arguments or express feelings for and against this idea. Draw them out about family members who travel or enjoy physical adventures or exploring. Ask them if this quotation could apply to other less or non-physical activities as well.
4. Have the class or students in groups of 3-4 take at least 5-8 minutes in class to find other *Space Story* quotations that agree with Michael Collins' idea.
5. Have students present the quotations they've found, identified by speaker, for class review. Ask these students to explain how this quotation agrees with Collins' quotation or expresses an idea he would enjoy hearing.
6. After all these quotations have been posted and discussed, continue by having your students do one or more of the following options, depending upon your curricula goals and your students' learning strengths:
  - Develop illustrations or a storyboard representation of the idea expressed by the quotation. Grades 3 and up, visual learners and ESL/ELL learners
  - Write a personal reflection or poem using the words of a particularly meaningful *Space Story* quotation as a starter. Grades 3 and up
  - Write a commentary explaining how the student's familial or native culture supports or refutes the ideas expressed in a quotation. Grades 5-8, ESL/ELL learners
  - Using a student (or yourself) as the moderator, develop an imagined conversation among the *Space Story* personalities about the special qualities of space travel using

their quotations as an informational starter and then expanding the conversation with imagined comments they might make. Enriched and grades 6-8

- Research a particular space traveler's interviews and published/videoed commentary to build an extended response to his/her ideas. Enriched and grades 6-8

**Common Core State Standards for English Language Arts (CCSS ELA):**

Reading Informational Text #1 and 3: Key Ideas and Details

Reading Informational Text #4 and 6: Craft and Structure

Reading Informational Text #7 and 9: Integration of Knowledge and Ideas

Writing #1, 2, and 3: Text Types and Purposes\*

Writing #4 and 6: Production and Distribution of Writing\*

Writing #8 and 9: Research to Build and Present Knowledge\*

Speaking and Listening #1: Comprehension and Collaboration

Speaking and Listening #4 and 5\*: Presentation of Knowledge and Ideas

**Common Core Standards in for Literacy in History/Social Studies (RH)**

RH #2: Key Ideas and Details

RH #6: Craft and Structure

RH #7\*: Integration of Knowledge and Ideas

**Common Core State Standards for Literacy in Science and Technical Subjects (RST)**

RST #2: Key Ideas and Details

RST #8: Integration of Knowledge and Ideas

\*Starred standards apply depending upon which activities are done in Step #6.

## Activity #5: Science Fact or Science Fiction?

*How Do You Burp in Space?* is meticulously researched nonfiction, of course. But our world of burgeoning information requires alert, informed readers. Prepare students to turn a critical eye on nonfiction, consumer information, business and news by using *How Do You Burp in Space?* to fact-check some suggested works below.

1. Divide students into teams of 3- 4 and assign them each a different section of *How Do You Burp in Space?*

2. Have each group list space travel facts from its section, at least 8-10 facts for grades 3-5 and 15 or more for grades 6-8. If appropriate for the class level, have the students cite the chapter, page, or document from which the fact was taken (attribution is emphasized in all CCSS ELA, SS and Science Standards).

3. Once these lists are compiled, have each team share their findings with the class and pin them on a bulletin board for reference.

4. Then students can bridge back to other works to fact-check them about space travel. (Note: Depending upon students' age, grade and English fluency, a work studied by the entire class can be the common anchor for review.) A single poem or short work of science fiction may have to be taught to become the basis of this activity. Or teams can choose a portion of favorite science fiction novels. Possibilities include the poem "Astronaut Stopping by a Planet on a Snowy Evening" in *Science Verse* by Jon Scieszka, picture book *Green Wilma Frog in Space*, picture book *Mungo and the Spiders from Space* by Timothy Knapman, picture book *The Magic School Bus Lost in the Solar System* by Joanna Cole (preferably the original 1990 edition), a story from *The Martian Chronicles* by Ray Bradbury, or a chapter from *Miss Pickerell Goes to the Moon* by Ellen MacGregor, *Doctor Doolittle on the Moon* by Hugh Lofting, or *The Wonderful Flight to the Mushroom Planet* by Eleanor Cameron.

5. Enrichment options: Have students revise a poem or story as the authors might have if they had the facts at hand. Or, have them argue that the story should remain "uncorrected," supplying reasons for this opinion. Students can also compose an imaginary dialogue with the author in which the author reacts to their fact checking. Another option is a dialogue with the director of an old film or TV series.

### **Common Core State Standards for English Language Arts (CCSS ELA):**

Reading Informational Text #1 and 2: Key Ideas and Details

Reading Informational Text #4: Craft and Structure

Reading Informational Text #7 and 9: Integration of Knowledge and Ideas  
Reading Literature #5: Craft and Structure  
Reading Literature #9: Integration of Knowledge and Ideas  
Writing #1, 2, and 3\*: Text Types and Purposes  
Writing #4\* and 6: Production and Distribution of Writing  
Writing #7, 8 and 9: Research to Build and Present Knowledge  
Speaking and Listening #2: Comprehension and Collaboration  
Language #5 and 6: Vocabulary Acquisition and Use

**Common Core Standards in for Literacy in History/Social Studies (RH)**

RH #2: Key Ideas and Details  
RH # 4, 5 and 6: Craft and Structure  
RH #8: Integration of Knowledge and Ideas

**Common Core State Standards for Literacy in Science and Technical Subjects (RST)**

RST #1 and 2: Key Ideas and Details

\*Starred standards apply to Step 5.

## Activity # 6: Foods that are Out of this World!

Key focuses of the current CCSS Standards are College and Career Readiness plus 21<sup>st</sup> Century skills. Why not use the entrepreneurial aspects of space travel discussed in *How Do You Burp in Space?* to engage students in applying technical content as they develop product design ideas. Authentic learning for an authentic entrepreneurial opportunity.

Note: there is an optional class trip for this activity (see Step 5).

1. Tell your students they are going to be marketers for real food companies who have products that can be sold as “space ready,” or can be adapted for space travel. They will create a campaign to sell these products to space tourism companies and/or to improve sales on Earth by advertising it as a product that space travelers aren’t willing to leave behind.
2. Teach your class about Tang, a powder that, mixed in water, becomes a drink. It was sold by General Foods but not very popular until the early astronauts used it to cover the unpleasant taste of the water they took into space (water in space tastes fine now!). Show the students the following YouTubes of commercials that helped make Tang a bestselling product:  
<http://www.youtube.com/watch?v=TWghCdlgedA&feature=youtu.be>,  
<http://www.youtube.com/watch?v=6t6zoY9zaVQ&feature=related>  
<http://www.youtube.com/watch?v=HXp23zl5ats&feature=related>
3. Have your students reread Chapter 5: Dining (pages 35-39) of *How Do You Burp in Space?* from the perspective of a food marketer eager to sell or adapt a product for the new space travel market. Then ask them, as a whole class, teams or individuals, to create a list of at least 5 criteria for food used in space.

The criteria include:

1. Food that can be prepared on Earth and reheated in space.
2. Food that can be stored in pouches.
3. Foods capable of being dehydrated or already available in dehydrated form on Earth, which would cut out the cost of dehydrating them exclusively for space travel.
4. Foods that can be eaten directly from their packages.
5. Pouch packaging that can be cut with scissors.
6. Food sticky enough to stay on silverware in microgravity until it gets to someone’s mouth.
7. Liquids that can be used with a straw that is outfitted with a clamp.

8. Highly spiced foods, because travelers' noses become stuffy so food needs more flavor.
9. Foods that do not create crumbs (unlike bread and crackers).
10. Foods that don't need refrigeration.

Note: further criteria for space foods can be found at

<http://spaceflight.nasa.gov/shuttle/reference/factsheets/food.html>

4. While reading Chapter 5, have students note fun selling points that they might be able to use in their campaign, for example, using their product in some of the food games listed on p. 37.
5. With their criteria in hand, have your students go on a class or individual trip to a food market or look at the food in their homes. Have them examine and note snacks, condiments, pouch foods, dehydrated products, and reheatable meals, etc. that might be good candidates for space.
6. Have the students pick 2-3 products they think would be good to market and bring the ideas into class. Help individuals or teams select one for their campaign.
7. Students should then write marketing proposals for their product that explain why it is or how it could become "space ready" and why it would be a good food to take on board.
8. Then have them write slogans for their Earth-based marketing campaign. They can also create posters that show their ideas for ads, create an audio commercial for radio shows, even a video if there is time and interest.
9. Students should present these proposals to their peers. They can also send them to the author at [www.susangoodmanbooks.com](http://www.susangoodmanbooks.com).
10. Space food campaigns can also be showcased as a school-based exhibit to get student feedback. There could even be a school- or grade-wide vote to determine what should be the next new food in space.

**Common Core State Standards for English Language Arts (CCSS ELA):**

Reading Informational Text #1, 2 and 3: Key Ideas and Details

Writing #1, 2, and 3: Text Types and Purposes

Writing #4: Production and Distribution of Writing

Writing #7: Research to Build and Present Knowledge

Speaking and Listening #1 and 2: Comprehension and Collaboration

Speaking and Listening #4, 5, and 6: Presentation of Knowledge and Ideas

Language #6: Vocabulary Acquisition and Use

**Common Core State Standards for Literacy in Science and Technical Subjects (RST)**

RST #1 and 2: Key Ideas and Details

RST #7: Integration of Knowledge and Ideas

## Activity #7: The ABCs of Space Travel

Alphabet books are a respected genre in science study as well as in other subjects. *How Do You Burp in Space?* with its extended back matter is a fine springboard for a class or small pod making their own alphabet book about space travel. This in-depth project is appropriate for grades 3-8, ESL/ELL and visual learners.

### Project Overview and Prep

A class of students (split into teams) will plan, research, write, produce, and publish its own space travel alphabet book. To create well-rounded content, they can also add illustrations or drawings, cartoons or images from NASA and other materials, such as fun related facts or appropriate quotations. Teachers should set grade and class appropriate standards and parameters for the definitions and added features. A rubric or a set of expectations should be shared and discussed with the students at the onset.

In some classes the teacher may prefer to assign all the content for each letter page to the teams. In others, teachers may see the advantage of creating a few teams of student specialists, such as student artists and research experts, who spend their time assisting principal teams with these parts of the work.

Teachers should gather some alphabet books in the classroom to use as models and inspiration. Several books are suggested in the Resource List below. By studying alphabet books in class and online and visual glossaries including ESL visual glossaries used in schools, students are addressing multicontent CCSS Standard 10 by examining a range of reading and level of text complexity.

### Project Steps

1. Divide the class into small groups and monitor their selection of letters (artistically it would be better if teams did not work on sequential letters). Record the selections.
2. Have students research to come up with candidates for space/space travel words starting with their chosen letters. Their gathered information should include definitions, ideas for possible illustrations, interesting trivia and quotations to consider. The Gallery of Space Images on <http://www.spaceplace.nasa.gov/gallery-space/en/> can inspire be a good source for illustration. Students should feel free to use Michael Slack's style of illustration, combining drawings with photos. Ask the teams to keep a list of the websites and print sources they used if you want the book to have bibliography.
3. Have students create a draft of their definitions and Illustrations. Encourage them to use their own words and let the definitions reflect the interests, talents and creativity of

team members. For added interest you may want to assign the definitions as poetry, dialogue, or a different focused use of language.

4. Review by having a whole class discussion in which each letter definition is presented. Students can offer constructive criticism and brainstorm suggestions, which the letter team records the feedback for later use in their revisions.
5. Have teams present their illustration(s) for feedback and suggestions.
6. After teams create at least 1 extra piece of content for their assigned letter(s), repeat the review process in Step 4 in a whole group setting so the class collaboratively provides feedback and suggestions for revision.
7. Once students have completed their revisions, have the teams organize the various elements into completed pages for each letter. They will be working from a Letter Page Template provided by the teacher at the beginning of the project.
8. In whole group lesson mode, the teachers and the class make decisions about the final look, body of content, and format of the book. However, depending on grade, students' achievement level and time considerations, the teacher has the option of working with students or taking over any or all of the following features: the book cover, front matter (possibilities include title page; a list of contributing authors, artists, researchers, and editors; and/or an introduction); back matter (i.e. bibliography, index, etc.); and, a back cover.
9. All the pages are put in order. The book can be bound in an 8 x 11½ format and/or scanned to produce an e-Book. Students can also produce a collection of posters based on the pages to be shown gallery style to audiences.
10. If the students can get feedback from any division of the Smithsonian, Nasa, a local science museum, an appropriate professor at a local university, or the entrepreneurial companies involved in space travel, it will add immeasurably to the excitement of this science language special domain research.
11. The finished work can be presented to other classes in school, neighboring schools, or a local senior center. Quiz questions culled from *How Do You Burp In Space?* could be shared with the audience.
12. A xeroxed color copy of the alphabet book can be donated to the school library, the local community library, and the author, who would put parts of it up on her website, [www.susangoodmanbooks.com](http://www.susangoodmanbooks.com).

## **Resource List: Recommended Alphabet Books**

*S is for Story* by Esther Hershenhorn

*Gone Wild*, by David McLimans

*The Construction ABC Book* by Jerry Pallotta

*D is for Drinking Gourd: An African-American Alphabet* by Nancy I. Sanders

*Autumn: An Alphabet Acrostic* by Steven Schnur

*Q is for Quark* by David Schwartz

*G is for Gladiators* by Michael Shoulders and Debbie Shoulders

Sleeping Bear Press (<http://sleepingbearpress.com>) specializes in multi-content alphabet books with texts ranging from simple to complex, beautifully designed to inspire a broad range of learners.

### **Common Core State Standards for English Language Arts (CCSS ELA):**

Reading Informational Text #2 and 3: Key Ideas and Details

Reading Informational Text #4 and 5: Craft and Structure

Reading Informational Text #7 and 9: Integration of Knowledge and Ideas

Writing # 2: Text Types and Purposes

Writing #4, 5, and 6: Production and Distribution of Writing

Writing #7, 8 and 9: Research to Build and Present Knowledge

Speaking and Listening #1, 1c, 1d, and 2: Comprehension and Collaboration

Speaking and Listening #4, 5 and 6: Presentation of Knowledge and Ideas

Language #4: Vocabulary Acquisition and Use

### **Common Core Standards in for Literacy in History/Social Studies (RH)**

RH #1 and 2: Key Ideas and Details

RH # 4: Craft and Structure

RH #7: Integration of Knowledge and Ideas

WHST #2 and 2a: Text Types and Purposes

WHST #4, 5 and 6: Production and Distribution of Writing

WHST # 7, 8, and 9: Research to Build and To Present Knowledge

### **Common Core State Standards for Literacy in Science and Technical Subjects (RST)**

RST #1: Key Ideas and Details

RST #4: Craft and Structure

RST #7: Integration of Knowledge and Ideas