KEY IDEA  Science fiction television shows and movies feature amazing devices and advanced technology. But today, some of these gadgets and concepts might not be fictional. This book explains new developments and advancements that are bringing some of these fantasies to life.

LITERACY STANDARDS ADDRESSED IN THIS PLAN

RI.4.1  MAIN FOCUS Key Ideas & Details
Sessions 1, 2, 3
Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.

RI.4.4  MAIN FOCUS Craft & Structure
Sessions 2, 3
Determine the meaning of general academic and domain-specific words or phrases in a text relevant to a grade 4 topic or subject area.

RI.4.7  MAIN FOCUS Integration of Knowledge & Ideas
Sessions 2, 3
Interpret information presented visually, orally, or quantitatively (e.g., in charts, graphs, diagrams, time lines, animations, or interactive elements on Web pages) and explain how the information contributes to an understanding of the text in which it appears.

RI.4.10  Range of Reading & Level of Text Complexity
By the end of year, read and comprehend informational texts, including history/social studies, science, and technical texts, in the grades 4–5 text complexity band proficiently, with scaffolding as needed at the high end of the range.

SL.4.1d  Comprehension & Collaboration
Sessions 1, 2, 3
Review the key ideas expressed and explain their own ideas and understanding in light of the discussion.

L.4.4  Vocabulary Acquisition & Use
Additional Instruction
Determine or clarify the meaning of unknown and multiple-meaning words and phrases based on grade 4 reading and content, choosing flexibly from a range of strategies.

L.4.4a  Vocabulary Acquisition & Use
Sessions 1, 2
Use context (e.g., definitions, examples, or restatements in text) as a clue to the meaning of a word or phrase.

L.4.4b  Vocabulary Acquisition & Use
Additional Instruction
Use common, grade-appropriate Greek and Latin affixes and roots as clues to the meaning of a word (e.g., telegraph, photograph, autograph).

RF.4.3a  Phonics & Word Recognition
Additional Instruction
Use combined knowledge of all letter-sound correspondences, syllabication patterns, and morphology (e.g., roots and affixes) to read accurately unfamiliar multisyllabic words in context and out of context.

RF.4.4c  Fluency
Session 2
Use context to confirm or self-correct word recognition and understanding, rereading as necessary.

W.4.1  Text Types & Purposes
Writing Task
Write opinion pieces on topics or texts, supporting a point of view with reasons and information.

W.4.8*  Research to Build & Present Knowledge
Sessions 1, 2, 3
Recall information from experiences or gather information from provided sources to answer a question.

W.4.10  Range of Writing
Write routinely over extended time frames and shorter time frames for a range of discipline-specific tasks, purposes, and audiences.
Session 1  Text Selection: pp. 4–13

Key Idea: Text Selection The introduction illustrates how quickly technology changes and how our daily lives are impacted by these changes. The first half of Section 1 explores new technology that was once only a dream of science fiction writers, such as the Holodeck, replicators, and advanced robots.

PREVIEWING THE TEXT  5 minutes
Read the title and author name with students. Discuss the front cover and then read the back cover.

Let’s read the title on the front cover and look at the picture. Who would like to share what you think about the title?

I think this book will talk about things in science fiction movies.

Let’s read the back cover. What did you learn?

Instead of teaching us how they make things for science fiction movies and shows, this book will teach us about different devices that are fictional today but that might exist in the future.

READING THE TEXT CLOSELY  10 minutes
Explain the learning focus to students. Then have them read the Introduction on page 4. Check to see how they are doing with the application of the focus. Provide support if needed.

Let’s begin by finding some specific details on this page that tell us what this book will be about.

Although we think the future will be very different from life today, things are actually changing slowly without us realizing it.

What details did you find to support this main idea?

The Internet and cell phones have been around for years. The computers in smartphones are more powerful than computers that helped put a person on the moon.

As we read, we can think about ideas that are not directly stated in the text. This is called making inferences. Can anyone make an inference after reading the Introduction?

Things we have today might seem old-fashioned in the future. Some things we see in science fiction movies might be part of our everyday lives when we grow up.

What explicit evidence in the text supports your inferences?

Star Trek communicators seemed futuristic and unbelievable to the audience at the time, but they are really similar to smartphones people use today. Things our parents did, like share a family phone, seem very old-fashioned to us today because so many people have their own cell phones.

If students show they can apply the focus, set the reading assignment for the session. If not, ask them to reread the Introduction slowly and find an explicit detail in each paragraph to help them understand the main idea.

As we read today, we’ll think about the explicit details and examples that we can use to explain what the text says and also to support inferences we make. Be sure to take notes on information you find that you want to use in our discussion.
DISCUSSING THE TEXT 10 minutes

Invite students to share details and examples they found to explain new technology being developed today. Encourage students to review the key ideas expressed and give explanations in light of the discussion.

As we talk today, listen carefully to the key ideas and use those ideas to add to your understanding. Who can get us started by describing a new technology being developed today?

The Cave2 Machine is a new type of video game room.

What details did you find that explain more about this technology?

There are screens all over the rooms and sensors that follow your movements.

What inference can you make about the Cave2 Machine?

The inventors may have gotten the idea for the Cave2 from watching Star Trek and seeing the Holodeck.

Who can find explicit details to support this inference?

On page 6, the text says, “some scientists are now working to invent something like a real Holodeck.”

Focus on the word gadgets on page 4.

The word gadgets is in the last paragraph on page 4. Who can identify words on this page that help us figure out what gadgets means?

The page talks about cool stuff like cell phones, GPS, and video games. These are things that were only dreamed about not too long ago. Now they are real, but now we are dreaming about more cool stuff. So maybe gadgets are cool technology things, like amazing new inventions.

That is very close. You used context clues to help you come up with a definition that works in this Introduction. Gadgets can also just be small mechanical devices that are old news, like a multi-purpose bottle opener.

Confirm students’ good use of the focus and encourage them to keep it in mind whenever they read nonfiction, especially reports.

You found many explicit details to help you explain what the text says. You also made some good inferences. Use these strategies as we continue reading this book.

Formative Assessment: Comprehension Using the Quick Start Planner, note this session’s learning focus. Observe each student’s articulation and use of text evidence to evaluate effective use of the learning focus.

COMPREHENSION: DETAILS AND INFERENCES

Formative Assessment Have students use the blackline master on page 10 to make an inference. They should support their inference with details they located in the book. Review students’ responses as you evaluate their mastery of the learning focus.

CONSTRUCTED RESPONSE: COLLECT TEXT EVIDENCE

Formative/Summative Assessment Have students use the blackline master on page 11 as they read. Students will collect details from the text to answer the question: What technology from science fiction shows and movies are scientists close to inventing? Use text evidence to support your response. Review students’ collected evidence as you evaluate their mastery of the learning focus.
Session 2  Text Selection: pp. 4–13

RETURNING TO THE TEXT  5 minutes
Ask students to reflect on the text they read in Session 1. Guide them to recall how they applied the learning focus to their reading.

Let’s review our discussion of science fiction and new technology from the last session.

We looked for details and examples to explain what the text said about devices used in science fiction and new inventions. Then we used those facts to make inferences about this information.

Being able to explain what the text says using details and examples and then using this information to make inferences about what the text doesn’t say explicitly lets us check our understanding of what we read.

READING THE TEXT CLOSELY  10 minutes
Explain the learning focuses for this session. Invite students to reread pages 8–10. Check to see how well they have understood the focuses. If you are satisfied that students can apply them, set the reading assignment for the session. If not, provide corrective feedback as suggested on page 2 of this lesson plan.

Let’s reread pages 8–10. We know now that people are actually developing gadgets and technology that was once only imagined in fictional settings. What is an inference you can make about 3-D printers?

Maybe someday 3-D printers will be able to actually create things we need to help or cure people with certain diseases, or people with parts of their body that don’t work right.

What details in the text support this idea?

Right now, the text says there are 3-D printers that can print small objects, and soon these printers may be able to print food and even body parts. If they are working on these ideas today, someday they will be able to create anything with these advanced printers.

Did anyone learn any new content-area words while reading this page?

I’d never heard of tissue engineering until I read page 10. Now I understand that the scientists are literally figuring out how to build human cells and tissues.

Invite students to study the photos on pages 8–10.

Let’s look at the photos on pages 8–10. What part of the text do you think they illustrate?

The first photo shows a 3-D printer that can make items from plastic. The second shows a pizza, something that people are trying to make with a 3-D printer. The third shows a 3-D printer that was used to build part of a human ear.

Who will share how these pictures help you understand 3-D printers?

I imagined the printer looking like the printer we have hooked up to the computer in the classroom, but now that I see the pictures, I can see how large they are. I can also see the different parts that work together to “print” the final product.

Be sure to pay attention to the drawings, diagrams, charts, and photographs in nonfiction text. They will show you what the text says and help explain the content so that you understand the information you read.
Formative Assessment: Fluency

Listen to each student read a portion of the text. Observe students’ fluency. If students need additional practice with fluency, provide the necessary support at the end of the session. Ask students to note words or phrases they find challenging for discussion after the reading.

DISCUSSING THE TEXT

10 minutes

Invite students to continue to share new facts, examples, and domain-specific words they found that will help them explain the text and make inferences. Encourage them to review what classmates have said and to share key ideas they developed as a result of the discussion.

Let’s talk about the information that is presented on pages 11–13. Remember to find evidence from the text and use key ideas we’ve discussed to support your ideas. This will help you remember explicit details and examples from the text.

Robots that were invented in movies like Star Wars did not seem like they were realistic, but today scientists are working on building Nao, a humanoid robot.

Let’s use those details to make an inference.

In the future, people might have robots to help them do their chores or to chat with them.

Who found an explicit detail to support this inference?

The text says the Nao can be programmed to speak 19 different languages.

You used the explicit details in the text to make inferences about robots and you were able to support each inference with details from the text. Who came across a word that you weren’t sure about?

I was not sure about the word sophisticated on page 11.

Who has an idea to share about this word?

I think it means “advanced” because the text says “robotic technology is getting more sophisticated” and then it goes on to explain some of the new, complex developments in technology, like smartphones and robot vacuums.

What can you infer about these new robots from this information?

They will be able to be programmed to do very complex tasks.

Focus on the word vast in the last paragraph on page 12.

Let’s look at the word vast on page 12. Together let’s come up with a strategy to figure out its meaning. What are some strategies you’ve used to find the meanings of words?

look at the words around it, look at word parts, look for related words, look up the word in the glossary or a dictionary

Let’s look for context clues. Reread the last paragraph and find the word vast. What words and phrases are clues to what it might mean?

The author uses vast to describe our knowledge base, which is a lot of stuff we know how to do without even thinking about it. Like when we pick something up, our body knows just how to do it. Robots don’t have all that knowledge so it has to be programmed in.

Based on those clues, what do you think vast means?

a lot; very large or deep in size
As we read, we’ll continue to use the vocabulary strategies we know, such as context clues, word parts, related words, and looking words up in reference books to determine word meanings.

Confirm students’ good use of the focuses. Encourage them to continue to look for details and examples that will help them explain what the text says and to think of inferences they can make about new technology that is being developed. Encourage them also to pay attention to the photos, diagrams, and illustrations to see if they find additional information that will help them better understand the text.

We’ve talked a lot about how we can cite explicit details from the text and visuals and use them to make inferences. How does reviewing key ideas expressed during a group discussion help you better understand science technology?

When I think about what someone else said before I speak, I’m able to make sure I’m not repeating their ideas. It also helps me make sure my comments stay focused on the discussion topic. I can add to the ideas using my own understanding.

Formative Assessment: Comprehension Using the Quick Start Planner, note the session’s learning focuses. Observe each student’s articulation and use of text evidence to evaluate effective use of the learning focuses.

FLUENCY FOLLOW-UP
Remind students that rereading a nonfiction text builds understanding and strengthens fluency. Model reading the last paragraph on page 11. Share your thinking as you note an example of vocabulary that is difficult to pronounce and understand, such as computerized artificial intelligence. Model how to self-correct by thinking aloud. Then have partners reread the same text and discuss what they self-corrected as they reread.

CONSTRUCTED RESPONSE: COLLECT TEXT EVIDENCE
Formative/Summative Assessment Have students continue to use the blackline master on page 11 for collecting evidence as they read. Students will continue to collect details from the text to answer the question: What technology from science fiction shows and movies are scientists close to inventing? Use text evidence to support your response. Review students’ collected evidence as you evaluate their mastery of the learning focuses.
Session 3  
Text Selection: pp. 14–24

**Key Idea: Text Selection**  
The second half of Section 1 explores more inventions that mirror science fiction movies, such as self-healing synthetic skin, hoverbikes, flying cars, and jet packs.

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**RETURNING TO THE TEXT**  
5 minutes

Explain that students will read the second half of Section 1 and analyze how the domain-specific vocabulary and the visuals on each page support the text, both explicitly and inferentially.

.tell me what we have focused on so far while reading this book?

*We discussed what the text says and inferences we made about the topic.*  
*We talked about how to determine the meaning of words and phrases using context clues and how the visuals support what the text explains.*

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**READING THE TEXT CLOSELY**  
10 minutes

State the learning focuses and invite students to read pages 14–15. Check to see how they are doing with application of the focuses. Then have students read through page 24, paying specific attention to how the words and visuals work together to explain the new technology.

Skin is difficult to duplicate because it is flexible, repels water, senses pressure and temperature, and can knit itself back together.

What can you infer from these details?

Scientists have a lot of work to do if they are going to be able to develop fake skin that mirrors all the properties of real skin.

Did you come across any challenging vocabulary words as you read?

Yes, I wasn’t sure what *synthetic* means, but I read that scientists are trying to make something that takes the place of your skin and does everything skin can do. So I’m pretty sure synthetic means “fake” or “not the real thing.”

Remember to look for context clues and word parts that help you define unknown words.

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**DISCUSSING THE TEXT**  
10 minutes

Facilitate a discussion in which students share details and examples to explain the text, context that defines domain-specific words, and information they found in the visuals.

Remember to review key ideas and use them to obtain a deeper understanding. Who wants to share a picture that helped them understand the text?

*The pictures on pages 19 and 20 were really helpful for me. I could imagine what hoverbikes looked like from seeing them in Star Wars, but I wasn’t really sure what the actual invention would look like. After seeing the pictures, I have a much clearer idea of how the fans operate and how drivers control the vehicles.*
After reading these pages, what can you infer about hoverbikes?

It will be a very long time before people like you and me are able to ride on a hoverbike, because the text says they "cost between $50,000 and $100,000."

Encourage students to finish reading the book independently. Remind them to use the same strategies and techniques as they complete it.

You'll finish reading this book on your own. I encourage you to think about how the visuals match the words on each page and what they add to the text. Remember to pause sometimes to review what you’ve read and to make inferences.

CONSTRUCTED RESPONSE: WRITE TO SOURCE

Formative/Summative Assessment Have students use the blackline master on page 11 as they finish reading. Then ask them to write a response on a separate sheet of paper that answers the question: What technology from science fiction shows and movies are scientists close to inventing? Use text evidence to support your response. Have students use the text evidence they collected to support their writing.

CLOSE READING OPTIONS

Summative Assessment Print the online blackline master for independent close reading. Ask students to read the selection indicated on the page independently and respond to the prompts (summarize author’s message, identify critical vocabulary, respond to constructed response questions) before returning for a small-group discussion. Alternatively, you can use the completed blackline master for summative assessment.

Writing Task: Opinion

Summative Assessment Review with students the elements of an opinion piece. Then invite them to write an opinion about which piece of new technology described in this book they believe will be the most useful in our daily lives. Guide students to use the the blackline master on page 12 as they write their opinion pieces.

Before writing, have students discuss their points of view with partners. Students will work independently to write their opinion pieces. If time permits, encourage students to include an original illustration that shows the technology they've selected.

You’ve been collecting text evidence and details from visuals that describe new technology and gadgets being invented and studied today. Work with a partner to discuss your point of view regarding which one you feel will become the most useful in our daily lives.

Then write your opinion piece describing what technological advancement you chose and explaining why you think it will be the most useful. Begin by introducing and clearly stating your opinion. Provide reasons for your opinion that are supported by facts and details from the text and illustrations. Finally, end with a concluding statement that restates your opinion.
WORD STUDY

**Affixes and Roots** Explain that knowing the meaning of common affixes and roots will help students determine the meaning of unfamiliar words they encounter while reading.

When you find an unfamiliar word, a strategy you can use to find clues about its meaning is to look for a common affix or root in the word. Knowing the meanings of these word parts will help you determine the unfamiliar word’s meaning. Let’s look at the word *emptiness* in the second paragraph on page 36. Who can name the suffix in this word?

-ness

Yes. This suffix means “the condition or state of.” What is the root word?

empty

So what does this word mean?

“the state of containing nothing”

VOCABULARY

**Multiple-Meaning Words** Focus on the word *program* on pages 12 and 46.

Let’s closely read the last paragraph on page 12. The word *program* appears in the last sentence. How is this word used in the sentence?

It’s a verb.

What does it mean?

to write instructions and input them into a computer

Now let’s look at the last paragraph on page 46. How is the word *program* used here?

It is a noun that means a set of instructions that tells a computer what to do.

Can anyone think of other definitions we might use for *program*?

a show on television, a pamphlet or flyer you get when you see you a play, a plan of things that are done in a certain order

WORD RECOGNITION

**Multisyllabic Words** Focus on the word *cryogenics* on page 45.

To read and pronounce an unfamiliar word that has many syllables, you can look at the parts of the word and use what you know about the sounds of the letters, syllables, and affixes. Let’s look at the word *cryogenics* on page 45. What is the first thing we need to figure out?

that the c sounds like /k/ in the first syllable

Let’s continue by breaking the word into syllables.

cry-o-gen-ics

How can we figure out the meaning of *cryogenics*?

We can look in the glossary.
Comprehension: Details and Inferences

Write an inference you made as you read. Then identify details from the book that support your inference and the pages on which you found those details.

My Inference:

Supporting Detail: 
Page: 

Supporting Detail: 
Page: 

Supporting Detail: 
Page: 

Score: ________
Collecting Text Evidence

What technology from science fiction shows and movies are scientists close to inventing?

Use this chart to collect evidence about each piece of new technology described in this book. Be sure to include page references as you take notes. You may need more than one copy of this chart.

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Score: __________
Writing Task: Planning Your Opinion

Plan an opinion piece to share your thoughts on which piece of new technology will be the most useful in our daily lives. Introduce your piece by stating your opinion. Then give reasons why you feel the piece of technology you selected will become the most useful in our daily lives. Support your opinion with evidence, details, and examples from the text. End by restating your opinion in a different way.

Introduction (state your opinion):

________________________________________________________________________

________________________________________________________________________

Reasons why this piece of technology will be the most useful:

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

________________________________________________________________________

Conclusion (restate your opinion):

________________________________________________________________________

________________________________________________________________________

NOTE: Write your response on a separate sheet of paper or on a computer. Remember to read your writing when you are done and make any necessary revisions.

Score: ____________