Teacher Lesson Plans & Student Materials

Module Title: Robotic Technology

The materials for this module of K.L.I. include:

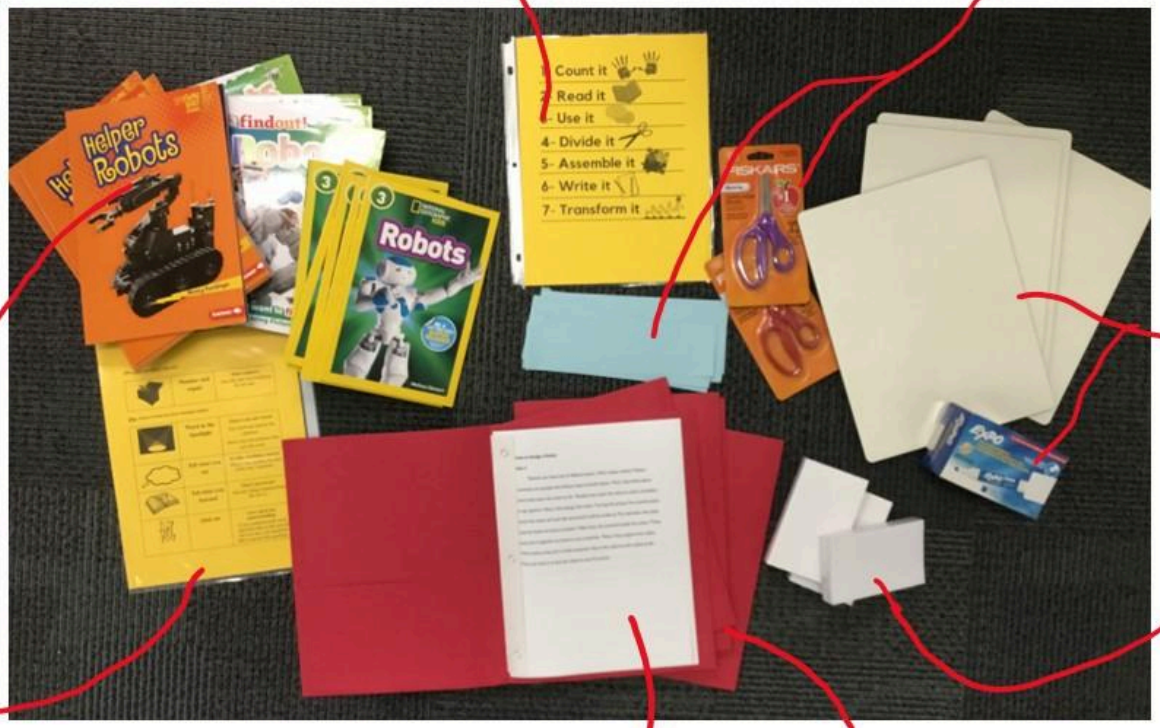
Topic-related books for *Discovery Reading:*

1. *Helper Robots* by N. Furstinger (Lerner Publishers; ISBN: 1467745081)
2. *Robots* by M. Stewart (Nat Geo Kids; ISBN: 9781426313448)
3. *DK Find Out!: Robots* by N. Lepora (DK Children Pub; ISBN: 1465469338)

Discovery Reading prompt card and *Sentence Workshop* prompt card

Breaking Words prompt card

Scissors and strips of paper for *Breaking Words*



Small dry erase boards and markers for *Breaking Words*

Note cards for *Sentence Workshop*

Stacked texts for *Confident Reading*

Graphic organizers for *Uncover the Structure*

Module Inquiry Focus: Robotic Technology **Overarching Inquiry Questions:** -How have robots been developed? -What are some of the important features that allow robots to do their jobs? -How have humans solved challenges by developing robotic technology?			
Segment 0	**Intro/Preview**		
Segments 1-3	**1-DR Lesson A**	**2-CR Lesson A**	**3-BW Lesson A**
	Book Title: *Helper Robots*	Passage Title: How to Design a Robot Text 1	Words: sensor (sensing, sensation); collapse (collapsing, collapsible)
	Text Chunks (page #s): p. 4-9		
	Guiding Question: What are some ways robots can do jobs that are challenging for humans to do?		
	Word in the Spotlight: sensor		BW Affixes: un-, pre-, -ing, -ion/-tion, -able/-ible
Segments 4-6	**4-DR Lesson B**	**5-CR Lesson B**	**6-SW Lesson A**
	Book Title: *Helper Robots*	Passage Title: How to Design a Robot Text 2	Mystery Sentence: Rescue robots can work in unsafe places because they have features such as cameras and sensors that can find survivors after a disaster.
	Text Chunks (page #s): 10-15		
	Guiding Question: What are some ways that robots can help people in dangerous situations?		
	Word in the Spotlight: survivor		
Segments 7-9	**7-DR Lesson C**	**8-CR Lesson C**	**9-BW Lesson B**
	Book Title: *Helper Robots*	Passage Title: How to Design a Robot Text 3 (MAZE)	Words: measure (measuring, measurable, unmeasurable, premeasure); survivor (surviving, survivable)
	Text Chunks (page #s): p. 16-21		
	Guiding Question: How do robots help scientists understand the world?		
	Word in the Spotlight: measure		BW Affixes: un-, pre-, -ing, -ion/-tion, -able/-ible
Segments 10-12	**10-DR Lesson D**	**11-UtS Lesson A**	**12-SW Lesson B**
	Book Title: *Helper Robots*	Passage Title: How to Design a Robot Text 3 (complete)	Mystery Sentence: Robots explore oceans and collect data from icy environments in order to help scientists understand how the Earth's climate is changing.
	Text Chunks (page #s): 22-27	Text Structure: Sequence	
	Guiding Question: How can robots help people study the environment?		
	Word in the Spotlight: environment		
Segment 13	**13-Inquiry Space Maintenance Day**		
Segments 14-16	**14-DR Lesson E**	**15-CR Lesson D**	**16-BW Lesson C**
	Book Title: *Robots* (NatGeo Kids, Melissa Stewart)	Passage Title: Fact vs Fiction Text 1	Word Choices: explore (exploring, exploration, explorable, unexplorable); invent (invention, inventing)
	Text Chunks (page #s): 16-19		
	Guiding Question: Why do scientists design robots to move like animals?		
	Word in the Spotlight: motion		BW Affixes: un-, pre-, -ing, -ion/-tion, -able/-ible
Segments 17-19	**17-DR Lesson F**	**18-CR Lesson E**	**19-SW Lesson C**
	Book Title: *Robots*	Passage Title: Fact vs Fiction Text 2	Mystery Sentence: Some areas of the Earth are too dangerous for humans to explore, but robots designed to copy the movement of animals can safely hop over rocky cliffs or squeeze through tight caverns.
	Text Chunks (page #s): 26-29		
	Guiding Question: How have roboticists invented robots that can help people in their homes?		
	Word in the Spotlight: roboticist		
Segments 20-22	**20-DR Lesson G**	**21-CR Lesson F**	**22-BW Lesson D**
	Book Title: *Robots*	Passage Title: Fact vs Fiction Text 3 (MAZE)	Word Choices: recognize (recognizing, recognizable, unrecognizable); injure (injuring, uninjured, injurable)
	Text Chunks (page #s): p. 32-35		

	Guiding Question: What features do androids have that make them similar to humans?		
	Word in the Spotlight: artificial		BW Affixes: un-, pre-, -ing, -ion/-tion, -able/-ible
Segments 23-25	**23-DR Lesson H**	**24-UtS Lesson B**	**25-SW Lesson D**
	Book Title: *Robots*	Passage Title: Fact vs Fiction Text 3 (complete)	Mystery Sentence: Some roboticists develop android robots that are programmed to mimic human behaviors and appear lifelike even though they are artificial.
	Text Chunks (page #s): 30-31 and 44-45	Text Structure: Compare and Contrast	
	Guiding Question: Why are scientists continually working on ideas for new robots?		
	Word in the Spotlight: develop		
Segment 26	**26-Inquiry Space Maintenance Day**		
Segments 27-29	**27-DR Lesson I**	**28-CR Lesson G**	**29-BW Lesson E**
	Book Title: *DK Find Out! Robots*	Passage Title: Drones Text 1	Word Choices: operate (operation, operating, preoperate, operatable); developed (undeveloped, developing)
	Text Chunks (page #s): p. 14-15 and 18-19		
	Guiding Question: How are robots designed to help make some jobs easier for humans?		
	Word in the Spotlight: operate		BW Affixes: un-, pre-, -ing, -ion/-tion, -able/-ible
Segments 30-32	**30-DR Lesson J**	**31-CR Lesson H**	**32-SW Lesson E**
	Book Title: *DK Find Out! Robots*	Passage Title: Drones Text 2	Mystery Sentence: Some robots are designed to lift heavy metal objects to build cars in factories, while others are built with specific features that enable them to handle delicate items.
	Text Chunks (page #s): p. 30-31		
	Guiding Question: How does the coding process for robots work?		
	Word in the Spotlight: programming		
Segments 33-35	**33-DR Lesson K**	**34-CR Lesson I**	**35-BW Lesson F**
	Book Title: *DK Find Out! Robots*	Passage Title: Drones Text 3 (MAZE)	Word Choices: program (programming, programmable, preprogram, unprogram); control (controllable, uncontrollable, controlling)
	Text Chunks (page #s): p. 50-51		
	Guiding Question: How can robots improve people's physical abilities?		
	Word in the Spotlight: delicate		BW Affixes: un-, pre-, -ing, -ion/-tion, -able/-ible
Segments 36-38	**36-DR Lesson L**	**37-UtS Lesson C**	**38-SW Lesson F**
	Book Title: *DK Find Out! Robots*	Passage Title: Drones Text 3 (complete)	Mystery Sentence: In the future, robots may be able to build entire houses or help find a cure for cancer because scientists are working hard every day to develop new robot technology.
	Text Chunks (page #s): 56-57	Text Structure: Sequence	
	Guiding Question: What might robots be able to do for us in the future?		
	Word in the Spotlight: assemble		
Segment 39	**39-Inquiry Space: Prepare for informal showcase**		
Segment 40	**40-Showcase: Share and celebrate new knowledge**		

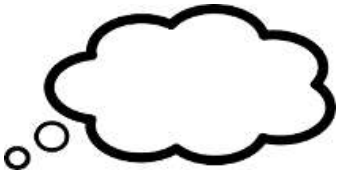
Printable Materials

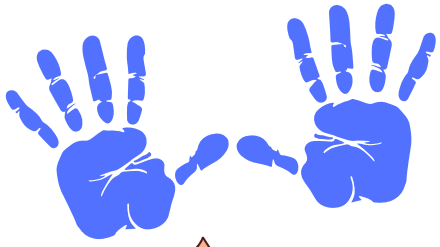
1. Discovery Reading Prompt Card
2. Breaking Words Prompt Card
3. Sentence Workshop Prompt Card
4. Graphic Organizers for Uncover the Structure
5. Confident Reading Stacked Texts

After <u>every</u> text chunk, stop and:

	**Monitor and repair**	**Wait a minute!** One idea that was confusing for me was…

<u>Plus</u>, choose at least one more thought routine:

	**Word in the spotlight**	**There's our new word!** Our word was used in this sentence… Here's my own sentence that uses the word...
	**Tell what you see**	**It's like watching a movie!** When I was reading this part of the text, I pictured…
	**Tell what you learned**	**That's new to me!** One new thing I learned from the text is...
	**Quiz me**	**Let's check for understanding!** If you understood the most important idea in this part of the text, then you should be able to answer this question...

1- Count it 

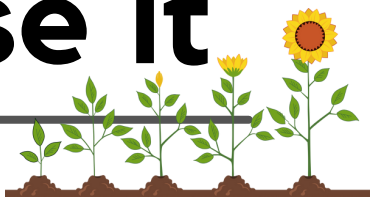
2- Read it 

3- Use it

4- Divide it 

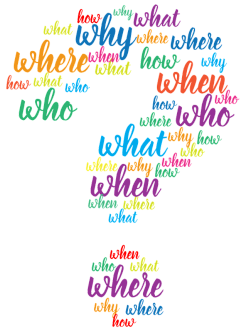
5- Assemble it 

6- Write it 

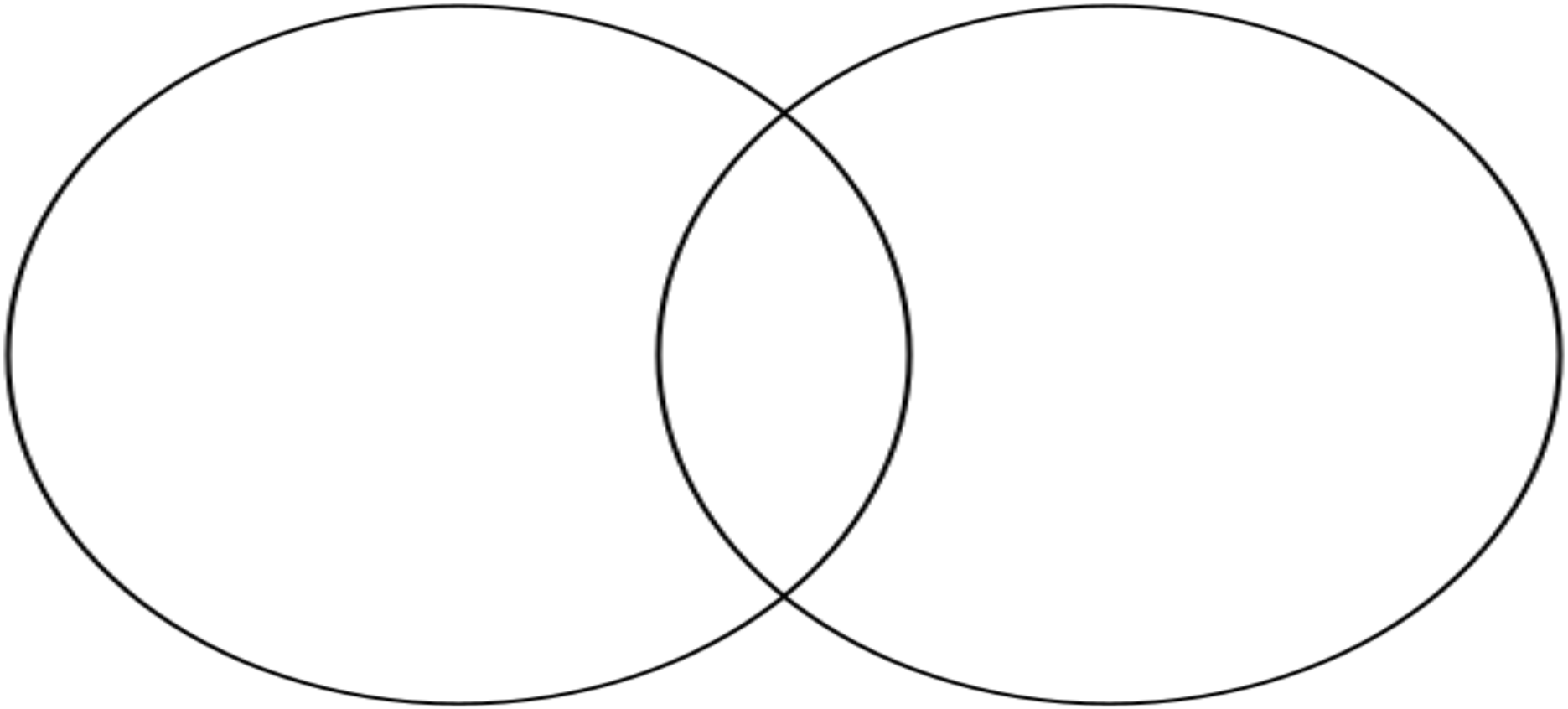
7- Transform & Use it 

Sentence Workshop

Prompts for Discussing a Sentence

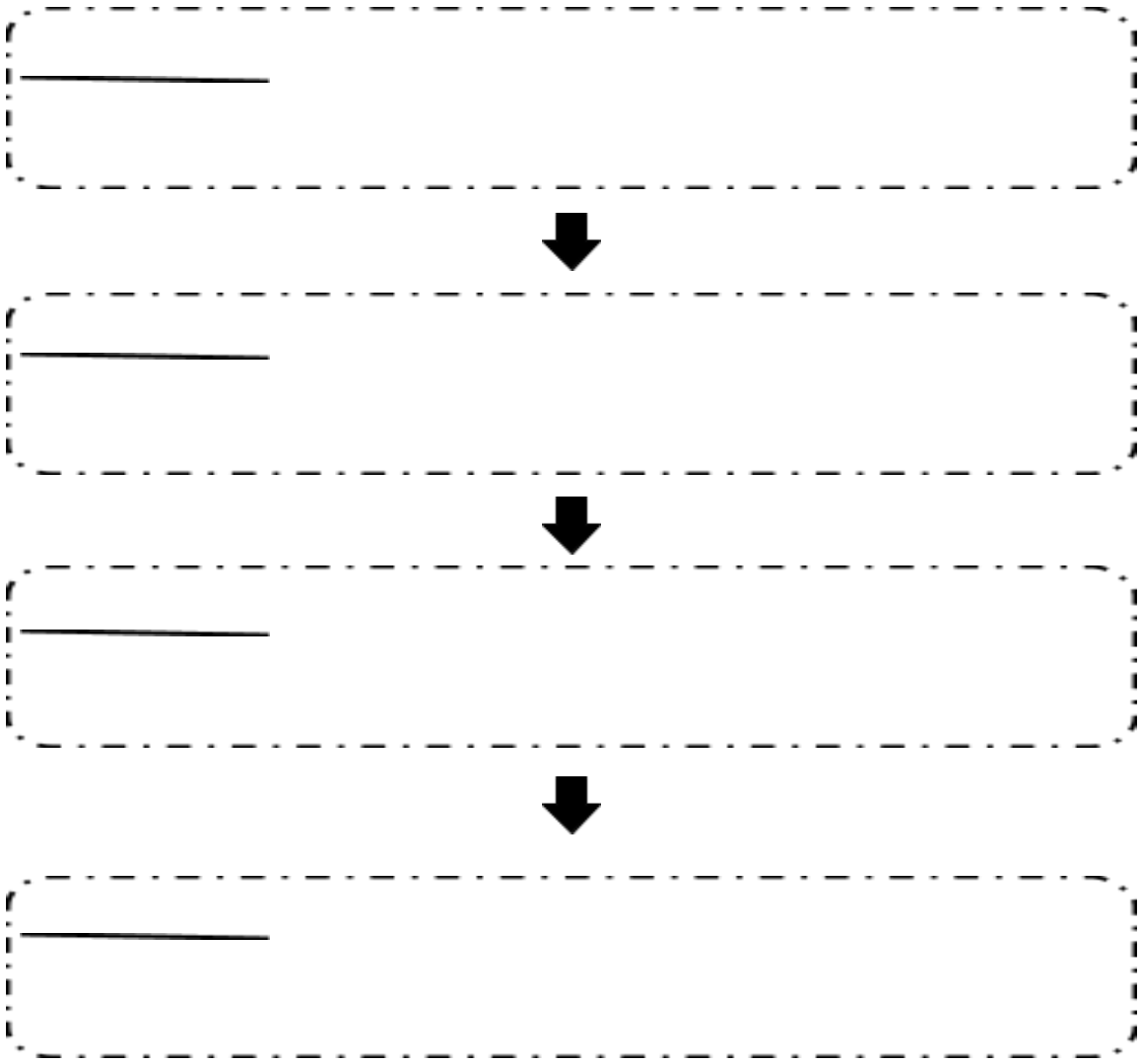
	1. <u>Who</u> or <u>what</u> is the most important part of this sentence?
	2. What does the sentence tell us about the who or what?
	3. What else do we know from the sentence? a. Do we know why? b. Do we know when? c. Do we know where? d. Do we know how?

Compare and Contrast



Signal Words for Compare: *Same as*, *similar(ly)*, *both*, *have in common*, *likewise*, *alike*
Signal Words for Contrast: *Different*, *in comparison*, *in contrast*, *however*, *but*, *on the other hand, although*

Sequence



Signal Words: first, then, next, last, finally, now, after, in (date)

Student Texts for Confident Reading

Robotic Technology Module

How to Design a Robot

Text 1

[1]Robots can have lots of different parts. [2]Who makes robots? [3]Robot scientists are people who follow steps to build robots. [4]First, they think about what they want the robot to do. [5]Maybe they want the robot to solve a problem or go explore. [6]Next, they design the robot. [7]During this phase, the scientist plans what the robot will look like and what it will be made of. [8]For example, the robot may be made of metal or plastic. [9]After that, the scientist builds the robot. [10]They may put it together by hand or use a machine. [11]Next, they program the robot. [12]This means they put a small computer chip in the robot to tell it what to do. [13]The last step is to test the robot to see if it works!

How to Design a Robot

Text 2

[1]Robots can have thousands of different parts. [2]Who makes these machines? [3]Many robots are built in factories, but some are made by people. [4]Roboticists are scientists who follow steps to design and build robots. [5]First, they think about what the purpose of their robot will be. [6]Maybe they want the robot to solve a problem or explore a new place. [7]Next, they design the robot. [8]During this phase, the roboticists plan what the robot will look like and what materials it will be made of. [9]For example, the robot may be made of hard metal or flexible plastic. [10]After that, the scientists build the robot by putting the pieces together by hand or using a machine. [11]Next, the roboticists program the robot. [12]This means they put a small computer chip in the robot and send instructions to the chip. [13]Finally, they test the robot to see if it works properly.

How to Design a Robot

Text 3 (Maze)

[1]Robots can have thousands of different parts. [2]Who makes these machines? [3]Many robots are built in factories, but some are made by people. [4]Roboticists are

person
scientists
human

who follow steps to design and build robots. [5]First, they think about what the purpose of their robot will be, such as being able to solve a problem or explore a new

After
Before
Next

place. [6], they design the robot. [7]During this phase, the roboticists plan what the robot will look like and what materials it will be composed of. [8]For example, it

build
break
mend

may be made of hard metal or flexible plastic. [9]After that, the scientists the robot by putting the pieces together by hand or using a machine. [10]Next, the roboticists program the robot. [11]This means they put a small computer chip in the robot

First
Finally
Hence

and send instructions to the chip. [12], they test the robot to see if it functions properly.

How to Design a Robot

Text 3 (complete)

[1]Robots can have thousands of different parts. [2]Who makes these machines? [3]Many robots are built in factories, but some are made by people. [4]Roboticists are scientists who follow steps to design and build robots. [5]First, they think about what the purpose of their robot will be, such as being able to solve a problem or explore a new place. [6]Next, they design the robot. [7]During this phase, the roboticists plan what the robot will look like and what materials it will be composed of. [8]For example, it may be made of hard metal or flexible plastic. [9]After that, the scientists build the robot by putting the pieces together by hand or using a machine. [10]Next, the roboticists program the robot. [11]This means they put a small computer chip in the robot and send instructions to the chip. [12]Finally, they test the robot to see if it functions properly.

Fact vs. Fiction

Text 1

[1]We see robots in movies, TV, and books. [2]Some of them even look like humans. [3]These human-like robots are called androids. [4]They can be "good guys", or they can be dangerous. [5]But in real life, androids are not going to take over the world! [6]Though some of them can walk and talk, they are still machines. [7]They are not alive. [8]Some robots can even copy human faces, but they don't have feelings. [9]They cannot think, either. [10]Instead, some robots have a computer that is like a human brain. [11]But human scientists still tell them what to do. [12]Most of the time, they can only do a few jobs. [13]Androids can't learn on their own like humans can. [14]So even though an android might seem similar to a human, it is still a robot!

Fact vs. Fiction

Text 2

[1]Robots are very popular in movies, TV, and books. [2]Some of these robots even look similar to humans. [3]These human-like robots are called androids. [4]Some are "good guys," but others become dangerous. [5]However, real-life androids are not going to take over the world! [6]Even though they look like humans, androids are still machines. [7]Some can walk and talk, but there are many differences between androids and humans. [8]Unlike humans, they are not alive. [9]Although some robots can see and copy human faces, they don't feel emotions. [10]They cannot think, either. [11]Instead, some robots have a computer that acts like a human brain. [12]This computer is called artificial intelligence. It helps the robot make decisions like humans. [13]However, unlike the human brain, these computers are programmed to do just a few jobs. [14]Human scientists decide what the robot needs to know, unlike humans that can learn on their own. [15]So even though an android might look like a human, walk like a human, and talk like a human, it is still a robot!

Fact vs. Fiction

Text 3 (Maze)

[1]Robots are very popular in movies, TV, and books. [2]Some of these robots even look similar to humans. [3]These human-like robots are called androids. [4]Some are "good guys," but others become dangerous. [5] However While Therefore , real-life androids are not going to take over the world! [6]Even though they look like humans, androids are still machines. [7]Some can walk and talk like humans, but there are many differences between the two. [8]Unlike humans, androids are not alive. [9]Although some robots can see and copy human faces, they don't think or feel emotions signs things . [10]Instead, some robots have a computer that acts like a human brain. [11]This computer is called artificial intelligence, but so and it helps the robot make human-like decisions. [12]However, unlike the human brain, these computers are only programmed to complete a few jobs. [13]Human scientists decide what the robot needs to know, unlike humans that can learn on their own. [14] Finally Even Then though an android might look like a human, walk like a human, and talk like a human, it is still a robot!

Fact vs. Fiction

Text 3 (complete)

[1]Robots are very popular in movies, TV, and books. [2]Some of these robots even look similar to humans. [3]These human-like robots are called androids. [4]Some are "good guys," but others become dangerous. [5]However, real-life androids are not going to take over the world! [6]Even though they look like humans, androids are still machines. [7]Some can walk and talk like humans, but there are many differences between the two. [8]Unlike humans, androids are not alive. [9]Although some robots can see and copy human faces, they don't think or feel emotions. [10]Instead, some robots have a computer that acts like a human brain. [11]This computer is called artificial intelligence, and it helps the robot make human-like decisions. [12]However, unlike the human brain, these computers are only programmed to complete a few jobs. [13]Human scientists decide what the robot needs to know, unlike humans that can learn on their own. [14]Even though an android might look like a human, walk like a human, and talk like a human, it is still a robot!

Drones

Text 1

[1]Have you ever seen a drone? [2]They fly in the air and are controlled by people from afar. [3]These popular machines range from very small to large. [4]Police, news crews, and scientists use them for their jobs. [5]But drones aren't new. [6]They have been around for over 200 years! [7]The first drone was a balloon that Austrian soldiers used to drop bombs in 1839. [8]In 1915, the British army used drones to make maps during war. [9]Our military began using them in the 1940s. [10]They were seen as expensive toys until the 1980s. [11]Later, in the 1990s, the first tiny drones were created. [13]Now, some companies are trying to use drones to deliver packages.

Drones

Text 2

[1]Have you ever seen a drone? [2]These remote-controlled machines fly in the air and are controlled by people from afar. [3]These popular machines can be very small or as large as a plane. [4]Police, news crews, and scientists use them in their jobs. [5]But drones aren't brand new. [6]People have used them for over 200 years! [7]The first drone was a balloon that Austrian soldiers used to drop bombs on an Italian city in 1839. [8]In 1915, the British army used drones to make maps during World War I. [9]Then, the U.S. military began using them in the 1940s, but they were seen as expensive toys until the 1980s. [10]Later, in the 1990s, the first tiny drones were created. [11]Now, companies like Amazon are developing drones to deliver packages to customers. [12]People are finding lots of new ways to use these interesting machines.

Drones

Text 3 (Maze)

[1]Have you ever seen a drone? [2]These remote-controlled machines fly in the air and are [lost / controlled / blocked] by people from afar. [3]Drones are popular machines that can be very small or as large as a plane. [4]Police, news crews, and scientists use them in their jobs. [5]But drones aren't brand new. [But / So, / In fact,] people have used them for over 200 years! [6]The first drone was a balloon that Austrian soldiers used to drop bombs on an Italian city in 1839. [7]In 1915, drones were being used by the British army in order to make land maps during World War I. [8] [Second / Lastly / Then], the U.S. military began using them in the 1940s, but they were seen as expensive toys until the 1980s. [9]Later, in the 1990s, the first tiny drones were created. [10]Now, companies like Amazon are developing drones to [deliver / stop / leave] packages to customers. [11]People are finding lots of new ways to use these fascinating machines.

Drones

Text 3 (complete)

[1]Have you ever seen a drone? [2]These remote-controlled machines fly in the air and are controlled by people from afar. [3]Drones are popular machines that can be very small or as large as a plane. [4]Police, news crews, and scientists use them in their jobs. [5]But drones aren't brand new. In fact, people have used them for over 200 years! [6]The first drone was a balloon that Austrian soldiers used to drop bombs on an Italian city in 1839. [7]In 1915, drones were being used by the British army in order to make land maps during World War I. [8]Then, the U.S. military began using them in the 1940s, but they were seen as expensive toys until the 1980s. [9]Later, in the 1990s, the first tiny drones were created. [10]Now, companies like Amazon are developing drones to deliver packages to customers. [11]People are finding lots of new ways to use these fascinating machines.

“Robots” Module Day 0 Lesson
Introduction to the Module

Purpose of the Day Zero Lesson

The first lesson of a KLI module is intended to allow students to preview the inquiry topic of the module and to be introduced to the Discovery Reading thought process routines. We provide some general guidance in this Day Zero lesson plan, but we allow for and encourage flexibility so teachers can use this first day to get themselves and students set up for success in the module. Thus, this lesson should not be used as a script or formula.

Generally, the components of the Day 0 lesson should include:

- acquainting students to the teacher, each other and the classroom environment
- introducing and explaining the DR thought process routines using the DR prompt card
- reading a short text that introduces the topic of the module and allows for students to begin practicing the DR routines
- setting up the inquiry space and discussing what topics or questions students are curious about learning in the module

Introductory activities to establish classroom environment (optional)

Use the first ten minutes to introduce students to the classroom environment in ways that fit your teaching style and preferences. This is especially important if the students have not worked together or with the teacher before beginning K.L.I.

Ideas for this time might include:

- Icebreaker activities to help students get to know each other and the teacher. It’s a good idea to do something that gets students talking to one another to set the stage for all the discussion they will do during the module.
- Establishing classroom routines or norms, such as expectations for participation or time-saving procedures.

Introductory text to practice the DR thought process routines

-Pass out the DR prompt card to students. Teacher may say, **“Every day we are going to be reading books together during a routine called Discovery Reading. While we read, we are going to use these special cards to help us think about what we are reading. We will use these cards to discuss what we are reading about and what we are learning while we read. Today, we are going to get introduced to what these routines are and practice them a little bit.”**

-Introduce the topic of this module: robots. Teacher may say, “**During this module we are going to be learning all about robots. Some of you may already be familiar with robots,**

and that's great. During this unit, we are going to be doing a lot of reading, thinking, and talking about robots, so it's okay if you don't know much about this topic yet. Just to get a little introduction to this topic before we read any books, today we are going to read this short text about robots. We'll use this text to learn and practice these routines on our Discovery Reading prompt card."

-Use this short text (see below) to introduce the typical "format" of a Discovery Reading lesson. For example, you may say, **"Each day, before we read, I will introduce our spotlight word. This is an important new vocabulary word that we will come across in the text we read during each lesson. Our first spotlight word is a very important word: *robot!* A *robot* is a machine that is made to do certain tasks. Be on the lookout for this word as we read today."**

- **"Another thing we will do before we begin reading each day is look at our Guiding Question. Each day we will have a question that relates to the big idea of what we are learning that day. If we think carefully about what we are reading, we will be able to answer the Guiding Question by the end of the lesson! Today our guiding question is *Why are robots special?* After we read this text, we should be able to answer this question!"**

-Lead students through reading the text. You may choose to read it aloud, or choose a reading routine from our Scaffolded Reading Routine in the DR manual.

-You can either take pauses after every few sentences and lead students in practicing the thought routines. Or, you can read the whole text one time through, introduce and practice a few thought routines, then read the text a second time, and practice the routines again.

-When you pause, introduce a routine and model it for students, then invite students to take a turn practicing it as well, just as you would do during Discovery Reading. Here are two examples:

- **"One routine we are always going to do after we read is 'Monitor and Repair.'** (direct them to Prompt Card) **"This is when we say, 'Huh! Wait a minute! Something that confused me in the text was…' We think about what was confusing and then talk through it together so that we can understand what we are reading. I'll go first. On this part it says robots can work with 'fragile objects.' I'm not really sure what that word *fragile* means, but I feel like I've heard it before. Let me re-read around that word: it says robots are designed to do jobs that are difficult for humans, such as rescuing people trapped in dangerous situations or working with fragile objects. Rescuing people from danger is a difficult job. So it's sort of giving examples here of difficult jobs for humans that robots can do. So maybe if the robot is working with a fragile object, maybe fragile means an object that is hard to work with, like maybe because it is special or important or hard to carry or hold because it could break really easily. I think fragile has something to do with being really delicate or easy to break. (Student name), do you want to take a turn? What in the text made you say 'Wait a minute!'?"**

- **"Let's stop here and practice 'Word in the Spotlight.' This is when we have**

spotted our new vocabulary word for today in the text we are reading! During this routine, we will find our new word, explain what it means, and practice using the word in a sentence! Today our word is *robot*, which was all over this text!"

- **"(Student name), can you read us the first sentence that we saw the word *robot*?"**
- **"Great, can you explain to us what *robot* means?"**
- **"And (*student* name), do you think you can use the word *robot* in your own sentence?"**

-After you have finished reading the text, lead students in a discussion of the guiding question: <u>*What makes robots special?*</u> You do not need to record the answer– just use this time to talk about the answer and to help students practice returning to the text to construct an answer. Try to solicit participation from every student here.

Introduce the Inquiry Space

-After you have finished reading, introduce the Inquiry Space to students. Teacher may say something like, "**During this module we are going to be learning so many exciting things about robots. We need a place to keep track of our new knowledge! This is called our Inquiry Space. We are going to pull this up every day, at the end of each lesson, and record important things we learned during the lesson.**

We are doing this not only to keep track of our new knowledge, but because at the end of this module, we are going to share this knowledge with others! When we are finished reading all about robots, we are going to invite some other students, teachers, family members, whoever you'd like!-- to come visit our class, and we are going to share everything we learned about robots with them! We are going to be robot experts by the end of this module. So that we are totally prepared to share our knowledge with others, we are going to use this inquiry space to keep our learning organized."

-Take some time with students to set up this inquiry space however you'd like, using the template provided. You may solicit input from students on how to organize it, what colors to use, etc. It's also a good idea to add one entry to the inquiry space based on today's lesson: for example, you may record the definition of "robot" or write one sentence about why robots are special.

-Close the lesson by sharing the two overarching questions for this module and inviting students to generate any questions they have about the module, as well. Read the questions together and tell students that this is what we will be learning about in the module. You may choose to place the questions on the inquiry space if you'd like:

-How have robots been developed?
-What are some of the important features that allow robots to do their jobs?
-How have humans solved challenges by developing robotic technology?

Robots are machines that can do many amazing jobs that help humans. Some robots can build cars, while others explore outer space. Some robots are made to look just like humans and can even talk or make facial expressions. There are huge robots that can lift heavy metal objects, while other robots are so tiny that they can study bacteria. Scientists have designed robots to do jobs that are difficult for humans, such as rescuing people trapped in dangerous situations or working with fragile objects. Robots have different features inside of them to help them carry out these jobs, such as motors that help them move or computers that act as their "brains." Robots have helped humans solve many problems. Every day, scientists are thinking of new ideas to improve robot technology. What will robots be able to do for us in the future? The possibilities are exciting.

DR Lesson A

Discovery Reading Lesson Title: Robots _Lesson A (Elaborative, High Teacher Support)

Book: *Helper Robots*

Pages: 4-9: "What is a Robot?"

Lesson Reminders:

- Students should practice **at least two routines** from the prompt card after **every text chunk**. Lessons are fast-paced: each routine should be practiced with **urgency.**
- For each prompt routine, invite participation from **at least two students**, rotating strategically to hear from as many students as possible. **Every student** should have a chance to share their ideas **at least once** during the lesson.
- The teacher **does not need to take a turn on every prompt routine.** When the teacher takes a turn, they should model using the prompt card language **succinctly**.
- **Encourage students to talk to each other**, not just to the teacher. During each routine, after the first student contributes, a second student should, when appropriate and whenever possible, be invited to add to or respond to the first student.
- **Full linguistic repertoire (FLR)**: Students can discuss and ask each other questions in their home language to support their mental models of the text.
- Remember to give **wait time**: after inviting students to participate, wait 3-4 seconds to allow some thinking time.

SETTING THE PURPOSE - Before Reading

Ideas from Inquiry Space to Review Before Reading:

- **"As we discussed yesterday, over the next few weeks, we are going to be learning all about robots. Today during Discovery Reading we are going to start reading a book called *Helper Robots*. We are going to be learning about how robots can be helpers."** Show cover of book to students.

Guiding Question Framing:

- **"Let's take a second and look at the big question that we are going to be able to answer by the end of this lesson.** (*Show and read the question.*) **The question we will answer is: 'What are some ways robots can do jobs that are challenging for humans to do?' So while we read today, let's make sure we are gathering ideas that help us understand an answer to this question."**

Word to Preview Before Reading:

- **"Before we start reading, I want to talk about a word we will encounter in this text today. The word is <u>sensor</u>. Repeat after me: sensor."** (*Students say the word.*) **"Good. A sensor is a device that can detect or measure something. Do you hear how that word sensor has the word "sense" inside of it, like the five senses? Right, so for example, my iphone has a little sensor on it that can tell when it's getting too hot, and it will shut down. It *senses* heat! So we will see that word in our reading today, and some other words that might be new to you too. We'll discuss those when we come across them."**
- Add the vocabulary word to the Inquiry Space for later reference.

METACOGNITIVE DISCUSSION - During Reading

<u>Text Chunk #1:</u> pages 4 and 5

- **"We are going to read a couple of pages before we stop and discuss using our prompt card. I am going to start by reading aloud. Follow along in your books while I read. Let's begin."**Students follow along while teacher reads pages 4 and 5.

- Prompt cards should be in front of students, and direct them to look at the prompt card as you say this next part. **"Let's stop here. Let's begin with Monitor and Repair. I will model first. Here is something that was confusing for me. On page 5 it says, "This robot can slither through collapsed buildings to find people who are trapped." Hmmm…. slither--usually when I hear "slither" I think of snakes. Slithering is like how a snake slides along the ground. That sounds a little weird to me. Robots aren't soft like snakes, so that is a little tough to imagine. Maybe I can think about this more and look at the picture...Oh! Maybe the robot is built to be flexible like a snake and can move in thin spaces, just like a snake can? Hm, that's kind of cool! Now it's your turn. What was a part that made you say "Wait a minute!" What word or idea was confusing for you?"**
    - Teacher calls on each student to share and guides the students (or assists students in supporting each other) in clarifying and repairing ideas.
    - <u>Note:</u> If students are not volunteering to share, you may direct them to the word *collapsed* on page 5, which may be unfamiliar to students, and lead students in a discussion of what that might mean.

- **"Ok great. Now let's do Tell What you Learned. What did you learn that was new? I'll let you guys lead this one. Turn to your partner and each of you take a turn telling one thing you learned in the text."** Point to the prompt card. **"Remember, use your prompt card to guide your discussion. You can start by saying, 'Here's what I learned…'"**
    - Allow students a minute to share with one another, and ask one or two students to share out what their partner learned.
    - **"Awesome discussion. I heard some great ideas!"** (The teacher does not need to take a turn on this part if students already shared lots of ideas; but here is an example of what the teacher may share, or what it might look like to discuss this

section of text): **"Here's what I learned. I used to think that all robots look like people, but now I've learned that they don't have to. The robot on page 4 looks like a person, but the robot on page 5 looks like a snake so that it can squeeze into small spaces! I'm also thinking that a human can't squeeze into small spaces like that-- so that's why this robot is small and thin, and not shaped like a person! That also might help me with the big question we have to answer later-it's unsafe for a human to go into a building that has collapsed!"** (Point out on inquiry Space)

Text Chunk #2: pages 6 and 7

- **"For this section, let's choral read. We are going to follow along and read these pages aloud together."**
    - Students and teacher read aloud (captions included) until the end of page 7.

- "**Now let's start with 'Monitor and Repair.' Let's think of something that made you say 'Wait a minute!' Who would like to take a turn monitoring and repairing? What on those pages made you say 'wait a minute!'"**
    - Call on one student to share and another to help that student work out their confusion.

- "**As our next step, let's practice 'Tell What You See' with our partners. As we read this section of text, what did you picture robots doing or looking like in your mind? I want you to turn to your seat partner and each take a turn sharing what you saw in the text. When you answer, be sure to use the prompt card and say, 'When I was reading this part of the text, I pictured…' While talking to your partner, you can explain or give an example in English or another language that you speak."** (FLR)
    - Allow students to take turns sharing with their partners.
    - Debrief or allow students to share out if time.
    - An example of modeling or teacher turn taking for this part might look like (this is just an example if you get the sense modeling is needed; remember, teacher does not always need to take a turn): **"A lot of this chunk is about how scientists think about robots. In my head, I am picturing a group of scientists sitting around and coming up with new ideas for robots and then helping each draw out the plans for building the robot."**

Text Chunk #3: pages 8 and 9

- **"I'm going to read aloud pages 8 and 9 for us. Please follow along with me in your books."**
    - Teacher reads aloud pages 8-9 with students following along.

- **"OK, I think we should do 'Word in the Spotlight' first here because I spotted today's word on one of these pages! Did you guys see it? Who would like to read us the sentence with the word *sensor* in it?"**

- **"Yes, (student name), thank you for reading the sentence for us. So what does it mean that robots have *sensors*? Remember our definition: sensors are devices that help measure or sense something."** Call on a student to respond and briefly discuss. You may push students' thinking by asking questions such as: "**What kinds of sensors can a robot have?"** (*Cameras for eyes, microphones for sounds, lasers to map*.) **"Yes, so these sensors help the robot in the same way that our eyes and ears and hands help us!"**

- **"Now, who would like to use the word *sensors* in your own sentence? When you share, start by saying, 'Here's my own sentence that uses this word,' and tell us your sentence that shows us you know what *sensor* or *sensors* means!"**

- **"Let's Monitor and Repair one last time. Who would like to share something on this page that made you say "Huh. Wait a minute!"? Let's talk through it together."**
  - Call on one student to share and another to help that student work out their confusion.
  - <u>If no one volunteers, you can take a turn, for example</u>: **"I'm going to come back to this last sentence on page 9: 'Underwater robots move using propellers.' I'm a little confused about what a propeller is, so I'm going to stop for a minute and think. This whole page was about how robots move in different situations: they can fly, drive, and even climb. Since this last sentence is about underwater robots, I think that propellers are something that helps the robot move through the water. Now, what part stumped you that we can figure out together?"**

SYNTHESIZING KNOWLEDGE - After Reading

"Now that we have finished our reading for today, let's return to our guiding question:

What are some ways robots can do jobs that are challenging for humans to do? **Hopefully you noticed that this idea came up a bunch today in our conversation.**

"Let's generate an answer to this together. Who has an idea to get us started?"

Walk the students through a discussion, encouraging students to return to the text, and have them work together with you to construct an answer. The teacher leads the students in writing an answer as a group on the **Inquiry Space** (you write while students dictate.)

*NOTE: You should always ensure that the vocabulary word is reinforced or reviewed after reading. You can either encourage students to use the vocabulary word in the class answer (as in the model sentence below), or you can briefly review the meaning of the word before

answering the question.

Example model answer:
Robots are made with special features, such as sensors and motors, in order to go into unsafe areas for humans, such as collapsed buildings or disaster sites.

CR Lesson A

Confident Reading Lesson Plan A: Elaborative

Text: How to Design a Robot Text 1

Reminders for Every Lesson:

- Invite participation from **at least two students** each time you pause to discuss, rotating strategically to hear from as many students as possible. **Every student** should have a chance to share their ideas **at least once** during the lesson.
- **Encourage students to talk to each other**, not just to the teacher. During each routine, after the first student contributes, a second student should, when appropriate and whenever possible, be invited to add to or respond to the first student.
- Remember to give **wait time**: after inviting students to participate, wait 3-4 seconds to allow some thinking time.

Text 1

[1]Robots can have lots of different parts. [2]Who makes robots? [3]Robot scientists are people who follow steps to build robots. [4]First, they think about what they want the robot to do. [5]Maybe they want the robot to solve a problem or go explore. [6]Next, they design the robot. [7]During this phase, the scientist plans what the robot will look like and what it will be made of. [8]For example, the robot may be made of metal or plastic. [9]After that, the scientist builds the robot. [10]They may put it together by hand or use a machine. [11]Next, they program the robot. [12]This means they put a small computer chip in the robot to tell it what to do. [13]The last step is to test the robot to see if it works!

Text: “How to Design a Robot Text 1”
Step One. Teacher Intro and Model Read Aloud
“Today we are going to be reading a text called “How to Design a Robot.” I will read the text aloud first so you can get a sense of what the text is saying and how it sounds. Follow along with me.” Teacher reads aloud the text while students follow along.
Step Two. Silent Read
“In a moment you will take turns reading this same text out loud with your partner. To get ready for that, let’s first take a minute and read the text silently in our heads. Go ahead.” Students read the text silently.
Step Three. Partner Read
“Now I want you to take turns reading the text aloud to your partner. Partner A will read the whole text aloud, and then Partner B will read the text aloud.” [Offer any brief reminders related to teaching points covered in prior lessons.] As students take turns reading the text aloud, the teacher observes and listens carefully, identifying common issues that can be discussed during the feedback and teaching portion of the lesson.
Step Four. Discuss
“Wow, we just read a lot of information. Let’s take a second and quickly discuss what we just read. Let’s use our prompt “Tell me what you learned” from Discovery Reading. I’m going to quickly go around and point to each of you. When I point to you, tell me one thing you learned from this text.” *Teacher calls on each student to share*. This should be done quickly.
Step Five. Feedback and Teaching Point
Teacher provides feedback in specific areas, such as: (see manual for description) ● pace and expression ● accuracy ● punctuation ● connectives and conjunctions

- words and phrases that signal text structure
- other forms of phrasing

Example: "While you were reading, I heard some really great confident reading. First, I noticed that you all read at just the right speed. I know last week we were reading a little too quickly, which made it hard for us to understand one another, so it's great that I heard you slow down this time. Confident readers make the text sound clear to whoever is listening to them read.

"Let's talk a little bit about the way we should sound when we read phrases that show us a little bit about text structure. These are words or phrases that give us clues about how the text is organized. Everyone put your finger on this sentence. I'm going to read it. Listen carefully. [7]*During this phase, the scientist plans what the robot will look like and what it will be made of.* Did you hear how I paused after *during this phase*? I took a breath there to signal that the rest of the sentence would explain what happened during this part of the design process. That pause was a clue that I needed to pay close attention to what came next. It helps me understand the steps scientists take to design a robot, and helps me keep them in order.

"Let's practice this and hear how it sounds. "Now I'll read the whole sentence, being sure to take that brief pause at the comma, and I want you to repeat after me: [7]*During this phase, the scientist plans what the robot will look like and what it will be made of.*" (students repeat; do this maybe 1 or 2 more times.)

Step Six. Bridging Language Routine

The teacher offers a teaching point related to an example of bridging language in the text using the systematic routine:

"Put your finger on the third sentence and listen while I read. [3]*Robot scientists are people who follow steps to build robots.* [4]*First, they think about what they want the robot to do.*

"Who is *they* referring to in the second sentence? Who wants the robot to do something?" Students: "The robot scientists."
"Robot scientists? OK, let's check it and see. Let's place the words "robot scientists" in place of "they" in the fourth sentence. Read aloud with me, from the beginning: [3]*The robot scientists are people who follow steps to build robots.* [4]*First, the robot scientists think about what the robot scientists want the robot to do.*

"Does that sound right? Yes! The first sentence said *robot scientists*, so we know that *they* in

the next sentence is referring to *the robot scientists*! We don't usually write it that way because it's repetitive, but that's what the sentence means."
Step Seven. Group Read
"Let's read the text one last time, and this time we will choral read aloud, all together. Let's try to make sure we are incorporating the feedback we learned today." Students and the teacher read the text together, and the teacher provides some brief last bits of feedback.

BW Lesson A

Breaking Words Lesson Plan A (Elaborative_High Teacher Support)
Robots Module

Word Cards:
- *sensor*
- *collapse*

Affix Cards:
- *un-*
- *pre-*
- *-ing*
- *-ion/-tion**
- *-able/-ible**

Note: Not all of these affixes will be used in every Breaking Words lesson during this module, but students should have access to the affix cards to experiment with during this section of the lesson. Cards will be used again in future lessons.
*Two sides of the same notecard.

Note: For each part of the lesson, refer back to the BW Prompt Card

Warm up	There is no warm up today because it is the first day of the module.
Phase	**Word 1: *sensor*** **Spanish cognate: *sensor***
Count It	"Today we are going to work with a few words related to our learning about robots. The first word is *sensor*. For example, we learned that robots use something called a *sensor* to see and hear since they don't have eyes and ears like humans do. Let's start with **Count It** on our prompt card. How many syllables are in the word *sensor*?" [Do this without showing the written word to students; this prompts them to think about it based on phonology (sound)] Students: *Two* ● *Note: if students struggle with syllabification, remind them of the vowel rule: one vowel sound for each syllable. Also, the teacher can help them clap through the "rhythm" of the word: "Think about how it*

	sounds as we say it and the movement of your chin up and down with each syllable." "You're right! *Sensor* has two syllables. Let's clap it out to make sure."
Read It	Now let's move on **Read It** (place the word card in front of the student). Can you read this word aloud?" Students: *sensor*
Use It	"Next, let's **Use It**. How would you use *sensor* in a sentence about robots?" Students: (for example) *A robot may have a sensor to locate objects.* (*Note: give two students an opportunity to contribute a sentence; invite students to use their full linguistic repertoire)*
Divide It	"Now it's time for **Divide It**. How would we divide this word?" Students: sen/sor Students mark these breaks on the card. If they mark a break in a place that is not logical, the teacher provides support. "Let's check each syllable to make sure it has exactly one vowel sound. The first syllable *sen* has /eh/ and *sor* has the -er sound, which is how the vowel or is working in this word. Awesome! We are going to cut this word into two pieces."
Assemble It	"Ok, time to **Assemble It.** How do we put this word back together?" Scramble the cards and have students put it back together.
Write It	"Next we're going to **Write It.** Without looking, how do you write *sensor*? Think about the two syllables we found to help you spell it." Students take a moment to write the word on the whiteboards. If students need assistance, prompt them to think about what they noticed/learned in previous parts of the lesson to help them write it correctly. When they finish, show the word card so they can check their spelling.
Transform & Use It	"Last but not least, let's **Transform It**. "While we are learning about robots, we are going to pay attention to a set of word parts that can be added to a lot of our words, though not all of them will work. I have already made cards for these parts so that we can add them to our words. *Show the students the affixes for this module: un-, pre-, -ing, -ion/-tion, -able/-ible*

	"These word parts add meaning to our words. The base word of *sensor* is *sense.* We can add other word parts to this base word to make new words. For example, if I add the word part *-ing* to the base, [*Physically lay the -ing card next to the base word you cut out during Divide It] w*hat new word do we have?" Students: *sensing* "If the word part *-ing* means something is being done right now, what do you think *sensing* could mean?" Students: *Robots are sensing something right now.* "Does adding *-ing* add a syllable to the base word *sense*?" Students: *Yes, now it is two syllables.* "How could you use *sensing* in a sentence about robots?" Students: *Since robots don't have ears or eyes, it is important for robots to have other ways of sensing danger.* "Does that word work in that sentence? Does it make sense?" Students: *Yeah, it makes sense because it means that the robots can sense what's going on around them.* "Let's try another of our word parts. This time let's add this word part to the beginning of the word. What if we added *un-* at the beginning of the word? [Lay prefix card in front of the word.] What word do we have now?" Students: *unsense* "If the word part *un-* means "not" or "opposite," what does *unsense* mean?" Students: *to not sense* "True, that is what it would mean. But *unsense* isn't a real word that anyone uses. Sometimes a prefix makes a word that isn't a real word. So let's just move that aside and keep going." "Let's try this ending [present the -tion word card and place it at the end of the base word]. This would be *sense - tion*." "I see some puzzled looks on your face. That doesn't sound right, does it? The correct way to make this word part fit here is to add another sound so it makes

	the word *sensation*. [Show spelling on whiteboard.] Sometimes word parts are weird like that. A *sensation* is something you can feel. Like you might feel a cold sensation on your teeth when you drink ice water. Or you might have a rumbling sensation in your belly when you get hungry. Who can give us a sentence with the word *sensation* that has something to do with robots?" Student: *The robot could feel the sensation of the earthquake deep in the ground.* "That's good. A shaking feeling in the ground during an earthquake is definitely a sensation." I'm going to start building a word deck of the words we create in Breaking Words lessons during this module. I'm going to write *sensor*, *sensation,* and *sensing* on three word cards for us to practice later. I'm not going to make a word card for *unsense* because that's not a real word. "Let's move on to our next word."
Phase	**Word #2: *collapse*** **Spanish cognate: *colapsar***
Count It	"Our next word is *collapse*. We have learned that robots can go places such as a building that has collapsed in order to save people. Let's start with **Count It** on our prompt card. How many syllables are in the word *collapse*?" [Do this without showing the written word to students; this prompts them to think about it based on phonology (sound)] Students: *Two* ● *Note: if students struggle with syllabification, remind them of the vowel rule: one vowel sound for each syllable. Also, the teacher can help them clap through the "rhythm" of the word: "Think about how it sounds as we say it and the movement of your chin up and down with each syllable"* "You're right! *collapse* is a two syllable word."
Read It	"Now let's move on **Read It** *(place the word card in front of the student*). Can you read this word aloud?" Students: *collapse*
Use It	"Next, let's **Use It**. How would you use *collapse* in a sentence about robots?"

	Students: *When buildings collapse, robots can go in to help people.* (*Note: give two students an opportunity to contribute a sentence; invite students to use their full linguistic repertoire)*
Divide It	"Now it's time to **Divide It**. How would we divide this word?" Students: col/lapse or coll/apse [both are logical here, but first option is preferred] "Let's check the syllables. Remember, each one has to have exactly one vowel sound. What's the sound in the first syllable?" Students: /uh/ "Yes, it's /uh/ spelled with an o. What about the second syllable?? Students: /a/ [short a] "You got it. Looks like we made logical syllable breaks. Now we can cut this word into two pieces, col/lapse."
Assemble It	"Ok, time to **Assemble It.** How do we put this word back together?" Scramble the cards and have students put it back together.
Write It	"Next we're going to **Write It.** Without looking, how do you write *collapse*?" Students take a moment to write the word on the whiteboards. If students need assistance, prompt them to think about what they noticed/learned in previous parts of the lesson to help them write it correctly.
Transform & Use It	"Last but not least, let's **Transform It**. *[Show students the affix cards again.]* "What if we added *-ible* to this word? What is the word now? (*Physically lay the -ible card next to the base word you cut out during Divide It.)* "What new word do we have?" Students: *collapsible* [Note: collapsable is also an acceptable spelling, but ible is more common] "If the word part *-ible* means "able to", what do you think *collapsible* could mean?" Students: *Able to collapse*

	"Does adding -*ible* add a syllable?" Students: *It actually added two. There were two and now there are four syllables.* "How could you use *collapsible* in a sentence about robots?" Students: *The collapsible robot was able to squeeze into tight spaces.* "Does that word work in that sentence? Does it make sense?" Students: *Yes, it makes sense because some robots are designed to get smaller depending on their surroundings.* "Let's try another of our word parts. Let's take off -*ible* and add -*ing*. What word do we have now?" Students: *collapsing* "If the word part -*ing* means something is happening right now, what do you think the word *collapsing* means?" Students: *collapsing right now* "Does -*ing* add another syllable to the base/root word *collapse*?" Students: *Yes, now it is three syllables.* "How could you use *collapsing* in a sentence about robots?" Students: *The robot was sent into the collapsing building to keep humans safe.* "Great work! Let's write that sentence on our Inquiry Space. I'm going to make word cards for these new words for us to review later." *(Students may add additional words to the inquiry space to synthesize their knowledge of the module topic.)*

DR Lesson B

Discovery Reading Lesson Title: Robots_Lesson B (Blueprint)

Book: *Helper Robots*

Pages: 10-15: “Robots to the Rescue”

Lesson Reminders:

- Students should practice **at least two routines** from the prompt card after **every text chunk**. Lessons are fast-paced: each routine should be practiced with **urgency.**
- For each prompt routine, invite participation from **at least two students**, rotating strategically to hear from as many students as possible. **Every student** should have a chance to share their ideas **at least once** during the lesson.
- The teacher **does not need to take a turn on every prompt routine.** When the teacher takes a turn, they should model using the prompt card language **succinctly**.
- **Encourage students to talk to each other**, not just to the teacher. During each routine, after the first student contributes, a second student should, when appropriate and whenever possible, be invited to add to or respond to the first student.
- **Full linguistic repertoire (FLR)**: Students can discuss and ask each other questions in their home language to support their mental models of the text.
- Remember to give **wait time**: after inviting students to participate, wait 3-4 seconds to allow some thinking time.

SETTING THE PURPOSE - Before Reading

Ideas from Inquiry Space to Review Before Reading:

- Review 1-2 new learnings from the previous day about robots, using the Inquiry Space.

Guiding Question Framing:

- Show question: *What are some ways that robots can help people in dangerous situations?*
- **"As we talk and discuss our reading together, we're going to be thinking about how to answer our guiding question."**

Word to Preview Before Reading:

- survivor: a person who has survived or lived through a dangerous situation like a hurricane or an earthquake
- Add the vocabulary word to the Inquiry Space for later reference.

METACOGNITIVE DISCUSSION - During Reading

Text Chunk #1: pages 10 and 11. Teacher reads aloud while students follow along.

Prompt cards should be in front of students and the teacher for all discussions.

- **"Let's stop here and begin with 'Word in the Spotlight' because I know some of us spotted our vocabulary word on this part! Who can read us the sentence with the word *survivor* in it?"**
    - Call on a student to read the sentence and ask the student to explain the meaning of the word.
    - Call on another student to come up with an original sentence using the word *survivor.*

- **"Next let's practice 'Monitor and Repair.' Let's think of something that made you say 'Wait a minute!' Who would like to go first?"**
    - Call on students to share and guide them to work through their confusion. There are a couple of words and phrases that might be worth talking about in this chunk: *disasters, take risks, collapsed buildings.*

Text Chunk #2: pages 12 and 13. Teacher reads aloud while students follow along.

- **"Let's start with 'Monitor and Repair' again. Who would like to share something on this page that made you say "Huh. Wait a minute!"?"**
    - If no students answer, point out something that you can anticipate may have been challenging for them, such as how microphones can "hear" yells for help.

- "**Next let's do 'Quiz Me.' I want to ask you guys a question. If you understood the important ideas of this section, you should be able to answer this. Let me think of a big idea question...Ok, here's one. What special features do robots have that make them useful in dangerous situations?"**
    - Lead students in a discussion of these ideas, such as strong motors, cameras, microphones, etc. to aid rescue teams in finding people who need help.

Text Chunk #3: pages 14 and 15. Teacher can read aloud or choose an appropriate scaffolded reading method.

- **"Let's start with 'Monitor and Repair' one last time. Who would like to share something on this page that made you say 'Huh. Wait a minute!'?"**
    - Give students time to discuss.
    - An example of what it may look like to model on this part or to jump in and take a turn if no one is volunteering: **"On page 15, the caption says "This robot can hover in place and take photos." I'm confused about what the word 'hover' means. The text on this page is talking about robots that can fly over fires, and in the photograph, I see that this robot looks like a tiny helicopter. I've seen helicopters before, and I know one of the things that**

makes them special is their ability to kind of hang out mid-air without moving. I think, based on what I see here, that when this robot hovers, it hangs in the air without moving around, like a helicopter does. Cool! So was there anything on these pages that confused you?

- **"OK, for our next routine, let's do 'Tell What You See.' There were a lot of examples on these pages of different things robots were doing. Let's take a moment and turn to our partners and share what you were picturing in your mind as you read this part."**
    - Students take turns sharing their internal movie with their partners.

SYNTHESIZING KNOWLEDGE - After Reading

Collaboratively guide students through forming and writing an answer to today's big question. Be sure to review lesson vocabulary before or while answering the question. Add answer to the Inquiry Space.

What are some ways that robots can help people in dangerous situations?

Exemplar answer:
Robots can explore damage after natural disasters and help rescue survivors. They can find and free trapped people in rubble. They can also help firefighters find fires or even put out fires themselves.

CR Lesson B

Confident Reading Lesson Plan B: Elaborative

Text: How to Design a Robot Text 2

Reminders for Every Lesson:

- Invite participation from **at least two students** each time you pause to discuss, rotating strategically to hear from as many students as possible. **Every student** should have a chance to share their ideas **at least once** during the lesson.
- **Encourage students to talk to each other**, not just to the teacher. During each routine, after the first student contributes, a second student should, when appropriate and whenever possible, be invited to add to or respond to the first student.
- Remember to give **wait time**: after inviting students to participate, wait 3-4 seconds to allow some thinking time.

Text 2

[1]Robots can have thousands of different parts. [2]Who makes these machines? [3]Many robots are built in factories, but some are made by people. [4]Roboticists are scientists who follow steps to design and build robots. [5]First, they think about what the purpose of their robot will be. [6]Maybe they want the robot to solve a problem or explore a new place. [7]Next, they design the robot. [8]During this phase, the roboticists plan what the robot will look like and what materials it will be made of. [9]For example, the robot may be made of hard metal or flexible plastic. [10]After that, the scientists build the robot by putting the pieces together by hand or using a machine. [11]Next, the roboticists program the robot. [12]This means they put a small computer chip in the robot and send instructions to the chip. [13]Finally, they test the robot to see if it works properly.

Text: “How to Design a Robot Text 2”
Step One. Teacher Intro and Model Read Aloud
“Today we are going to be reading a text called “How to Design a Robot.” I will read the text aloud first so you can get a sense of what the text is saying and how it sounds. Follow along with me.” [At this point in the lesson, teachers can also remind students of a teaching point covered previously, such as, “Last time we were working on how to pause after a period at the end of the sentence. As I read, pay attention to where I pause.”] Teacher reads aloud the text while students follow along.
Step Two. Silent Read
“In a moment you will take turns reading this same text out loud with your partner. To get ready for that, let’s first take a minute and read the text silently in our heads. Go ahead.” Students read the text silently.
Step Three. Partner Read
“Now I want you to take turns reading the text aloud to your partner. Partner A will read the whole text aloud, and then Partner B will read the text aloud.” [Offer any brief reminders related to teaching points covered in prior lessons.] As students take turns reading the text aloud, the teacher observes and listens carefully, identifying common issues that can be discussed during the feedback and teaching portion of the lesson.
Step Four. Discuss
“Wow, we just read a lot of information. Let’s take a second and quickly discuss what we just read. Let’s use our prompt “Tell me what you learned” from Discovery Reading. I’m going to quickly go around and point to each of you. When I point to you, tell me one <u>new</u> thing you learned from this text.” *Teacher calls on each student to share*. This should be done quickly with very little elaboration or discussion.
Step Five. Feedback and Teaching Point
Teacher provides feedback in specific areas, such as: (see manual for description) ● pace and expression

- accuracy
- punctuation
- connectives and conjunctions
- words and phrases that signal text structure
- other forms of phrasing

Example: "While you were reading, I heard some really great confident reading. First, I noticed that you all read at just the right speed. I know last week we were reading a little too quickly, which made it hard for us to understand one another, so it's great that I heard you slow down this time. Confident readers make the text sound clear to whoever is listening to them read.

"Let's talk a little bit about the way words can show us how two ideas are related in a sentence. Everyone put your finger on the third sentence. I'm going to read that sentence. Listen carefully. [3]*Many robots are built in factories, but some are made by people.* Did you notice how the comma in the middle divided that sentence into two different ideas? I also heard the word *but*- that's a linking word that signals that the next idea is different from the first. In this example, the first part of the sentence is telling me that robots are built in factories. The next part of the sentence tells me that robots are also made by people. So, that little word *but* is signaling that there are different ways that robots are made, and here are two examples.

"Let's practice this and hear how it sounds. "Now I'll read the whole sentence, being sure to take that brief pause at the comma, and I want you to repeat after me: [3]*Many robots are built in factories, but some are made by people.* (students repeat; do this maybe 1 or 2 more times.)

Step Six. Bridging Language Routine

The teacher offers a teaching point related to an example of bridging language in the text using the systematic routine:

"Put your finger on this sentence and listen while I read. [11]*Next, the roboticists program the robot.* [12]*This means they put a small computer chip in the robot and send instructions to the chip.* [13]*Finally, they test the robot to see if it works properly.*

"Who is *they* referring to in sentence 12 and 13? Who is putting a computer chip in the robot? Who is testing the robot?"

Students: "The roboticists."

“The roboticists? OK, let’s check it and see. Let’s place the words “the roboticists” in place of “they” in the next two sentences. Read aloud with me, from the beginning: *[11]Next, the roboticist programs the robot. [12]This means the roboticists put a small computer chip in the robot and send instructions to the chip. [13]Finally, the roboticists test the robot to see if it works properly.*

“Does that sound right? Yes! The first sentence said *robot scientists*, so we know that *they* in the next sentence is referring to *the roboticists*!”

Step Seven. Group Read

“Let’s read the text one last time, and this time we will choral read aloud, all together. Let’s try to make sure we are incorporating the feedback we learned today.”

Students and the teacher read the text together, and the teacher provides some brief last bits of feedback.

SW Lesson A

Sentence Workshop Lesson A (Elaborative)
Robots Module

Mystery Sentence: Rescue robots can work in unsafe places because they have features such as cameras and sensors that can find survivors after a disaster. **Sentence #1:** Rescue robots can work in unsafe places. **Sentence #2:** Robots have features such as cameras and sensors that can find survivors after a disaster.
Word Cards for Sentence #1: If you are making the cards beforehand, it might be helpful to group them by chunk, paperclip each chunk, and have them ready to go in the order they'll appear in the lesson. [Note: some cards consist of entire phrases as indicated by the brackets.] *robots, work, can* *places, in, unsafe, rescue*
Word Cards for Sentence #2: *survivors, robots, find* *have, features, [that can]* *[such as cameras and sensors], [after a disaster]*
Word Cards for Mystery Sentence: *because, they*

Note: Be sure the SW prompt card is visible to the whole group. Use it to guide the discussion of each sentence.

Build Sentence #1
"Today we are going to build a sentence that is about our topic of robots. We are going to start with a few words, and then we'll add more words to make the sentence longer and longer." *"Here on the table I have three word cards."* **(T reads each card as they lay them out.)** *"Can you build a sentence that makes sense using all these words?"* ***Word Cards:*** *work, robots, can*

Teacher allows students to arrange the words to make a sentence, then debriefs with the students and provides feedback, such as:

"OK, read the sentence you wrote." **(Student reads *Robots can work.*)** *"Does that sentence make sense?"* **[students answer]** "*Yes. It does, doesn't it?"* **Teacher directs the student to the first question on the <u>prompt card.</u>** *"Let's talk about what is going on in this sentence. Here we have some questions on this prompt card that will help us. Our first question is, 'Who or what is the most important part of this sentence?'"* **[Student answers]** *"Yes, robots are the most important part of the sentence. Let's look at our second question. What do we know about robots in that sentence?"* **[Student answers]**. *"That's right, robots can work."*

"Now, let's add on to this sentence by adding these words in the appropriate places. Where can we put these words to make a longer sentence about our topic that still makes sense? Let's try it. Here are more words: unsafe, places, in, rescue. What do you think? Where could these words go?"

Word Cards: *unsafe, places, in, rescue*

T gives students time to add words, providing support or feedback as necessary.

"Can you read to me what you wrote?" Students should come up with:
<u>Rescue robots can work in unsafe places.</u>

<u>Note:</u> After the teacher has given the students *<u>up to two</u>* attempts to arrange the words and if they are still not successful, the teacher should intervene. For example, the teacher can model inserting the words into different places, reading each option aloud and checking it each time, until they have found the sentence that conveys the idea clearly.

T directs the student back to the prompt card to the third question. *"Let's look at our third question on our prompt card. When we added those words just then, what else did we learn about robots?"* **[student answers]** *"We learned about the types of places that robots can work."*

Manipulate Morphosyntactic Structure of Sentence #1

*Note: This routine is placed here in this lesson plan, but it could be done anytime while building sentences (i.e., after you have built a whole expanded sentence, or after the first expansion of a sentence, etc.). The key is that at one point during the lesson, the teacher follows a routine to help students manipulate the morphosyntactic structure of a sentence. Note: this is a verbal conversation; students and the teacher are not manipulating the sentence with new word cards here.

"What if we added a phrase to the beginning of this sentence? What if the beginning of the sentence said, 'last week'? How would the rest of the sentence need to change?

Students provide an answer, and teacher can support or lead students through understanding how to manipulate the sentence: *"Right, so we need to change the action of the sentence to make it happen in the past, instead of now. So we need to change can work to worked:* ***Last week, rescue robots worked in unsafe places.*** *Or we could change it to were able to work, and we would have:* ***Last week, rescue robots were able to work in unsafe places.*** *Both of those would talk about what the rescue robots did last week in the past. Both of those would also help us answer the third question on our prompt card, great!"*

Build Sentence #2

Teacher removes the word cards from Sentence #1 and places them off to the side (<u>note:</u> put them in a nested stack, keeping them in order, to make it easier to quickly re-build the mystery sentence later).

"Now I'm going to move these and keep them right here because we'll come back to them in a moment, but now we are going to build a different sentence. Can you create a sentence using these three word cards?" **Teacher reads aloud *survivors, robots,* and *find* and places them on the table for students to arrange.**

> ***Word Cards:*** *survivors, robots, find*

Students build ***Robots find survivors.*** *"OK, read that sentence aloud to me. Does it sound right? Is it logical? Excellent, yes, I agree.* **T refers to the prompt card;** *"Can you tell me who or what is the most important part of this sentence?"* **[Student answers].** *"We are still talking about robots, that's right. And looking at our second question here, what do we know about those robots?"* **[student responds]** "*We have learned that robots can find survivors such as in collapsed buildings after an earthquake."*

"Let's add on to this sentence with a big phrase and a couple more words. Can you add these three sets of word cards to the sentence?"

> ***Word Cards:*** *[that can], features, have*

Students may build something like, ***Robots have features that can find survivors.*** **After asking the student(s) to read it aloud or after reading it aloud themselves, the teacher may say, "***Does that sound right? Yes, I agree."* **T refers back to question three on the prompt card.** *"By adding these words to our sentence, what else do we learn about these robots?"* **[S answers]**

"Let's add a few details to this sentence to really make it more complex and convey more information. Where could these two phrases go in this sentence?"

> ***Word Cards:*** *[such as cameras and sensors], [after a disaster]*

Repeat the feedback process. Students should build:
Robots have features such as cameras and sensors that can find survivors after a disaster.
"Can we answer questions about when, how, why, or even how often the robots are finding survivors?" (referring back to questions on SW prompt card)

Build Mystery Sentence and Discuss Meaning

Teacher places sentence #1 (already built) back on the table so that both sentences are arranged in front of the students. Note: Do not spend time asking students to rebuild the sentences; put them back on the table intact.

"Alright, today we have built two sentences. The two ideas in these sentences are actually connected to each other, because they are both about how robots can help rescue people in unsafe places after a disaster. I wonder how we could combine these sentences to convey one key idea? Let's take a second and read each sentence to understand their individual ideas.

"So we've got two key ideas here that are related to each other. Sometimes authors need to convey two ideas that are connected in order to make a point. So they need to combine two sentences together into one big sentence, and that's what we're going to do. The nice thing is, when we are combining two big sentences like this, we have special words we can use to put our ideas together to show they relate."
Lay out the word card, because. *"Here we have the word because. Where could we place this word to combine these two sentences into one sentence?"*

Students place word card with teacher support as needed.

> ***Word Cards:*** *because*

"Great job. Let's read our big mystery sentence: ***Rescue robots can work in unsafe places because robots have features such as cameras and sensors that can find survivors after a disaster.*** *This makes sense, right? But I don't love how it sounds. We say robots several times. Sometimes, when we don't want to say the same word over and over again, we can use a different word or phrase instead. We could use a word like, they." Place the word they on the table. "Where could I place they in the second part of the sentence to send the same message?"*

> ***Word Cards:*** *they*

T allows students to try it, providing support or feedback as necessary.

"Great. Yes, we can substitute robots for they in the second sentence. Alright, I think we have built our mystery sentence! Can you read this sentence out loud to me one last time?"

Student reads: ***Rescue robots can work in unsafe places because they have features such as cameras and sensors that can find survivors after a disaster.***

"Excellent job building this complex sentence today! Let's add it to our Inquiry Space."

DR Lesson C

Discovery Reading Lesson Title: Robots_Lesson C (Blueprint)

Book: *Helper Robots*

Pages: 16-21: “Dangerous Science”

Lesson Reminders:

- Students should practice **at least two routines** from the prompt card after **every text chunk**. Lessons are fast-paced: each routine should be practiced with **urgency.**
- For each prompt routine, invite participation from **at least two students**, rotating strategically to hear from as many students as possible. **Every student** should have a chance to share their ideas **at least once** during the lesson.
- The teacher **does not need to take a turn on every prompt routine.** When the teacher takes a turn, they should model using the prompt card language **succinctly**.
- **Encourage students to talk to each other**, not just to the teacher. During each routine, after the first student contributes, a second student should, when appropriate and whenever possible, be invited to add to or respond to the first student.
- **Full linguistic repertoire (FLR)**: Students can discuss and ask each other questions in their home language to support their mental models of the text.
- Remember to give **wait time**: after inviting students to participate, wait 3-4 seconds to allow some thinking time.

SETTING THE PURPOSE - Before Reading

Ideas from Inquiry Space to Review Before Reading:

- Review 1-2 new learnings from our previous book about robots, using the Inquiry Space.

Guiding Question Framing:

- Show question: *How do robots help scientists understand the world?*
- **"As we talk and discuss our reading together, we're going to be thinking about how to answer our guiding question."**

Word to Preview Before Reading:

- measure: to use a tool to find out something, like the size or amount of something. (For example, a thermometer measures someone’s body temperature)
- Add the vocabulary word to the Inquiry Space for later reference.

METACOGNITIVE DISCUSSION - During Reading

Text Chunk #1: pages 16 and 17. Teacher reads aloud while students follow along.

Prompt cards should be in front of students and the teacher for all discussions.

- "**Let's stop here and begin with 'Monitor and Repair.' Let's think of something that made you say 'Wait a minute!' Who would like to go first?"**
    - Call on students to share and guide them to work through their confusion. *Eel* might be a confusing word for students in this chunk. If you take a turn here or want to model, you might say something like, "On page 17 the caption says "This robot swims under water like an eel." Hm. What's an eel? The robot in the photograph looks flexible and bendy. Oh! Eels are a kind of fish. They are long and thin and can fit into narrow spaces between rocks. This robot is designed to move like an eel underwater. I wonder what kinds of places the scientists send it."

- **"Let's do 'Tell What You See' in our next routine. Remember, reading can be like watching a movie in our heads when we visualize what we're reading. Who would like to share with us what they saw in their minds as they read this page? Remember to begin by saying, "Let me describe what I see in my head."**
    - Call on one student to share and another to respond.

Text Chunk #2: pages 18 and 19. Teacher reads aloud while students follow along.

- **"Let's practice 'Monitor and Repair' again just to make sure we can clear up anything that confused us. Who would like to share something on this page that made you say "Huh. Wait a minute!"?"**
    - Call on a student to share and allow students to collaborate to work out their confusion.
- **"I think this is a good time to use Tell what you learned.**
    - Students can turn to their partners and share one new thing they learned, in their own words. Remind students to use the prompt card language to help them get started as they share.

Text Chunk #3: pages 20 and 21. Teacher can read aloud or choose an appropriate scaffolded reading technique.

- **"Let's stop here and begin with 'Words in the Spotlight' because I wonder who caught our vocabulary word on these pages! Who can read us the sentence with the word *measure* in it?"**
    - Call on a student to read the sentence and ask the student to explain the meaning of the word. This might be a good place to review the meaning of the word *sensor*, since it also shows up in this sentence. This is also a good place to review some key ideas: **"Sensors such as cameras and microphones are used by robots to detect things like our eyes and ears do. We know that measure**

means to determine the size or quantity of something, so here we learn that robots are measuring, or determining the amount of, poison gas in a volcano. This is another way robots can do things humans can't!", etc.)
    - Call on another student to come up with an original sentence using the word *measure*, perhaps pushing students to give an example of how robots can measure things that humans can't.

- **"Let's end with 'Quiz Me.' Who wants to come up with a really solid question to ask our group that will help us see if we understood the big idea. Go ahead, who can ask us a question?"**
    - Call on a volunteer to ask a question, and call on other students to answer the question or collaborate to answer it together.

SYNTHESIZING KNOWLEDGE - After Reading

Collaboratively guide students through forming and writing an answer to today's big question. Be sure to review lesson vocabulary before or while answering the question. Add answer to the Inquiry Space.

How do robots help scientists understand the world?

Exemplar answer:
Robots help scientists understand the world because they can go places humans can't, like deep in the sea, under Arctic ice, into dangerous caves, and even into volcanoes. They explore and measure facts and data about these places in order to help scientists understand our earth better and to help keep humans safe from disaster.

CR Lesson C

Confident Reading Lesson Plan C: Elaborative

Text: How to Design a Robot Text 3 (maze)

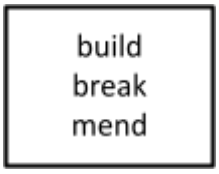
Reminders for Every Lesson:

- Invite participation from **at least two students** each time you pause to discuss, rotating strategically to hear from as many students as possible. **Every student** should have a chance to share their ideas **at least once** during the lesson.
- **Encourage students to talk to each other**, not just to the teacher. During each routine, after the first student contributes, a second student should, when appropriate and whenever possible, be invited to add to or respond to the first student.
- Remember to give **wait time**: after inviting students to participate, wait 3-4 seconds to allow some thinking time.

Text 3 (maze)

[1]Robots can have thousands of different parts. [2]Who makes these machines? [3]Many robots are built in factories, but some are made by people. [4]Roboticists are 

who follow steps to design and build robots. [5]First, they think about what the purpose of their robot will be, such as being able to solve a problem or explore a new place. [6] 

, they design the robot. [7]During this phase, the roboticists plan what the robot will look like and what materials it will be composed of. [8]For example, it may be made of hard metal or flexible plastic. [9]After that, the scientists 

the robot by putting the pieces together by hand or

using a machine. [10]Next, the roboticists program the robot. [11]This means they put a small computer chip in the robot and send instructions to the chip. [12] 

, they test the robot to see if it functions properly.

Text: "How to Design a Robot Text 3 (Maze)"
Step One. Teacher Intro and Maze Read
"We have read some texts about how robots are designed. Here's another version of that text, but this time you'll notice that a few words are missing. Read this text silently on your own and use your knowledge to pick the right word for each blank. Circle the word with your pencil, and then in a moment I will reveal the correct words." Students read silently and circle the words that should go in each blank.
Step Two. Teacher Model Reads
"OK, I saw you all really thinking about the language in the text as you chose the words that make sense in each sentence. Great! Now I'm going to read the text with the correct words inserted. Follow along with me. Pay attention to how I read the text aloud and what words should go in each spot." Teacher reads aloud the text while students follow along and circle the words that should go in each blank, changing their answers if needed. The teacher should offer a teaching point related to 1-2 of the words, especially any that several students in the group may have had trouble with. This teaching routine can follow the same methods that are usually used for the fluency teaching points in other lessons. **Example:** "Let's re-read the fourth sentence. *Roboticists are* [*person*/ scientists / *humans] who follow steps to design and build robots.*" "If we look at our choices for the first box, I think I can eliminate the word *humans.* The word *humans* correctly completes our sentence, but

I don't think all humans have studied how to create or build robots. Here, I could also eliminate the word *person* because we need a word that means more than one person. I think the word *scientists* is the best word to complete our sentence because scientists are people with expert knowledge about a particular area in science, such as the creation of robots."

"Let's practice this sentence together out loud one more time, reading the word that should go in that blank." Students and teacher read together.

Step Three. Partner Read

"Now I want you to take turns reading the text aloud to your partner. Partner A will read the whole text aloud, and then Partner B will read the text aloud." [Offer any brief reminders related to teaching points covered in prior lessons.]

As students take turns reading the text aloud, the teacher observes and listens carefully, identifying common issues that can be discussed during the feedback and teaching portion of the lesson.

Step Four. Feedback and Quick Practice

Note: for text iii, this routine can be a little shortened (or even skipped) because teachers already offer a teaching point via the maze routine.

Teacher provides feedback in specific areas, such as: (see manual for description)

- reading confidence
- accuracy
- punctuation
- connectives and conjunctions
- words and phrases that signal text structure
  other forms of phrasing

Example:

"There was one place where I noticed a few of us making a similar error with our phrasing. When we see a comma, that's the author telling us to take a pause. So let's reread the last sentence together: *Finally, they test the robot to see if it functions properly."*

Step Five. Bridging Language Teaching Point

The teacher offers a teaching point using the systematic routine:

"Let's all put our finger on the fifth sentence and read a few sentences together: [5]*First, they think about what the purpose of their robot will be, such as being able to solve a problem or explore a new place.* [6]*Next, they design the robot.* [7]*During this phase, the roboticists plan what the robot will look like and what materials it will be composed of."*

"Who does *they* refer to in sentence 5?"
Students: "Roboticists [or scientists]."
"Great. And who is *they* referring to in sentence 6?"
Students: "Roboticists [or scientists]."
"OK, let's check it and see. Let's place the word "roboticists" in place of "they" in these sentences. Read aloud with me: "[5]*First, roboticists think about what the purpose of their robot will be, such as being able to solve a problem or explore a new place.* [6]*Next, scientists design the robot.* "
"Does that sound right? Yes! *They* refers to *scientists called roboticists*!"

Step Six. Group Read

"Let's read the text one last time, and this time we will choral read aloud, all together. Let's try to make sure we are incorporating the feedback we learned today."

Students and the teacher read the text together, and the teacher provides some brief last bits of feedback.

BW Lesson B

Breaking Words Lesson Plan B (Blueprint)
Robots Module

Word Cards:
- *measure*
- *survivor*

Affix Cards:
- *un-*
- *pre-*
- *-ing*
- *-ion/-tion**
- *-able/-ible**

Note: Not all of these affixes will be used in every Breaking Words lesson during this module, but students should have access to the affix cards to experiment with during this section of the lesson. Cards will be used again in future lessons.
*Two sides of the same notecard.

Note: For each part of the lesson, refer back to the BW Prompt Card

Warm Up	Teacher may say: "In our last Breaking Words lesson, we analyzed a bunch of cool words. Let's read them quickly to review them." *Teacher can flash words and kids can read them chorally.* "I've picked one of our words. Who can use this one in a sentence for us?"
Phase	**Word 1: *measure***
Count It	• Teacher may say: "Let's begin by looking at a few words related to our learning about robots. The first word is *measure*. We've learned a little bit about how robots can be used to measure data or information about certain environments on earth." "How many syllables are in the word *measure*?"

	• Students may say: two *Note: if students struggle with syllabification, remind them of the vowel rule: one vowel sound for each syllable.*
Read It	• Teacher may say: "Can you read this word aloud?"
Use It	• Teacher may say: "How would you use the word *measure* in a sentence having to do with robots?" *Note: Give two students an opportunity to contribute a sentence; invite students to use their full linguistic repertoire*
Divide It	• Teacher may say: "Can we divide this word?" • Students may say: mea/sure • Check the vowel sound in each syllable.
Assemble It	• Teacher may say: "How do we put this word back together?" *Note:* Scramble the cards and have students put it back together. Repeat a few times.
Write It	• Teacher may say: "How do you write the word *measure*?"
Transform & Use It	• Teacher should display the affix cards *un-, pre-, -ing, -ion/-tion, -able/-ible* • Teacher may say: "Let's start by adding *-able* to the end of the base word *measure*. What word do we have now?" "Does adding *-able* create more syllables?" "How could you use *measurable* in a sentence?" "What if we add *un-* to the beginning of *measurable*? What does this new word mean?" "Let's take those off and go back to *measure*. What if we add *pre-* to the beginning of the word*?"*

	"Does adding *pre-* create another syllable? "How could you use *premeasure* in a sentence?" "Does that word make sense? How do you know?" "What happens when we take off *pre-* and add *-ing* to the end of the word*?"* "Does adding *-ing* create another syllable? "How could you use *measuring* in a sentence?" "Does that word make sense? How do you know?" "How is it different from using *measure?"* ● Teacher will write real words on new cards to add to the warm-up deck *(measure, measurable, unmeasurable, measuring, premeasure)*.

Phase	**Word 2: *survivor***
Count It	● Teacher introduces the word *survivor* and uses it in a sentence. "We have learned about how robots can help a human who lives through a disaster, or a survivor, because they can go into dangerous places to rescue them." "How many syllables are in the word *survivor*?" ● Students may say: three *Note: If students struggle with syllabification, remind them of the vowel rule: one vowel sound for each syllable.*
Read It	● Teacher may say: "Can you read this word aloud?"
Use It	● Teacher may say: "How would you use the word *survivor* in a sentence about robots?" *Note: Give two students an opportunity to contribute a sentence; invite students to use their full linguistic repertoire*

Divide It	● Teacher may say: "How would we divide this word?" ● Students may say: sur/vi/vor
Assemble It	● Teacher may say: "How do we put this word back together?" *Note: scramble the cards and have students put it back together.*
Write It	● Teacher may say: "How do you write the word *survivor?"*
Transform & Use It	● Teacher should display the affix cards *un-, pre-, -ing, -ion/-tion, -able/-ible* ● Teacher may say: Let's begin by removing the word part -*or* from the end of this word and work with just the base word, *survive,* which means to live through a disaster. "Now let's add -*able* to the end of this word. What word do we have now?" "Does adding -*able* create more syllables?" "How could you use *survivable* in a sentence?" "Now I'm going to take add -*ing* to the end this word. What word do we have now?" "How many syllables does it have?" "How could you use *surviving* in a sentence?" "How is it different from *survivor* or *survivable*?" "Do any of our other word parts work for this word? Why or why not?" ● Teacher will write real words on new cards to add to the warm-up deck *(survivor, survivable, surviving)*. Students may add a word(s) to the inquiry space to synthesize their knowledge of the module topic.

DR Lesson D

Discovery Reading Lesson Title: Robots_Lesson D (Blueprint)

Book: *Helper Robots*

Pages: 22-27 "Helping the Environment"

Lesson Reminders:

- Students should practice **at least two routines** from the prompt card after **every text chunk**. Lessons are fast-paced: each routine should be practiced with **urgency.**
- For each prompt routine, invite participation from **at least two students**, rotating strategically to hear from as many students as possible. **Every student** should have a chance to share their ideas **at least once** during the lesson.
- The teacher **does not need to take a turn on every prompt routine.** When the teacher takes a turn, they should model using the prompt card language **succinctly**.
- **Encourage students to talk to each other**, not just to the teacher. During each routine, after the first student contributes, a second student should, when appropriate and whenever possible, be invited to add to or respond to the first student.
- **Full linguistic repertoire (FLR)**: Students can discuss and ask each other questions in their home language to support their mental models of the text.
- Remember to give **wait time**: after inviting students to participate, wait 3-4 seconds to allow some thinking time.

SETTING THE PURPOSE - Before Reading

Ideas from Inquiry Space to Review Before Reading:

- Review 1-2 new learnings from previous lessons about robots, using the Inquiry Space.

Guiding Question Framing:

- Show question: *How can robots help people study the environment?*
- **"As we talk and discuss our reading together, we're going to be thinking about how to answer our guiding question."**

Word to Preview Before Reading:

- environment: all our physical surroundings on Earth. The environment includes everything that is alive, like plants and animals; and things that are not alive, like the air we breathe.
- Add the vocabulary word to the Inquiry Space for later reference.

METACOGNITIVE DISCUSSION - During Reading

Text Chunk #1: pages 22 and 23. Teacher reads aloud while students follow along.

Prompt cards should be in front of students and the teacher for all discussions.

- **"Let's stop here and begin with 'Words in the Spotlight' because did you catch today's word in the pages we just read? That's right. Who can read us the sentence with the word *environment* in it? When you share, be sure to say 'Our word was used in this sentence', and then read the sentence to us!"**
    - Call on a student to read the sentence and ask the student to explain the meaning of the word.
    - Call on another student to come up with an original sentence using the word *environment* (or students may use environmental since that word was also used in the next sentence on page 22).

- **Now let's practice 'Monitor and Repair.' Let's think of something that made you say 'Wait a minute!' Who would like to go first?"**
    - Note: if students share that there is nothing that is confusing them here, you could model a turn, or guide them to consider the words *data* or *predict*, which might be unfamiliar to students.
    - Example turn-taking/ modeling here: **"On page 22 it says, 'They collect data about environmental problems. Then scientists study the data.' I'm not totally sure what this means. I've heard about data before, like numbers. It also says right there that the robot measures something. So maybe the robot gathers information or measurements, that's data, and the data goes into the computer and the scientists study that information. That's pretty cool! Your turn. Who wants to share a word or idea that was confusing for them?"**

Text Chunk #2: pages 24 and 25.

- **"Let's stop here. As always, I want to give you a chance to 'Monitor and Repair.' Was there anything on this part that made you say… 'Wait a minute!'"**
    - Prompt students to help each other work through their confusion. It may be worthwhile to spend some time on the concept of *climate* (page 24).

- **"Now let's practice 'Tell what you Learned.' Take a moment to find something that was new to you on this page. When you're ready, take turns sharing what you learned with your partner. You can each start by saying, "One new thing I learned from the text is…"**
    - Give partners time to share and debrief as needed.

Text Chunk #3: pages 26-27.

- **"(Student), I want you to lead us through 'Monitor and Repair' this time. You can**

either take the first turn or call on us to do it. Remember to use your prompt card."

- Have a student lead the conversation and encourage kids to work together to clarify their confusion.

- **"Lastly, let's do 'Tell What You See.' There were a lot of things to visualize in our minds as we read this section, especially robots going into different types of environments. Who can describe for us what movie was playing in your mind as you read these pages?"**
  - Call on a student to share and discuss.

SYNTHESIZING KNOWLEDGE - After Reading

Collaboratively guide students through forming and writing an answer to today's big question. Be sure to review lesson vocabulary before or while answering the question. Add answer to the Inquiry Space.

How can robots help people study the environment?

Example model answer:

Robots can help protect the environment in many ways. For example, they can use their cameras to fly into dangerous places to collect data that helps scientists study the weather. They can also drill down into the ground or ice to collect data about the climate. Finally, they can study the ocean and check for pollution.

UtS Lesson A

Uncover the Structure Lesson Plan A: Elaborative

Text: How to Design a Robot Text 3 (Complete)

Reminders for Every Lesson:

- Invite participation from **at least two students** each time you pause to discuss, rotating strategically to hear from as many students as possible. **Every student** should have a chance to share their ideas **at least once** during the lesson.
- **Encourage students to talk to each other**, not just to the teacher. During each routine, after the first student contributes, a second student should, when appropriate and whenever possible, be invited to add to or respond to the first student.
- Remember to give **wait time**: after inviting students to participate, wait 3-4 seconds to allow some thinking time.

Text 3 (complete)

[1]Robots can have thousands of different parts. [2]Who makes these machines? [3]Many robots are built in factories, but some are made by people. [4]Roboticists are scientists who follow steps to design and build robots. [5]First, they think about what the purpose of their robot will be, such as being able to solve a problem or explore a new place. [6]Next, they design the robot. [7]During this phase, the roboticists plan what the robot will look like and what materials it will be composed of. [8]For example, it may be made of hard metal or flexible plastic. [9]After that, the scientists build the robot by putting the pieces together by hand or using a machine. [10]Next, the roboticists program the robot. [11]This means they put a small computer chip in the robot and send instructions to the chip. [12]Finally, they test the robot to see if it functions properly.

Text: "How to Design a Robot Text 3 (Complete)"
Step One. Review the Text
"We've read three different versions of a text about how roboticists design robots and during today's lesson we will revisit one of them. We've already read this text a couple of times, and we've learned a lot about a lot about robot designs from it. Let's quickly re-read it together." **Teacher reads aloud.**
Step Two. Stating the Structure of the Text
Now, we're going to 'uncover the structure' of this text. That means we are going to figure out how the author has organized the ideas in this text so that we can understand them. When writing, authors make choices about how they communicate ideas to help their readers learn." "There are lots of different ways that authors can organize their thoughts, but as we learn about robots, we are just going to focus on a couple." *Here the teacher shows the empty **sequence graphic organizer**. "Sometimes, an author might put events in order, or sequence, to explain how something happens over time. They might tell what happens first in a process, then talk about what happens next until they reach the last part of the process. An author chooses the structure that best fits the ideas they want to communicate to their readers." "The text we are reading today uses the sequence structure to organize ideas about robots."
Step Three. Identifying Cue Words for Structure
"There are some words that authors sometimes use to signal, or show us, how they are organizing a text. Let's take a moment to look back at our text and see if we can find a few. Some examples of words that signal sequence are **first, next, then, finally**. The author might use other clues, like dates, to show the order something happened as well. *Teacher will have students reread the text to locate a few examples, which they should circle or highlight on their papers*. As you work, point out the relationship between ideas and how cues in the text alert the reader to the correct sequence. Cue words should be added to the Inquiry Space for later reference. If students have difficulty, have students read a sentence aloud to help them locate the cue word. **For example:**

"Let's reread these sentence together: [5]*First, they think about what the purpose of their robot will be, such as being able to solve a problem or explore a new place.* [6]*Next, they design the robot.* [7]*During this phase, the roboticists plan what the robot will look like and what materials it will be composed of."*

"I heard the word *first* right at the beginning of sentence 5. I know that word is helping me understand the order, or sequence, of the text. When roboticists design robots, they start by thinking about what they want the robot to do. This is the *first* step. What words might the author use to tell us what the roboticists do after they decide the purpose of their robot?"
Students: "Next, then, finally, etc."
"Awesome, let's keep reading and see if we can find another clue word: [6]*Next, they design the robot.* [7]*During this phase, the roboticists plan what the robot will look like and what materials it will be composed of."*
"What signal word did you hear?"
Students: "Next."
"Great! So, roboticists start by thinking about what they want the robot to do first, and next they design the robot!"

Step Four. Discussion

"Now, I'm going to ask you a few questions about this text. In order to answer these questions, you will have to think about how the ideas in the text are organized, or structured."

Teacher should ask 2-3 of the following (depending on time):

"What is the first thing roboticists have to do?"

"What do roboticists do after they decide what the robot will be made of?"

"Once they build the robot, what happens next?"

"What is the last step in the process of designing a robot?"

Teacher calls on students to share, prompting them to refer back explicitly in the text to explain their thinking.

Step Five. Graphic Organizer

"Now we are going to take what we learned and put all the ideas from the text into our graphic organizer so that we can really see how this text uses the structure."

As a group, the teacher and students will work together to complete the **sequence graphic organizer**, paying close attention to the sequence of ideas in the text. The teacher will transcribe student responses into a shared document. ***In later lessons, teachers could release this responsibility to their students based upon ability and comfort.*

Step Six. Summarizing

"Now, we're going to practice summarizing this text. When we summarize, we want to explain the ideas in the text to someone else who hasn't read it so that they can understand it. That means we want to explain it in a way that uses the same structure that the author used."

"Using our graphic organizer, summarize what you learned about robots from this text."

Teacher gives students a minute to practice with their partners.

"Before we go, we are quickly going to write a summary of what we learned together. What should we begin with?"

Teacher will prompt students as the group writes a summary together, which the teacher will record to include on the Inquiry Space for future reference. As the teacher guides students through the shared-writing exercise, make sure to include structural cue words and appropriate academic vocabulary from the text and module.

Example: *First, roboticists decide what they want their robot to do. Next, they design the robot. After that, they build the robot. Then they program it. Finally, they test the robot to see if it works.*

SW Lesson B

Sentence Workshop Lesson B (Blueprint)
Robots Module

Mystery Sentence: Robots explore oceans and collect data from icy environments in order to help scientists understand how Earth's climate is changing. **Sentence #1:** Robots explore oceans and collect data from icy environments. **Sentence #2:** Robots help scientists understand how Earth's climate is changing.
Word Cards for Sentence #1: If you are making the cards beforehand, it might be helpful to group them by chunk, paperclip each chunk, and have them ready to go in the order they'll appear in the lesson. [Note: some cards consist of entire phrases as indicated by the brackets.] *data, robots, collect, [from icy environments]* *oceans, and, explore*
Word Cards for Sentence #2: *[Earth's climate], changing, is* *Scientists, how, understand* *help, robots*
Mystery Sentence: *[in order to]*

Note: Be sure the SW prompt card is visible to the whole group. Use it to guide the discussion of each sentence.

Build Sentence #1
• Teacher prompts students to build the first sentence. ***Word Cards:*** *data, robots, collect, [from icy environments]* • Students may build: ***"Robots collect data from icy environments."*** ***"From icy environments, robots collect data."*** • Teacher prompts students to expand sentence:

Word Cards: *oceans, and, explore*

- Students may build:
  "Robots explore oceans and collect data from icy environments."
  "Robots collect data from icy environments and explore oceans."
  "Robots explore icy environments and collect data from oceans."
  "Robots collect data from oceans and explore icy environments."

- Use the SW prompt card to discuss the sentence.

Note: Continue to give students time to add /rearrange words, providing support or feedback as necessary. Allow students 1-2 attempts to arrange words; after two unsuccessful attempts, intervene using one of the steps provided in the elaborative plan. If students build the second, third, or fourth option, tell them that these sentences are acceptable, but that they are going to use the first one moving forward.

Manipulate Morphosyntactic Structure of Sentence #1

- Teacher asks students how the sentence would need to be changed if we added the words *Ten years ago* to the beginning of the sentence.

- Teacher and students work together to change *collect* to *collected* and *explore* to *explored.*

  "Ten years ago, robots explored oceans and collected data from icy environments."

Building Sentence #2

*Note: Teacher removes the word cards from Sentence #1 and places them off to the side (but keep them in a nested stack, in order, to make it easier to quickly re-build mystery sentence later).

- Teacher prompts students to build sentence #2:

  Word Cards: *is, changing, [Earth's climate]*

- Students may build:

  "Earth's climate is changing."

- Teacher prompts students to expand sentence:

Word Cards: *scientists, understand, how*

- Students may say:

  "Scientists understand how Earth's climate is changing."

- Teacher prompts students to expand sentence:

  Word Cards: *help, robots*

- Students may say:

  "Robots help scientists understand how Earth's climate is changing."

  (Note: Though syntactically correct, if students build *Scientists help robots understand how Earth's climate is changing… you can discuss how the goal, based on our book, is not necessarily to help robots understand, but for scientists and humans to understand our Earth.)*

- Use the SW prompt card to discuss the sentence.

Note: Continue to give students time to add /rearrange words, providing support or feedback as necessary. Allow students 1-2 attempts to arrange words; after two unsuccessful attempts, intervene using one of the steps provided in the elaborative plan.

Build Mystery Sentence & Discuss Meaning

*Note: Teacher places the word cards from sentence #1 back on the table so that both sentences are arranged in front of the students. Do not ask students to rebuild the sentence.

- Teacher helps students briefly discuss the ideas in the sentences, helping students see how the ideas in both sentences are connected.

- Teacher prompts students to combine the two sentences using one phrase (below). Teachers should tell students that once they insert that phrase, they will also need to remove another word in the sentence.

  Word Card: *[in order to]*

- Students may build:

  "Robots explore oceans and collect data from icy environments in order to robots help scientists understand how Earth's climate is changing."

- After asking students to read the sentence aloud, teacher can remind students that one word now needs to be removed from the sentence.
- Students should remove the second *robots*.
- Ask students to read aloud the mystery sentence to ensure it makes sense and conveys the idea we want it to:

  "Robots explore oceans and collect data from icy environments in order to help scientists understand how Earth's climate is changing."

- Teacher and students add the mystery sentence to the Inquiry Space.

Inquiry Space (IS)

Ideas for planning the IS maintenance days

Note to teachers:

While the rest of the K.L.I. components are highly structured, the Inquiry Space, by its very nature, has to be flexible and customizable for each group. Think of this as your "playground" where you and your students have freedom to spend time playing with the big ideas about your topic that have come up across previous lessons. We haven't provided specific lesson plans for IS days. Instead, we provide these ideas below as starting points as you plan for these days.

Menu of Options

During an IS day, you can do one of these activities, a combination of several of them, or design something of your own that accomplishes the goal of this component. Keep in mind that the goal of the Inquiry Space component is to: *re-engage with the vocabulary and concepts your group has been collecting from lesson to lesson so that students can notice and discuss how these ideas fit together.*

1. Review and re-organize the Inquiry Space
    - Show the current version of the group's Inquiry Space.
    - Ask them to work with a partner or individually to re-read all the entries that are there.
    - Then have them work with a partner to identify a few sorting categories they could use to move the entries around into meaningful groups. For instance, maybe there are three entries about robots helping save people and two entries about robots helping the environment. You could move these into groups and label each one (ways robots help people; ways robots help the environment).

2. Review and connect new words
    - Show the current version of the group's Inquiry Space
    - Ask students to read all the entries and look for new vocabulary words they have learned.
    - After students have each found their list of new words, ask each student to pick one word to share with the group. They have to explain where the word is found on the Inquiry Space and what it means (related to the inquiry topic). You could also ask them to create an action or movement for the word to help the group remember it.
    - For each word, draw lines that connect to other words on the Inquiry Space and create a sentence that shows how the words are related. For example, you might draw a line between the words *survivor* and *sensor* and develop the sentence: "Robots use sensors to find survivors after a natural disaster."

3. Revisit the overarching inquiry questions
    - Show the current version of the group's Inquiry Space.
    - Chorally read all the entries as a group to review all the ideas.
    - Then show students the questions from the Day 0 lesson that you used to launch the module.

- Using one question at a time, ask students to work with a partner to find at least two entries on the Inquiry Space that help answer the question.
- The partners can share their ideas with the group, and then color-code or re-arrange the entries into groups based on the question they help answer.

4. Paraphrase the most important or most interesting ideas
    - Show the current version of the group's Inquiry Space and chorally read the entries aloud to review
    - Ask students to pretend they are explaining what they have learned to a friend or relative who hasn't been in the group. They have to pick ONE really important idea and explain it in their own words, in a way that will make sense to their friend or relative (this is a great opportunity for students to explain their new knowledge in a home language or dialect). Alternatively, you can ask them to pick the one idea that is most interesting to them that they think will also be interesting to their friend or relative.
    - Students work in partners or individually to come up with two sentences for their friend or relative. If needed, you can give them a sentence starter to get them started.
    - They share with the group and then record their sentences on the Inquiry Space as new entries.

DR Lesson E

Discovery Reading Lesson Title: Robots Lesson E (Blueprint)

Book: *Robots (National Geographic Kids)*

Pages: 16-19
(Note: only some parts of this book will be read)

Lesson Reminders:

- Students should practice **at least two routines** from the prompt card after **every text chunk**. Lessons are fast-paced: each routine should be practiced with **urgency.**
- For each prompt routine, invite participation from **at least two students**, rotating strategically to hear from as many students as possible. **Every student** should have a chance to share their ideas **at least once** during the lesson.
- The teacher **does not need to take a turn on every prompt routine.** When the teacher takes a turn, they should model using the prompt card language **succinctly**.
- **Encourage students to talk to each other**, not just to the teacher. During each routine, after the first student contributes, a second student should, when appropriate and whenever possible, be invited to add to or respond to the first student.
- **Full linguistic repertoire (FLR)**: Students can discuss and ask each other questions in their home language to support their mental models of the text.
- Remember to give **wait time**: after inviting students to participate, wait 3-4 seconds to allow some thinking time.

SETTING THE PURPOSE - Before Reading

Ideas from Inquiry Space to Review Before Reading:

- "We are starting a new book today called *Robots.*" (show book). A lot of this book explains things we have already learned, so we aren't going to read the whole book.
- Review 1-2 robot functions that help humans (from the last book), referring back to the Inquiry Space.

Guiding Question Framing:

- Show question: *Why do scientists design robots to move like animals?*
- **"As we talk and discuss our reading together, we're going to be thinking about how to answer our guiding question."**

Words to Preview Before Reading:

- *motion*: the act of movement; if something is in motion, it is moving around
- Add to inquiry space

METACOGNITIVE DISCUSSION - During Reading

Text Chunk #1: pages 16-17. Teacher reads aloud while students follow along.

Prompt cards should be in front of students and the teacher for all discussions.

- "**Let's stop here and begin with 'Words in the Spotlight' because I saw one of our new words right away! Who spotted one of our new vocabulary words on this page?"**
    - Call on a student to read the sentence and ask the student to explain the meaning of the word.
    - **"Next, the prompt card says 'Here's how I can use it.' Who would like to use this word in a sentence for us?"** Call on another student to come up with an original sentence using the word *motion*.

- **"Now let's do 'Monitor and Repair.'**If a student does not volunteer, the teacher can model. For example,
    - **"I'll go first. Wait a minute! Here is something that was confusing for me while I was reading. That huge word, *biomimetics*! In this text box it says this word means copying the shape and movement of animals in a machine's design. Copying an animal? Why would a machine want to do that? Let me look at other parts of the text. Well we just talked about how roboticists study animals for ideas about *motion*. So maybe they want to make robots that copy the way animals *move*! Like this little robot here in the picture is really tiny, just like a little ladybug. Maybe if it moves like a tiny little ladybug, it can study small parts of a leaf! See how that picture is zoomed in on the leaf?"**

    - **"(Student name), now it's your turn. What made you say 'Wait a minute!' When you share, be sure to say, 'Here is something that confused me…'"**

- **"Let's finish with 'Quiz Me.' (Student name), hold on, let's see if you understood the big idea here. Let me think of a question. Hmm, ok: Can you answer this question? How can a robot that moves like a gecko lizard help people?"**

    - **"(second student name), how did (first student) do answering my question? Can you add or change anything to their answer?"**
    - **"(either second student or another student), your turn. Can you think of a question to ask us to see if we understood the big idea here?"**
        - **"Great question! Who wants to answer their question?"**

Text Chunk #2: p. 18-19. Teacher reads aloud while students follow along.

- **"Let's begin with 'Monitor and Repair.' Who would like to start us out by sharing**

something that made you say 'Wait a minute!' or confused you while you were reading?"

- **"How can we help (student name) clear up his confusion? What part of the text might help with this idea? (Second student), can you help (first student name)?"**

- **"(Student name), does that idea feel clearer to you now? Great, I really like how you all worked together on this one to go back to the text and talked through it. That's the kind of thinking we want to do when the text gets confusing for us."**

- **"How about we do 'Tell what you learned' next. I'll start."**
  - **"Hmm, let me go back to the text. I learned that robots aren't always sturdy. Some are made of really squishy material so that they can move like jellyfish in the ocean!"**

  - **"Your turn. Who would like to go first in sharing something they learned from the text, in your own words?"**

  - **"One more. (Student name), we haven't heard from you in awhile. What is something new you learned from these pages?"**

SYNTHESIZING KNOWLEDGE - After Reading

Collaboratively guide students through forming and writing an answer to today's big question. Be sure to review lesson vocabulary before or while answering the question. Add answer to the Inquiry Space.

Why do scientists design robots to move like animals?

Exemplar answer:

Scientists design robots to move like animals because animals are very good at moving through different environments. If robots can move in similar ways as animals, they can effectively complete jobs in challenging environments, like in water or underground.

CR Lesson D

Confident Reading Lesson Plan D: Blueprint

Text: Fact vs. Fiction Text 1

Reminders for Every Lesson:

- Invite participation from **at least two students** each time you pause to discuss, rotating strategically to hear from as many students as possible. **Every student** should have a chance to share their ideas **at least once** during the lesson.
- **Encourage students to talk to each other**, not just to the teacher. During each routine, after the first student contributes, a second student should, when appropriate and whenever possible, be invited to add to or respond to the first student.
- Remember to give **wait time**: after inviting students to participate, wait 3-4 seconds to allow some thinking time.

Lesson Routine:

1. Teacher reads aloud and models
2. Students read silently
3. Partner Read
4. Discuss
5. Feedback and Teaching Point
6. Bridging Language Routine
7. Whole Group Read

Text 1

[1]We see robots in movies, TV, and books. [2]Some of them even look like humans. [3]These human-like robots are called androids. [4]They can be 'good guys', while others are dangerous. [5]But in real life, androids are not going to take over the world! [6]Though some of them can walk and talk, they are still machines. [7]They are not alive. [8]Some robots can even copy human faces, but they don't have feelings. [9]They cannot think, either. [10]Instead, some robots have a computer that is like a human brain. [11]But human scientists still tell them what to do. [12]Most of the time,

they can only do a few jobs. [13]Androids can't learn on their own like humans can. [14]So even though an android might seem similar to a human, it is still a robot!

Feedback & Teaching Points (choose 1 or 2):	**Bridging Language Routine (use for purple text):**
• reading confidence • accuracy • punctuation • connectives and conjunctions • words and phrases that signal text structure • other forms of phrasing Routine: Teacher models; students repeat after teacher 1-2 or times; students practice re-reading in unison 1-2 times.	-Reread sentences 8 and 9 (show students place in text with fingers.) -"Who is *they* referring to in these two sentences? Students: "The robots." "The robots? OK, let's check it and see. Let's place the word "robots" in place of "they" in the next sentences. Read aloud with me, from the beginning: [8]*Some robots can even copy human faces, but robots don't have feelings.* [9]*Robots cannot think, either."* "Does that make sense? Yes! The first sentence said *some robots*, so we know that at the end of the sentence *they* refers to the robots, just like in the following sentence!"

BW Lesson C

Breaking Words Lesson Plan C (Blueprint)
Robots Module

Word Cards:
- *explore*
- *invent*

Affix Cards:
- *un-*
- *pre-*
- *-ing*
- *-ion/-tion**
- *-able/-ible**

Note: Not all of these affixes will be used in every Breaking Words lesson during this module, but students should have access to the affix cards to experiment with during this section of the lesson. Cards will be used again in future lessons.
*Two sides of the same notecard.

Note: For each part of the lesson, refer back to the BW Prompt Card

Warm Up	Teacher may say: "We have already used our Breaking Words steps to analyze lots of words. Let's read them quickly to review them." *Teacher can flash words and kids can read them chorally.* "I've picked one of our words. Who can use this one in a sentence for us?"
Phase	**Word 1: *explore*** **Spanish cognate: *explorar***
Count It	• Teacher may say: "Let's begin by looking at a few words related to our learning about robots. The first word is *explore*. We've learned about how robots can *explore* dangerous places humans can't go." "How many syllables are in the word *explore*?"

	• Students may say: two *Note: if students struggle with syllabification, remind them of the vowel rule: one vowel sound for each syllable.*
Read It	• Teacher may say: "Can you read this word aloud?"
Use It	• Teacher may say: "How would you use the word *explore* in a sentence having to do with robots?" *Note: Give two students an opportunity to contribute a sentence; invite students to use their full linguistic repertoire*
Divide It	• Teacher may say: "Can we divide this word?" • Students may say: ex/plore
Assemble It	• Teacher may say: "How do we put this word back together?" *Note:* Scramble the cards and have students put it back together.
Write It	• Teacher may say: "How do you write the word *explore*?"
Transform & Use It	• Teacher should display the affix cards *un-, pre-, -ing, -ion/-tion, -able/-ible* • Teacher may say: "Let's start by adding *-ing* to the end of the base word *explore*. What word do we have now?" "Does adding *-ing* create another syllable?" "How could you use *exploring* in a sentence?" "What happens when we take off *-ing* and add *-able* to the end of the word*?"* "Does adding *-able* create more syllables? "How could you use *explorable* in a sentence?" "What if we add *un-* to the beginning of *explorable*?"

	"What is the difference between *explorable* and *unexplorable*? Can you use *unexplorable* in a sentence related to robots?" "What if we add -tion to *explore*? (note: add extra a before the suffix) ● Teacher will write real words on new cards to add to the warm-up deck *(explore, exploring, explorable, unexplorable, exploration)*.

Phase	**Word 2: *invent*** **Spanish cognate: *inventar***
Count It	● Teacher introduces the word *invent* and uses it in a sentence. "How many syllables are in the word *invent*?" ● Students may say: two *Note: If students struggle with syllabification, remind them of the vowel rule: one vowel sound for each syllable.*
Read It	● Teacher may say: "Can you read this word aloud?"
Use It	● Teacher may say: "How would you use the word *invent* in a sentence about robots?" *Note: Give two students an opportunity to contribute a sentence; invite students to use their full linguistic repertoire*
Divide It	● Teacher may say: "How would we divide this word?" ● Students may say: in/vent
Assemble It	● Teacher may say: "How do we put this word back together?" *Note: scramble the cards and have students put it back together.*
Write It	● Teacher may say: "How do you write the word *invent*?*"*
Transform & Use It	● Teacher should display the affix cards *un-, pre-, -ing, -ion/-tion, -able/-ible* ● Teacher may say:

	"Let's add -*ing* to the end of this word. What word do we have now?" "Does adding -*ing* create another syllable?" 'How could you use *inventing* in a sentence?" "Now I'm going to replace -*ing* at the end of the word with -*tion.* What word do we have now?" "How many syllables does it have?" "How could you use *invention* in a sentence?" "How is it different from *invent* or *inventing*?" "Do any of our other word parts work for this word? Why or why not?" ● Teacher will write real words on new cards to add to the warm-up deck (*invent, inventing, invention*). Students may add a word(s) to the inquiry space to synthesize their knowledge of the module topic.

DR Lesson F

Discovery Reading Lesson Title: Robots Lesson F (Blueprint)

Book: *Robots (National Geographic Kids)*

Pages: 26-29

Lesson Reminders:

- Students should practice **at least two routines** from the prompt card after **every text chunk**. Lessons are fast-paced: each routine should be practiced with **urgency.**
- For each prompt routine, invite participation from **at least two students**, rotating strategically to hear from as many students as possible. **Every student** should have a chance to share their ideas **at least once** during the lesson.
- The teacher **does not need to take a turn on every prompt routine.** When the teacher takes a turn, they should model using the prompt card language **succinctly**.
- **Encourage students to talk to each other**, not just to the teacher. During each routine, after the first student contributes, a second student should, when appropriate and whenever possible, be invited to add to or respond to the first student.
- **Full linguistic repertoire (FLR)**: Students can discuss and ask each other questions in their home language to support their mental models of the text.
- Remember to give **wait time**: after inviting students to participate, wait 3-4 seconds to allow some thinking time.

SETTING THE PURPOSE - Before Reading

Ideas from Inquiry Space to Review Before Reading:

- Review 1-2 robot functions you learned from the book yesterday, such as how robots help humans by completing tasks in the natural world (using ideas from the Inquiry Space or the answer to yesterday's guiding question).

Guiding Question Framing:

- Show question: *How have roboticists invented robots that can help people in their homes?*
- **"As we talk and discuss our reading together, we're going to be thinking about how to answer our guiding question."**

Words to Preview Before Reading:

- *roboticist*: a person who designs, builds, and experiments with robots. (You may also

want to briefly discuss the suffix *-ist* and how it's used to mean "a person who"--give examples like artist, scientist, etc.)

METACOGNITIVE DISCUSSION - During Reading

Text Chunk #1: pages 26-27. Teacher reads aloud and students follow along. Note: This text is not too lengthy and a lot of the vocabulary and context is familiar, so this might be a day with more time to push students to lead the discussions during each chunk.
Prompt cards should be in front of students and the teacher for all discussions.

- "**Let's stop here and begin with 'Word in the Spotlight' because I think our vocabulary word appeared on this part! Who spotted our new vocabulary word on this page?"**
    - Call on a student to read the sentence with the word *roboticist.* Then ask, **"Who can tell me what this word means?"**

    - **"Next, the prompt card says 'Here's how I can use it.' Everyone take a silent minute and think about how you might use this word *roboticist* in a sentence. Look back in the text for an example if you need to. When you're ready, I'm going to call on one of you to share."** Allow 1 or 2 students to share their sentence and discuss.

- **"Now let's do 'Monitor and Repair.' Who would like to go first?"**

    - Page 26 includes *invented* and *invisible*, which may be challenging for students or at least worth discussing. If students do not bring these up as confusing words, you'll want to make sure you cover those words either here (by taking a turn) or in one of the other thought routines.

    - **"(Student name), now it's your turn. What made you say 'Wait a minute!' When you share, be sure to say, 'Here is something that confused me…'**

Text Chunk #2: p. 28-29.

- **"Let's begin with 'Monitor and Repair.' Who would like to go first? What made you say "Wait a minute!" on these pages or confused you while you were reading?"**

    - **"How can we help (student name) clear up his confusion? What part of the text might help with this idea? (Second student), can you help (first student name)?"**

    - **(Student name), does that idea feel clearer to you now? Great, I really like how you all worked together on this one to go back to the text and talked through it. That's the kind of thinking we want to do when the text gets**

confusing for us."

- **"Next, let's try 'Tell what you see.' Close your eyes and picture what you see in your mind on this page. We are going to share what we see with our seat partner. Look back through the text if you need to."**
    - **"Ok, now that you've had some time to think about it, turn to your seat partner and share what you see. Then, let your partner take a turn sharing what they see. Then you all should discuss with each other to see if you were visualizing similar things in your minds while you read. If you would like, you can discuss using English or any other language you speak."**

SYNTHESIZING KNOWLEDGE - After Reading

Collaboratively guide students through forming and writing an answer to today's big question. Be sure to review lesson vocabulary before or while answering the question. Add answer to the Inquiry Space.

How have roboticists invented robots that can help people in their homes?

Exemplar answer:

Roboticists have invented robots that can help people with chores like mowing the lawn and cleaning the house. They are also working on inventing robots that can help people move around their homes.

CR Lesson E

Confident Reading Lesson Plan E: Blueprint

Text: Fact vs. Fiction Text 2

Reminders for Every Lesson:

- Invite participation from **at least two students** each time you pause to discuss, rotating strategically to hear from as many students as possible. **Every student** should have a chance to share their ideas **at least once** during the lesson.
- **Encourage students to talk to each other**, not just to the teacher. During each routine, after the first student contributes, a second student should, when appropriate and whenever possible, be invited to add to or respond to the first student.
- Remember to give **wait time**: after inviting students to participate, wait 3-4 seconds to allow some thinking time.

Lesson Routine:

1. Teacher reads aloud and models
2. Students read silently
3. Partner Read
4. Discuss
5. Feedback and Teaching Point
6. Bridging Language Routine
7. Whole Group Read

Text 2

[1]Robots are very popular in movies, tv, and books. [2]Some of these robots even look similar to humans. [3]These human-like robots are called androids. [4]Some are 'good guys,' but others become dangerous. [5]However, real-life androids are not going to take over the world! [6]Even though they look like humans, androids are still machines. [7]Some can walk and talk, but there are many differences between androids and humans. [8]Unlike humans, they are not alive. [9]Although some robots can see and copy human faces, they don't feel emotions. [10]They cannot think, either. [11]Instead, some robots have a computer that acts like a human brain. [12]This computer is called artificial intelligence. It helps the robot make decisions like humans.

[13]However, unlike the human brain, these computers are programmed to do just a few jobs. [14]Human scientists decide what the robot needs to know, unlike humans that can learn on their own. [15]So even though an android might look like a human, walk like a human, and talk like a human, it is still a robot!

Feedback & Teaching Points (choose 1 or 2):	**Bridging Language Routine (use for purple text):**
• reading confidence • accuracy • punctuation • connectives and conjunctions • words and phrases that signal text structure • other forms of phrasing Routine: Teacher models; students repeat after teacher 1-2 or times; students practice re-reading in unison 1-2 times.	-Reread sentences 6 and 7 (show students place in text with fingers.) -"Who is *they* referring to in sentence 6? Students: "Androids, which are robots." -"What about the following sentence. What is the word *some* referring to?" Students: "The androids." "Androids? OK, let's check it and see. Let's place the word "androids" in place of "they" and "some" in the next sentences. Read aloud with me, from the beginning: [6]*Even though androids look like humans, androids are still machines.* [7]*Androids can walk and talk, but there are many differences between androids and humans.* "Does that make sense? Yes! At the end of the first sentence, it says *androids are still machines*, so we know that the beginning of the sentence is still talking about androids, or robots. The following sentence begins with the word *some,* which still refers to the robots, just like in the previous sentence!"

SW Lesson C

Sentence Workshop Lesson C (Blueprint)
Robots Module

Mystery Sentence: Some areas of the Earth are too dangerous for humans to explore, but robots designed to copy the movement of animals can safely hop over rocky cliffs or squeeze through tight caverns. **Sentence #1:** Some areas of the Earth are too dangerous for humans to explore. **Sentence #2:** Robots designed to copy the movement of animals can safely hop over rocky cliffs or squeeze through tight caverns.
Word Cards for Sentence #1: If you are making the cards beforehand, it might be helpful to group them by chunk, paperclip each chunk, and have them ready to go in the order they'll appear in the lesson. **[Note: some cards consist of entire phrases as indicated by brackets.** These can be presented as separate word cards, at the teacher's discretion, to make the lesson more challenging.] *dangerous, areas, some, are, [of the Earth]* *for, [to explore], humans, too*
Word Cards for Sentence #2: *copy, movement, robots, the, [of animals]* *[designed to], [can hop], over, cliffs* *[or squeeze through tight caverns], safely, rocky*
Mystery Sentence: *but*

Note: Be sure the SW prompt card is visible to the whole group. Use it to guide the discussion of each sentence.

Build Sentence #1
● Teacher prompts students to build the first sentence. ***Word Cards:*** *dangerous, areas, some, are, [of the Earth]* ● Students may build: ***"Some areas of the Earth are dangerous."*** ● Teacher prompts students to expand sentence:

Word Cards: *for, [to explore], humans, too*

- Students may build:
  "Some areas of the Earth are too dangerous for humans to explore."

- Use the SW prompt card to discuss the sentence.

Note: Continue to give students time to add /rearrange words, providing support or feedback as necessary. Allow students 1-2 attempts to arrange words; after two unsuccessful attempts, intervene using one of the steps provided in the elaborative plan.

Manipulate Morphosyntactic Structure of Sentence #1

- Teacher asks students how the sentence would need to be changed if we said *One area* instead of *Some areas*.

- Teacher and students work together to change *are* to *is*.

  "One area of the Earth is too dangerous for humans to explore."

Building Sentence #2

*Note: Teacher removes the word cards from Sentence #1 and places them off to the side (but keep them in a nested stack, in order, to make it easier to quickly re-build mystery sentence later).

- Teacher prompts students to build sentence #2:

  Word Cards: *copy, movements, robots, the, [of animals]*

- Students may build:

  "Robots copy the movement of animals."

- Teacher prompts students to expand sentence:

  Word Cards: *[designed to], [can hop], over, cliffs*

- Students may say:

  "Robots designed to copy the movements of animals can hop over cliffs."

"Robots designed to hop over cliffs can copy the movements of animals." (less ideal but also acceptable)

- Teacher prompts students to expand sentence:

  Word Cards: *[or squeeze through tight caverns], safely, rocky*

- Students may say:

  "Robots designed to copy the movements of animals can safely hop over rocky cliffs or squeeze through tight caverns."

  "Robots designed to copy the movements of animals can hop over rocky cliffs safely or squeeze through tight caverns."

  "Robots designed to safely copy the movements of animals can hop over rocky cliffs or squeeze through tight caverns."

- Use the SW prompt card to discuss the sentence.

Note: Continue to give students time to add /rearrange words, providing support or feedback as necessary. Allow students 1-2 attempts to arrange words; after two unsuccessful attempts, intervene using one of the steps provided in the elaborative plan.

Build Mystery Sentence & Discuss Meaning

*Note: Teacher places the word cards from sentence #1 back on the table so that both sentences are arranged in front of the students. Do not ask students to rebuild the sentence.

- Teacher helps students briefly discuss the ideas in the sentences, helping students see how the ideas in both sentences are connected.

- Teacher prompts students to combine the two sentences using one word (below).

  Word Card: *but*

- This will create the mystery sentence (there are no words to remove). Ask students to read aloud the mystery sentence to ensure it makes sense and conveys the idea we want it to:

  Some areas of the Earth are too dangerous for humans to explore, but robots designed to copy the movement of animals can safely hop over rocky cliffs or squeeze through tight caverns.

- Teacher and students add the mystery sentence to the Inquiry Space.

DR Lesson G

Discovery Reading Lesson Title: Robots_Lesson G (Elaborative, High Student Responsibility)

Book: *Robots (National Geographic Kids)*

Pages: 32-35

Ways to Increase Student Responsibility:

- Select a different **student to lead the discussion** for each text chunk.
- Allow students to **choose which thought routines** would be most appropriate to practice with each chunk of text.
- Encourage the student discussion leader to use the **prompt card**. As needed, and gradually releasing over time, **support the student** in soliciting participation and facilitating discussion among their groupmates.
- **Full linguistic repertoire (FLR)**: Students can discuss and ask each other questions in their home language to support their mental models of the text.

SETTING THE PURPOSE - Before Reading

Ideas from Inquiry Space to Review Before Reading:

- **"Today during Discovery Reading, we are going to read some more from our book called *Robots.* Let's start by looking at our Inquiry Space to review some of the things we have learned about robots. Can someone talk us through some of the most important things we have learned so far?"** Allow one student to share. Encourage them to reference the ideas on the Inquiry Space as they talk to the group.

Guiding Question Framing:

- "**Now let's look at the big question that we are going to be able to answer by the end of this lesson**. (Show and read the question.) **The question we will answer is: *<u>What features do androids have that make them similar to humans?</u>* While we read today, let's make sure we are gathering ideas that help us form and understand an answer to this question."**

Word to Preview Before Reading:

- **"Before we start reading, I want to talk about a word we will encounter in this text today. Our word in the spotlight is <u>artificial</u>.** (Say and show the word to students.) **Artificial is when something is <u>made by humans to resemble, or look like, something found in nature</u>. For example, if you go to a restaurant and see artificial flowers on a table, these are fake flowers made out of plastic or cloth that are meant to look like real flowers. So in a way, artificial means 'fake.' Can one person share a quick example of how they have seen or heard that word**

before or an example of something that might be artificial– made to resemble something in nature? It could be in English or a similar word in another language that you speak." (FLR)

- **"I am going to keep this word card over here to the side so we can remember that we are looking for the word *artificial* as we read today. When you see it, be sure to let us know so we can talk about how it is used by the author."**
- Ask a student to add the vocabulary word to the Inquiry Space for later reference.

METACOGNITIVE DISCUSSION - During Reading

Text Chunk #1: pages 32-33. Note: This text is not too lengthy, but there are a few challenging vocabulary words that might need clarification during Monitor and Repair (i.e. *version* and *recognize*).

Prompt cards should be in front of students and the teacher for all discussions.

- **"I am going to read these pages aloud as you follow along. Before I start reading, who wants to be our discussion leader for this chunk?"** (Choose a student). **"As soon as I finish reading, the leader is going to start our conversation using the prompt card. Here we go."** Students follow along while the teacher reads page 10 aloud.

- After reading, the teacher does not jump in to start the conversation. Wait for the designated discussion leader to start. If the discussion leader does not start, give a short prompt or reminder to get the leader started. Prompt cards should be in front of students. Discussion leader should notice the word in the spotlight and say something like: *"That was a good place to stop because I see the Word in the Spotlight, artificial."* Using the prompt card language, the discussion leader can either explain how the word is used or ask a peer to do it. Teacher can support the group as needed, allowing the discussion leader to facilitate as much as possible.

- Then the discussion leader might say something like this: *"Okay, we always do 'Monitor and Repair', so let's do that next. Did anyone see something that made you say 'Wait a minute!' Who would like to take a turn monitoring and repairing?"* Discussion leader can call on a peer to respond and briefly discuss. The teacher can also participate similarly to the students, letting the discussion leader facilitate in the teacher role.

Text Chunk #2: p. 34-35. Note: this chunk recycles some previous vocabulary and big ideas- if needed, take this opportunity to call on a student to lead a review of what *roboticist* means.

- **"We have one more chunk for today's Discovery Reading before we try to answer our guiding question. We need one more discussion leader.** (Choose a student, ideally someone who hasn't already led). **I'll read aloud page 34, and then let's read**

page 35 together chorally."

- Like above, the discussion leader should begin the conversation, using prompt card language: *"Let's do Monitor and Repair again. Who would like to share something on this page that made you say "Huh. Wait a minute!"? Let's talk through it together."*

- Then the discussion leader might continue like this: "*Now let's choose another thinking routine from our prompt card. I think it would help us here to Tell What We See. Can someone tell us what they pictured in their mind when we read this part?"* Discussion leader can either call on a peer or explain their own thinking, using the prompt card language as a guide.

- Then, the discussion leader should choose another routine from the prompt card. They might say something like this: *"Let's use 'Quiz Me' now. That's a good way to check to see if we are understanding the important idea here."* They can either pose a question or ask for a peer to pose one. In either case, the question should be about a central idea important for understanding that chunk (not a trivial detail). For example: *"Why does Kismet react to the roboticist?"*

SYNTHESIZING KNOWLEDGE - After Reading

"Now that we have finished our reading for today, let's return to our guiding question:

What features do androids have that make them similar to humans?
Hopefully you noticed that this idea came up a bunch today in our conversation.

"Let's generate an answer to this together. Who has an idea to get us started?"

Walk the students through a discussion, encouraging students to return to the text, and have them work together with you to construct an answer. The teacher leads the students in writing an answer as a group on the **inquiry space** (you write while students dictate.)

*NOTE: You should always ensure that the vocabulary word is reinforced or reviewed after reading. You can either encourage students to use the vocabulary word in the class answer (as in the model sentence below), or you can briefly review the meaning of the word before answering the question. Here, the word is part of the question, so just encourage students to use it in the answer.

Example model answer:
Androids are similar to humans because they might look, move, or act like humans, even though they are artificial. Some can even dance or talk. One android, Kismet, can make faces to show emotions, just like a person.

CR Lesson F

Confident Reading Lesson Plan F: Blueprint

Text: Fact vs Fiction Text 3 (maze)

Reminders for Every Lesson:

- Invite participation from **at least two students** each time you pause to discuss, rotating strategically to hear from as many students as possible. **Every student** should have a chance to share their ideas **at least once** during the lesson.
- **Encourage students to talk to each other**, not just to the teacher. During each routine, after the first student contributes, a second student should, when appropriate and whenever possible, be invited to add to or respond to the first student.
- Remember to give **wait time**: after inviting students to participate, wait 3-4 seconds to allow some thinking time.

Lesson Routine:

1. Teacher intro and maze read: students read silently and select maze choices
2. Teacher model reads and maze teaching point
3. Partner Read
4. Discuss
5. Feedback and Quick Teaching Point
6. Bridging Language Routine
7. Whole Group Read

Text 3 (maze)

[1]Robots are very popular in movies, tv, and books. [2]Some of these robots even look similar to humans. [3]These human-like robots are called androids. [4]Some are 'good guys,' but others become dangerous. [5] However While Therefore , real-life androids are not going to take over the world! [6]Even though they look like humans, androids are still machines. [7]Some can walk and talk like humans, but there are many differences between the two. [8]Unlike humans, androids are not alive.

[9]Although some robots can see and copy human faces, they don't think or feel [emotions / signs / things]. [10]Instead, some robots have a computer that acts like a human brain. [11]This computer is called artificial intelligence [but / so / and] it helps the robot make human-like decisions. [12]However, unlike the human brain, these computers are only programmed to complete a few jobs. [13]Human scientists decide what the robot needs to know, unlike humans that can learn on their own. [14] [Finally / Even / Then] though an android might look like a human, walk like a human, and talk like a human, it is still a robot!

Maze Teaching Point	**Bridging Language Routine (use for purple text):**
(choose this one or one your students had the most difficulty with): "Let's re-read sentence 11 and we can consider all the ways this sentence could be completed: *This computer is called artificial intelligence but it helps the robot make human-like decisions.* ***OR*** *This computer is called artificial intelligence so it helps the robot make human-like decisions.* ***OR*** *This computer is called artificial intelligence and it helps the robot make human-like decisions."* "It can't be *so* because we can't imply that artificial intelligence makes human like decisions. *But* wouldn't make sense either because nothing is being compared in this sentence. So we have to use *and* here because we are connecting two thoughts or ideas!"	-Reread the sentence 6 and 7 (show with fingers.) -"In sentence 7, *the two* replaces which word(s)? -Students: "The androids and humans." -"Androids and humans? Let's check it and see. Read aloud the sentence again with me by substituting these words instead: [7]*Some can walk and talk like humans, but there are many differences between androids and humans.* -"Does that sound right? Yes! This sentence refers to differences and we know after reading that these machines differ from humans. Nice work!"

Feedback & Teaching Points (choose 1 or 2): ● reading confidence ● accuracy ● punctuation ● connectives and conjunctions ● words and phrases that signal text structure ● other forms of phrasing Routine: Teacher models; students repeat after teacher 1-2 or times; students practice re-reading in unison 1-2 times.	

BW Lesson D

Breaking Words Lesson Plan D (Elaborative_High Student Responsibility)
Robots Module

Word Cards:
- *recognize*
- *injure*

Affix Cards:
- *un-*
- *pre-*
- *-ing*
- *-ion/-tion**
- *-able/-ible**

Note: Not all of these affixes will be used in every Breaking Words lesson during this module, but students should have access to the affix cards to experiment with during this section of the lesson. Cards will be used again in future lessons.
*Two sides of the same notecard.

Note: For each part of the lesson, refer back to the BW Prompt Card

Warm Up	Teacher may say: "We have already used our Breaking Words steps to learn a bunch of cool words. Let's read them quickly to review them." *Teacher can flash words and kids can read them chorally* "I've picked one of our words. Who can use this one in a sentence for us?"
Phase	**Word 1: *recognize***
Count It	"Today we are going to work with two words related to our learning about robots. Who wants to lead us through the steps for analyzing our first word?" (Choose a student leader) "The first word is *recognize.* We've learned about how some robots can *recognize* human facial expressions and emotions. Our BW leader is going to lead us through all the steps, starting with—" (Teacher pauses and let's the student leader take over.)

	The discussion leader might say something like: "Let's start with Count it. Before I show you the word, let's count the syllables we hear when we say recognize." *Discussion leader should point to the steps in the prompt card to make sure everyone knows which step they are on.* Students may say: *three, clapping as they say the word aloud* *Discussion leader helps as needed if students have trouble hearing the syllables. The teacher should prompt and support as needed, while continuing to allow the leader to facilitate the steps. The teacher can actively participate as if in the role of a student.*
Read It	Discussion leader shows the word card and asks everyone to read it aloud.
Use It	Discussion leader asks: "How would you use the word *recognize* in a sentence having to do with robots?" *Note: Discussion leader can invite peers to use their full linguistic repertoire*
Divide It	Discussion leader asks the group to divide the word into three syllables. ● Students may say: re/cog/nize Then, the discussion leader asks students to check the logic of their syllables: "Each syllable has to have exactly one vowel sound. Let's check each one. What vowel do we hear in the first syllable? Second syllable? Last syllable?" "Now that we have checked the syllables and they make sense, let's cut the word apart." (Discussion leader chooses a peer to cut the word into three pieces on the syllable junctures.)
Assemble It	Discussion leader scrambles the three pieces and chooses a student to put the word back together. Then re-scramble and choose another person to re-assemble one more time.
Write It	Discussion leader covers up the word card and asks students to write the word recognize from memory on their boards or scratch paper, reminding them to think about the three syllables as they spell it.
Transform & Use It	Discussion leader pulls out the affix cards (Teacher should display the affix cards *un-, pre-, -ing, -ion/-tion, -able/-ible)* and says something like: "Now let's uses the prefixes and suffixes to see if we can transform *recognize* into new words." Discussion leader places each card, one at a time, on the word and asks:

	"Does this make a new word?" Students answer yes or no. When an affix does create a logical word, the discussion leader asks: "Does this affix add a syllable to recognize?" Students count the syllables in the new word to answer. Then they use or define the new form of the word. Discussion leader quickly goes through all the affixes this way. The teacher then adds (*recognize)* and any new transformed word to the cumulative word deck for future use *(recognizing, recognizable, unrecognizable)*.

Phase	**Word 2: *injure***
Count It	Teacher asks for another volunteer to lead the analysis of this word. "The next word is injure. We have learned about how robots can be used for surgeries for people who become *injured*." Discussion leader asks, "How many syllables are in the word *injure*?" Students may say: *two, clapping the syllables to make sure* *Note: If students struggle with syllabification, remind them of the vowel rule: one vowel sound for each syllable.*
Read It	Discussion leader presents the written word card and asks peers to read the word aloud.
Use It	Discussion leader chooses two students to use the word in a sentence about robots. *Note: Discussion leader can invite peers to use their full linguistic repertoire*
Divide It	Discussion leader asks: "How would we divide this word to form two syllables?" ● Students may say: in/jure *Discussion leader helps students check the syllables to make sure each one has one vowel sound. For each, they ask "What vowel sound do we hear?" and "How is that sound spelled in this written syllable?"* *Then, the discussion leader chooses a peer to cut the word apart.*

Assemble It	Discussion leader scrambles the pieces and asks a student to put the word back together.
Write It	Discussion leader asks students to get out their boards or scratch paper and to write the word from memory, using the syllables to help them. Then the leader shows the correct spelling so students can compare and self-check.
Transform & Use It	Discussion leader displays the affix cards again. "Now we will see if we can use these prefixes and suffixes to turn *injure* into new words." Use each affix, one at a time. For instance, the leader might say: "Let's add -*ing* to the end of this word. What word do we have now?" "Does adding -*ing* create another syllable?" "How could you use *injuring* in a sentence?" "Now I'm going to take off -*ing* and replace it with -*able* at the end of the word. What word do we have now?" "How many syllables does it have?" "How could you use *injurable* in a sentence?" "How is it different from *injure* or *injuring*?" "Do any of our other word parts work for this word? Why or why not?" ● Teacher will write real words on new cards to add to the warm-up deck (*injure, injuring, injurable)*. Students may add a word(s) to the inquiry space to synthesize their knowledge of the module topic.

DR Lesson H

Discovery Reading Lesson Title: Robots_Lesson H (Blueprint)

Book: *Robots (National Geographic Kids)*

Pages: 30-31 and 44-45

Ways to Increase Student Responsibility:

- Select a different **student to lead the discussion** for each text chunk.
- Allow students to **choose which thought routines** would be most appropriate to practice with each chunk of text.
- Encourage the student discussion leader to use the **prompt card**. As needed, and gradually releasing over time, **support the student** in soliciting participation and facilitating discussion among their groupmates.
- **Full linguistic repertoire (FLR)**: Students can discuss and ask each other questions in their home language to support their mental models of the text.

SETTING THE PURPOSE - Before Reading

Review ideas from Inquiry Space

Guiding Question: *Why are scientists continually working on ideas for new robots?*

Word in the Spotlight:
develop: to construct, create, or improve upon materials or machines for a certain purpose

Note: You may also briefly say there are other definitions of *develop*, such as to grow or mature, but we are just focusing on this definition today in the context of robots.

METACOGNITIVE DISCUSSION - During Reading

Use the prompt card and DR routines to read aloud and discuss:

Text Chunk #1: page 30

Text Chunk #2: page 31

Text Chunk #3: pages 44 and 45

SYNTHESIZING KNOWLEDGE - After Reading

Exemplar answer:

Scientists continually brainstorm new ideas for robots as they find problems in the world that they want to try to solve, such as by developing self-driving cars to prevent accidents or to study blood cells to cure cancer. Some roboticists want to try new things just to see if they are possible, so they are frequently coming up with new ideas for advanced robot designs.

UtS Lesson B

Uncover the Structure Lesson Plan B: Elaborative

Text: Fact vs. Fiction Text 3 (Complete)

Reminders for Every Lesson:

- Invite participation from **at least two students** each time you pause to discuss, rotating strategically to hear from as many students as possible. **Every student** should have a chance to share their ideas **at least once** during the lesson.
- **Encourage students to talk to each other**, not just to the teacher. During each routine, after the first student contributes, a second student should, when appropriate and whenever possible, be invited to add to or respond to the first student.
- Remember to give **wait time**: after inviting students to participate, wait 3-4 seconds to allow some thinking time.

Text 3 (complete)

[1]Robots are very popular in movies, TV, and books. [2]Some of these robots even look similar to humans. [3]These human-like robots are called androids. [4]Some are 'good guys,' but others become dangerous. [5]However, real-life androids are not going to take over the world! [6]Even though they look like humans, androids are still machines. [7]Some can walk and talk like humans, but there are many differences between the two. [8]Unlike humans, they are not alive. [9]Although some robots can see and copy human faces, they don't think or feel emotions. [10]Instead, some robots have a computer that acts like a human brain. [11]This computer is called artificial intelligence and it helps the robot make human-like decisions. [12]However, unlike the human brain, these computers are only programmed to complete a few jobs. [13]Human scientists decide what the robot needs to know, unlike humans that can learn on their own. [14]So even though an android might look like a human, walk like a human, and talk like a human, it is still a robot!

Text: "Robots: Fact vs Fiction Text 3 (Complete)"
Step One. Review the Text
"We've read a couple of different versions of a text about how robots are similar and different from humans and during today's lesson we will revisit one of them. We've already read this text a couple of times, and we've learned a lot about a lot about robots from it. Let's quickly re-read it together." **Teacher reads aloud.**
Step Two. Stating the Structure of the Text
"Now, we're going to 'uncover the structure' of this text. That means we are going to figure out how the author has organized the ideas in this text so that we can understand them. When writing, authors make choices about how they communicate ideas to help their readers learn." "There are lots of different ways that authors can organize their thoughts, but as we learn about robots, we are just going to focus on a couple." *Here the teacher shows the empty **compare and contrast graphic organizer.** "Sometimes, an author might show us how two topics are similar and different from each other. This is called "compare and contrast." When we compare two topics, we show the ways they are similar. When we contrast them, we find the things that are different. An author chooses the structure that best fits the ideas they want to communicate to their readers." "The text we are reading today uses the compare and contrast structure to teach us about how robots and humans are similar or different from each other."
Step Three. Identifying Cue Words for Structure
"There are some words that authors sometimes use to signal, or show us, how they are organizing a text. Let's take a moment to look back at our text and see if we can find a few. Some examples of words that signal compare and contrast are the same **as, both, alike, different,** and sometimes **but.** The author might use other clues, like details, to show how two things are alike and different as well. *Teacher will have students reread the text to locate a few examples, which they should circle or highlight on their papers.* Continue in this way for a few more examples, pointing out the relationship between ideas and how cues in the text alert the reader to the correct text structure. Cue words should be added to the Inquiry Space for later reference. If students have difficulty, have students read a sentence aloud to help

them locate the cue word. **For example:**

"Let's reread the ninth sentence together: *Although some robots can see and copy human faces, they don't think or feel emotions."*

"The word **although** at the beginning of the sentence tells me that while there are similarities between robots and humans, they are still different. If I'm thinking about the ideas in this sentence, I know that robots can read and copy our facial expressions, but that they don't think or feel any type of emotion."

Step Four. Discussion

"Now, I'm going to ask you a few questions about this text. In order to answer these questions, you will have to think about how the ideas in the text are organized, or structured."

Teacher should ask 2-3 of the following (depending on time):

"We learned that androids can look like humans, but what is one way that they are different?"

"What are some ways androids and humans are similar?

"Some robots can make decisions, but they don't think for themselves. How is artificial intelligence like a human brain? How is it different?"

Teacher calls on students to share, prompting them to refer back explicitly in the text to explain their thinking.

Step Five. Graphic Organizer

"Now we are going to take what we learned and put all the ideas from the text into our graphic organizer so that we can really see how this text uses the structure."

As a group, the teacher and students will work together to complete the **compare and contrast graphic organizer**, paying close attention to the similarities and differences between androids and humans. The teacher will transcribe student responses into a shared document by filling out the Venn diagram. ****In later lessons, teachers could release this responsibility to their students based upon ability and comfort.*

"Awesome! So we've 'uncovered' the structure of this text. We know that this text uses the structure of compare and contrast to tell us how humans and androids are alike and different."

Step Six. Summarizing

"Now, we're going to practice summarizing this text. When we summarize, we want to explain the ideas in the text to someone else who hasn't read it so that they can understand it. That means we want to explain it in a way that uses the same structure that the author used."
"Using your graphic organizer, summarize what you learned about androids and humans from this text."

Teacher gives students a minute to practice with their partners.

"Before we go, we are quickly going to write a summary of what we learned together. What should we begin with?"

Teacher will prompt students as the group writes a summary together, which the teacher will record to include on the Inquiry Space for future reference. As the teacher guides students through the shared-writing exercise, make sure to include structural cue words and appropriate academic vocabulary from the text and module.

Example: *Some robots, called androids, are a lot like humans. Some can walk and talk like people. However, they are still machines, and instead of brains they have artificial intelligence and need people to program them to perform their jobs. Androids cannot do all the things humans can do.*

SW Lesson D

Sentence Workshop Lesson D (Blueprint)
Robots Module

Mystery Sentence: Some roboticists develop android robots that are programmed to mimic human behaviors and appear lifelike even though they are artificial. **Sentence #1:** Some roboticists develop android robots. **Sentence #2:** Android robots are programmed to mimic human behaviors and appear lifelike even though they are artificial.
Word Cards for Sentence #1: If you are making the cards beforehand, it might be helpful to group them by chunk, paperclip each chunk, and have them ready to go in the order they'll appear in the lesson. [Note: some cards consist of entire phrases as indicated by the brackets.] *robots, roboticists, develop* *some, android*
Word Cards for Sentence #2: *are, artificial, [android robots]* *lifelike, appear, [even though they]* *[are programmed to], [mimic human behaviors], and*
Mystery Sentence: *that*

Note: Be sure the SW prompt card is visible to the whole group. Use it to guide the discussion of each sentence.

Build Sentence #1

- Teacher prompts students to build the first sentence.

  Word Cards: *robots, roboticists, develop*

- Students may build:
  "Roboticists develop robots."

- Teacher prompts students to expand sentence:

Word Cards: *some, android*

- Students may build:
  "Some roboticists develop android robots."
  "Roboticists develop some android robots."
- Use the SW prompt card to discuss the sentence.

Note: Continue to give students time to add /rearrange words, providing support or feedback as necessary. Allow students 1-2 attempts to arrange words; after two unsuccessful attempts, intervene using one of the steps provided in the elaborative plan.

Manipulate Morphosyntactic Structure of Sentence #1

- Teacher asks students how the sentence would need to be changed if we said *Tomorrow* at the beginning.
- Teacher and students work together to change *develop* to *will develop.*

  "Tomorrow some roboticists will develop android robots."

Building Sentence #2

*Note: Teacher removes the word cards from Sentence #1 and places them off to the side (but keep them in a nested stack, in order, to make it easier to quickly re-build mystery sentence later).

- Teacher prompts students to build sentence #2:

  Word Cards: *are, artificial, [android robots]*

- Students may build:
  "Android robots are artificial."
- Teacher prompts students to expand sentence:

  Word Cards: *lifelike, appear, [even though they]*

- Students may say:
  "Android robots appear lifelike even though they are artificial."
  "Even though they are artificial, android robots appear lifelike."
- Teacher prompts students to expand sentence:

Word Cards: *[are programmed to], [mimic human behaviors], and*

- Students may say:

  "Android robots are programmed to mimic human behaviors and appear lifelike even though they are artificial."

  "Android robots are programmed to appear lifelike and mimic human behaviors even though they are artificial."

- Use the SW prompt card to discuss the sentence.

Note: Continue to give students time to add /rearrange words, providing support or feedback as necessary. Allow students 1-2 attempts to arrange words; after two unsuccessful attempts, intervene using one of the steps provided in the elaborative plan.

Build Mystery Sentence & Discuss Meaning

*Note: Teacher places the word cards from sentence #1 back on the table so that both sentences are arranged in front of the students. Do not ask students to rebuild the sentence.

- Teacher helps students briefly discuss the ideas in the sentences, helping students see how the ideas in both sentences are connected.

- Teacher prompts students to combine the two sentences using the word *that*. When you arrange the two sentences together on the table, help the students see that the first sentence ends with *android robots* and the second sentence also begins with *android robots.* Tell students that in order to not repeat ourselves too much, we can remove one of these phrases and replace it with a special word: *that* (show word card below). Guide students in removing one of those phrases and replacing it with *that.*

  Word Card: *that*

- This will create the mystery sentence. Ask students to read aloud the mystery sentence to ensure it makes sense and conveys the idea we want it to:

  Some roboticists develop android robots that are programmed to mimic human behaviors and appear lifelike even though they are artificial.

- Teacher and students add the mystery sentence to the Inquiry Space.

Inquiry Space (IS)

Ideas for planning the IS maintenance days

Note to teachers:

While the rest of the K.L.I. components are highly structured, the Inquiry Space, by its very nature, has to be flexible and customizable for each group. Think of this as your "playground" where you and your students have freedom to spend time playing with the big ideas about your topic that have come up across previous lessons. We haven't provided specific lesson plans for IS days. Instead, we provide these ideas below as starting points as you plan for these days.

Menu of Options

During an IS day, you can do one of these activities, a combination of several of them, or design something of your own that accomplishes the goal of this component. Keep in mind that the goal of the Inquiry Space component is to: *re-engage with the vocabulary and concepts your group has been collecting from lesson to lesson so that students can notice and discuss how these ideas fit together.*

1. Review and re-organize the Inquiry Space
    - Show the current version of the group's Inquiry Space.
    - Ask them to work with a partner or individually to re-read all the entries that are there.
    - Then have them work with a partner to identify a few sorting categories they could use to move the entries around into meaningful groups. For instance, maybe there are three entries about robots helping save people and two entries about robots helping the environment. You could move these into groups and label each one (ways robots help people; ways robots help the environment).

2. Review and connect new words
    - Show the current version of the group's Inquiry Space
    - Ask students to read all the entries and look for new vocabulary words they have learned.
    - After students have each found their list of new words, ask each student to pick one word to share with the group. They have to explain where the word is found on the Inquiry Space and what it means (related to the inquiry topic). You could also ask them to create an action or movement for the word to help the group remember it.
    - For each word, draw lines that connect to other words on the Inquiry Space and create a sentence that shows how the words are related. For example, you might draw a line between the words *survivor* and *sensor* and develop the sentence: "Robots use sensors to find survivors after a natural disaster."

3. Revisit the overarching inquiry questions
    - Show the current version of the group's Inquiry Space.
    - Chorally read all the entries as a group to review all the ideas.
    - Then show students the questions from the Day 0 lesson that you used to launch the module.

- Using one question at a time, ask students to work with a partner to find at least two entries on the Inquiry Space that help answer the question.
- The partners can share their ideas with the group, and then color-code or re-arrange the entries into groups based on the question they help answer.

4. Paraphrase the most important or most interesting ideas
    - Show the current version of the group's Inquiry Space and chorally read the entries aloud to review
    - Ask students to pretend they are explaining what they have learned to a friend or relative who hasn't been in the group. They have to pick ONE really important idea and explain it in their own words, in a way that will make sense to their friend or relative (this is a great opportunity for students to explain their new knowledge in a home language or dialect). Alternatively, you can ask them to pick the one idea that is most interesting to them that they think will also be interesting to their friend or relative.
    - Students work in partners or individually to come up with two sentences for their friend or relative. If needed, you can give them a sentence starter to get them started.
    - They share with the group and then record their sentences on the Inquiry Space as new entries.

DR Lesson I

Discovery Reading Lesson Title: Robots_Lesson I (Blueprint)

Book: *DK Find Out! Robots*

Pages: 14-15 and 18-19

Ways to Increase Student Responsibility:

- Select a different **student to lead the discussion** for each text chunk.
- Allow students to **choose which thought routines** would be most appropriate to practice with each chunk of text.
- Encourage the student discussion leader to use the **prompt card**. As needed, and gradually releasing over time, **support the student** in soliciting participation and facilitating discussion among their groupmates.
- **Full linguistic repertoire (FLR)**: Students can discuss and ask each other questions in their home language to support their mental models of the text.

SETTING THE PURPOSE - Before Reading
Review ideas from Inquiry Space (starting new book today) **Guiding Question:** *How are robots designed to help make some jobs easier for humans?* **Word in the Spotlight:** *operate:* to control how something functions, or to perform a surgery (for example, "my job is to operate the snack machine"; or "the doctors are going to operate on his brain")
METACOGNITIVE DISCUSSION - During Reading
Use the prompt card and DR routines to read aloud and discuss: **Text Chunk #1:** pages 14 and 15 **Text Chunk #2:** page 18 (just the "Medical Robots" section and the "Wow!" text box.) **Text Chunk #3:** page 19
SYNTHESIZING KNOWLEDGE - After Reading
Exemplar answer:

Some robots can be designed to lift very heavy objects using powerful electric motors, such as large robots that are used in factories to build cars. Other robots can be designed to move very precisely in tiny places, such as robots used to help doctors perform surgeries. In both cases, robots are making challenging jobs easier for humans.

CR Lesson G

Confident Reading Lesson Plan G: Blueprint

Text: Drones Text 1

Reminders for Every Lesson:

- Invite participation from **at least two students** each time you pause to discuss, rotating strategically to hear from as many students as possible. **Every student** should have a chance to share their ideas **at least once** during the lesson.
- **Encourage students to talk to each other**, not just to the teacher. During each routine, after the first student contributes, a second student should, when appropriate and whenever possible, be invited to add to or respond to the first student.
- Remember to give **wait time**: after inviting students to participate, wait 3-4 seconds to allow some thinking time.

Lesson Routine:

1. Teacher reads aloud and models
2. Students read silently
3. Partner Read
4. Discuss
5. Feedback and Teaching Point
6. Bridging Language Routine
7. Whole Group Read

Text 1

[1]Have you ever seen a drone? [2]They fly in the air and are controlled by people from afar. [3]These popular machines range from very small to large. [4]Police, news crews, and scientists use them for their jobs. [5]But drones aren't new. [6]They have been around for over 200 years! [7]The first drone was a balloon that Austrian soldiers used to drop bombs in 1839. [8]In 1915, the British army used drones to make maps during war. [9]Our military began using them in the 1940s. [10]They were seen as expensive toys until the 1980s. [11]Later, in the 1990s, the first tiny drones were created. [13]Now, some companies are trying to use drones to deliver packages.

Feedback & Teaching Points (choose 1 or 2):	**Bridging Language Routine (use for purple text):**
• reading confidence • accuracy • punctuation • connectives and conjunctions • words and phrases that signal text structure • other forms of phrasing Routine: Teacher models; students repeat after teacher 1-2 or times; students practice re-reading in unison 1-2 times.	-Reread sentences 8-10 (show students place in text with fingers.) -"Who is *them* referring to in sentence 9? Students: "Drones." -"What about the following sentence? What is the word *they* referring to?" Students: "Drones." "Drones? OK, let's check it and see. Let's place the word "drones" in place of "them" in the following sentences. Read aloud with me, from the beginning: [8]*In 1915, the British army used drones to make maps during war.* [9]*Our military began using drones in the 1940s.* [10]*Drones were seen as expensive toys until the 1980s.* "Does that make sense? Yes! In sentence 8 it says that drones were used '*to make maps during war*'. SO, we know that sentence 9 is still referring to drones and when our military began to use them. The following sentence continues to describe *drones*. Great Job!"

BW Lesson E

Breaking Words Lesson Plan E (Blueprint)

Robots Module

Word Cards:
- *operate*
- *developed*

Affix Cards:
- *un-*
- *pre-*
- *-ing*
- *-ion/-tion**
- *-able/-ible**

Note: For each part of the lesson, refer back to the BW Prompt Card

Warm up	Use word deck from previous lessons, students quickly read all the words; pick one and create a sentence
Word 1: *operate*	**Count it:** *three* **Read it** **Use it:** *Some scientists operate certain robots to do jobs.* **Divide it:** op/er/ate **or** o/per/ate **Assemble it** **Write it** **Transform & Use it:** operating, operation, preoperate, operatable [note: some dictionaries will suggest *operable*, but *operatable* is acceptable and more intuitive in this lesson context]
Word 2*:* *developed*	**Count it:** *three* **Read it** **Use it:** *Scientists developed robots to perform specific tasks.* **Divide it:** de/vel/oped **Assemble it** **Write it** **Transform & Use it:** developing, undeveloped *After lesson, teacher adds new words to cumulative word deck.

DR Lesson J

Discovery Reading Lesson Title: Robots_Lesson J (Blueprint)

Book: *DK Find Out! Robots*

Pages: 30-31

Ways to Increase Student Responsibility:

- Select a different **student to lead the discussion** for each text chunk.
- Allow students to **choose which thought routines** would be most appropriate to practice with each chunk of text.
- Encourage the student discussion leader to use the **prompt card**. As needed, and gradually releasing over time, **support the student** in soliciting participation and facilitating discussion among their groupmates.
- **Full linguistic repertoire (FLR)**: Students can discuss and ask each other questions in their home language to support their mental models of the text.

SETTING THE PURPOSE - Before Reading

Review ideas from Inquiry Space

Guiding Question: *How does the coding process for robots work?*

Word in the Spotlight:

programming: related to the process of providing a computer or machine with instructions to complete a task (you may mention there are other definitions of *program*, such as a TV program or a school program, but today we are using the word with this meaning.)

METACOGNITIVE DISCUSSION - During Reading

Use the prompt card and DR routines to read aloud and discuss:

Text Chunk #1: p. 30: the paragraph, text box about Google, and the two captions.

Text Chunk #2: p. 31, the top paragraph "Coding with Blocks" plus the coding directions in the colored blocks on the top right corner of the page.

Text Chunk #3: p. 31, the three captions on that page.

SYNTHESIZING KNOWLEDGE - After Reading

Exemplar answer:

Roboticists use a special programming language to code robots. They use computer technology, such as phones or tablets, to give a list of instructions for the robot to do. They make it so that if a person presses a particular button, it "commands" the robot to do a certain task, such as moving left or right, picking something up, or dancing.

CR Lesson H

Confident Reading Lesson Plan H: Blueprint

Text: Drones Text 2

Reminders for Every Lesson:

- Invite participation from **at least two students** each time you pause to discuss, rotating strategically to hear from as many students as possible. **Every student** should have a chance to share their ideas **at least once** during the lesson.
- **Encourage students to talk to each other**, not just to the teacher. During each routine, after the first student contributes, a second student should, when appropriate and whenever possible, be invited to add to or respond to the first student.
- Remember to give **wait time**: after inviting students to participate, wait 3-4 seconds to allow some thinking time.

Lesson Routine:

1. Teacher reads aloud and models
2. Students read silently
3. Partner Read
4. Discuss
5. Feedback and Teaching Point
6. Bridging Language Routine
7. Whole Group Read

Text 2

[1]Have you ever seen a drone? [2]These remote-controlled machines fly in the air and are controlled by people from afar. [3]These popular machines can be very small or as large as a plane. [4]Police, news crews, and scientists use them in their jobs. [5]But drones aren't brand new. [6]People have used them for over 200 years! [7]The first drone was a balloon that Austrian soldiers used to drop bombs on an Italian city in 1839. [8]In 1915, the British army used drones to make maps during World War I. [9]Then, the U.S. military began using them in the 1940s, but they were seen as expensive toys until the 1980s. [10]Later, in the 1990s, the first tiny drones were created. [11]Now,

companies like Amazon are developing drones to deliver packages to customers. [12]People are finding lots of new ways to use these interesting machines.

Feedback & Teaching Points (choose 1 or 2):	**Bridging Language Routine (use for purple text):**
● reading confidence ● accuracy ● punctuation ● connectives and conjunctions ● words and phrases that signal text structure ● other forms of phrasing Routine: Teacher models; students repeat after teacher 1-2 or times; students practice re-reading in unison 1-2 times.	-Reread sentences 3 and 4 (show students place in text with fingers.) -"What is the phrase [*these popular machines]* referring to in sentence 3? Students: "Drones." -"Let's look at the following sentence. What is the word *them* referring to?" Students: "Drones." "The drones? OK, let's check it and see. Let's place the word "drones" in place of "these" and "them" in these two sentences. Read aloud with me. "Does that make sense? Yes! The first sentence discusses how *drones* were popular machines and the word "them" in the following sentence continued to talk about these machines! Great work!"

SW Lesson E

Sentence Workshop Lesson E (Blueprint)
Robots Module

Mystery Sentence: Some robots are designed to lift heavy metal objects to build cars in factories, while others are built with specific features that enable them to handle delicate items. **Sentence #1:** Some robots are designed to lift heavy metal objects to build cars in factories. **Sentence #2:** Robots are built with specific features that enable them to handle delicate items.
Word Cards for Sentence #1: If you are making the cards beforehand, it might be helpful to group them by chunk, paperclip each chunk, and have them ready to go in the order they'll appear in the lesson. [Note: some cards consist of entire phrases as indicated by the brackets.] *robots, metal, lift, [in factories], objects* *some, [are designed to]* *build, cars, to, heavy*
Word Cards for Sentence #2: *handle, robots, delicate, items* *[are built with specific features], [that enable them to]*
Mystery Sentence: *while, others*

Note: Be sure the SW prompt card is visible to the whole group. Use it to guide the discussion of each sentence.

Build Sentence #1
● Teacher prompts students to build the first sentence. ***Word Cards:*** *robots, metal, lift, [in factories], objects* ● Students may build: ***"Robots lift metal objects in factories."*** ***"In factories, robots lift metal objects."***

- Teacher prompts students to expand sentence:

  Word Cards: *some, [are designed to]*

- Students may build:
  "Some robots are designed to lift metal objects in factories."

- Teacher prompts students to expand sentence:

  Word Cards: *build, cars, to, heavy*

- Students may say:
  "Some robots are designed to lift heavy metal objects to build cars in factories."
  (other minor variations are also acceptable)

- Use the SW prompt card to discuss the sentence.

Note: Continue to give students time to add /rearrange words, providing support or feedback as necessary. Allow students 1-2 attempts to arrange words; after two unsuccessful attempts, intervene using one of the steps provided in the elaborative plan.

Building Sentence #2

*Note: Teacher removes the word cards from Sentence #1 and places them off to the side (but keep them in a nested stack, in order, to make it easier to quickly re-build mystery sentence later).

- Teacher prompts students to build sentence #2:

  Word Cards: *handle, robots, delicate, items*

- Students may build:
  "Robots handle delicate items."

- Teacher prompts students to expand sentence:

  Word Cards: *[are built with specific features], [that enable them to]*

- Students may say:
  "Robots are built with specific features that enable them to handle delicate items."

- Use the SW prompt card to discuss the sentence.

Note: Continue to give students time to add /rearrange words, providing support or feedback as necessary. Allow students 1-2 attempts to arrange words; after two unsuccessful attempts, intervene using one of the steps provided in the elaborative plan.

Manipulate Morphosyntactic Structure of Sentence #2

- Teacher asks students how the sentence would need to be changed if we said *A robot* instead of *robots*.
- Teacher and students work together to change *are built* to *is built,* and *them* to *it.*

  "A robot is built with specific features that enable it to handle delicate items."

Build Mystery Sentence & Discuss Meaning

*Note: Teacher places the word cards from sentence #1 back on the table so that both sentences are arranged in front of the students. Do not ask students to rebuild the sentence.

- Teacher helps students briefly discuss the ideas in the sentences, helping students see how the ideas in both sentences are connected.
- Teacher prompts students to combine the two sentences using the word *while* (see word card below).

  Word Card: *while*

- Students may build:
  "Some robots are designed to lift heavy metal objects to build cars in factories, while robots are built with specific features that enable them to handle delicate items."
- Teacher takes a moment to discuss why this sentence isn't quite making sense: we are talking about different kinds of robots in each part of the sentence, so we need to distinguish between the two. We can remove a word from the second part of the sentence and replace it with this word below. What word can be replaced with this word?

  Word Card: *others*

- With support as needed, students work together to replace *robots* in the second part of the sentence with the word *others* in order to build the mystery sentence:

  "Some robots are designed to lift heavy metal objects to build cars in factories, while

others are built with specific features that enable them to handle delicate items."

- Teacher and students add the mystery sentence to the Inquiry Space.

DR Lesson K

Discovery Reading Lesson Title: Robots_Lesson K (Blueprint)

Book: *DK Find Out! Robots*

Pages: 50-51

Ways to Increase Student Responsibility:

- Select a different **student to lead the discussion** for each text chunk.
- Allow students to **choose which thought routines** would be most appropriate to practice with each chunk of text.
- Encourage the student discussion leader to use the **prompt card**. As needed, and gradually releasing over time, **support the student** in soliciting participation and facilitating discussion among their groupmates.
- **Full linguistic repertoire (FLR)**: Students can discuss and ask each other questions in their home language to support their mental models of the text.

SETTING THE PURPOSE - Before Reading
Review ideas from Inquiry Space **Guiding Question:** *How can robots improve people's physical abilities?* **Word in the Spotlight:** *delicate:* easily broken or damaged; fragile
METACOGNITIVE DISCUSSION - During Reading
Use the prompt card and DR routines to read aloud and discuss: **Text Chunk #1:** page 50, top paragraph under heading "Superhumans." **Text Chunk #2:** page 50, all captions: top left for the picture called "PowerFoot BIOM", bottom left for picture "Walking Assist" and caption for picture "Argus II glasses." **Text Chunk #3:** page 51, both captions.
SYNTHESIZING KNOWLEDGE - After Reading
Exemplar answer:

Robotic devices can be made to look like parts of the human body. These devices can help people who have been injured or who have muscle weakness to move more easily, such as prosthetic legs or feet that help people walk and run. Robotic devices can also help people see more easily, help them become stronger in order to lift heavy objects, or even gently pick up delicate objects.

CR Lesson I

Confident Reading Lesson Plan I: Blueprint

Text: Drones Text 3 (maze)

Reminders for Every Lesson:

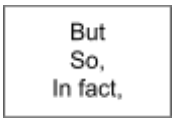
- Invite participation from **at least two students** each time you pause to discuss, rotating strategically to hear from as many students as possible. **Every student** should have a chance to share their ideas **at least once** during the lesson.
- **Encourage students to talk to each other**, not just to the teacher. During each routine, after the first student contributes, a second student should, when appropriate and whenever possible, be invited to add to or respond to the first student.
- Remember to give **wait time**: after inviting students to participate, wait 3-4 seconds to allow some thinking time.

Lesson Routine:

1. Teacher intro and maze read: students read silently and select maze choices
2. Teacher model reads and maze teaching point
3. Partner Read
4. Discuss
5. Feedback and Quick Teaching Point
6. Bridging Language Routine
7. Whole Group Read

Text 3 (maze)

[1]Have you ever seen a drone? [2]These remote-controlled machines fly in the air and are

by people from afar. [3]Drones are popular machines that can be very small or as large as a plane. [4]Police, news crews, and scientists use them in their jobs. [5]But drones aren't brand new. 

people have used them for over 200 years! [6]The first drone was a

balloon that Austrian soldiers used to drop bombs on an Italian city in 1839. [7]In 1915, drones were being used by the British army in order to make land maps during World War I.

[8] Second / Lastly / Then, the U.S. military began using them in the 1940s, but they were seen as expensive toys until the 1980s. [9]Later, in the 1990s, the first tiny drones were created. [10]Now, companies like Amazon are developing drones to deliver / stop / leave packages to customers. [11]People are finding lots of new ways to use these fascinating machines.

Maze Teaching Point (choose this one or one your students had the most difficulty with): "Let's re-read sentence 8 and we can consider all the ways this sentence could be completed." "The sentence using the word *then* completes the sentence the best because it shows that this is the next thing that happens."	**Bridging Language Routine (use for purple text):** -Reread sentence 11 (show with fingers). -"What is the phrase *these fascinating machines* referring to?" -Students: "Drones." -"Drones? Let's check it and see. Read aloud this sentence again with me by substituting the word *drones*. -"Does that sound right? Yes! We know from the previous sentence that the author is talking about drones and calls them fascinating machines."
Feedback & Teaching Points (choose 1 or 2): ● reading confidence ● accuracy ● punctuation ● connectives and conjunctions ● words and phrases that signal text structure ● other forms of phrasing Routine: Teacher models; students repeat after teacher 1-2 or times; students practice re-reading in unison 1-2 times.	

BW Lesson F

Breaking Words Lesson Plan F (Blueprint)

Robots Module

Word Cards:
- *program*
- *control*

Affix Cards:
- *un-*
- *pre-*
- *-ing*
- *-ion/-tion**
- *-able/-ible**

Note: For each part of the lesson, refer back to the BW Prompt Card

Warm up	Use word deck from previous lessons, students quickly read all the words; pick one and create a sentence
Word 1: *program* **Spanish cognate:** *programa*	**Count it:** *two* **Read it** **Use it:** *Roboticists program robots to carry out commands or tasks.* **Divide it:** pro/gram **Assemble it** **Write it** **Transform & Use it:** programming, preprogram, unprogram, programmable
Word 2*:* *control* **Spanish cognate:** *controlar*	**Count it:** *two* **Read it** **Use it:** **Divide it:** con/trol **Assemble it** **Write it** **Transform & Use it:** controllable, uncontrollable, controlling *After lesson, teacher adds new words to cumulative word deck. Students may add a word(s) to the inquiry space to synthesize their knowledge of the module topic.

DR Lesson L

Discovery Reading Lesson Title: Robots_Lesson L (Blueprint)

Book: *DK Find Out! Robots*

Pages: 56-57

Ways to Increase Student Responsibility:

- Select a different **student to lead the discussion** for each text chunk.
- Allow students to **choose which thought routines** would be most appropriate to practice with each chunk of text.
- Encourage the student discussion leader to use the **prompt card**. As needed, and gradually releasing over time, **support the student** in soliciting participation and facilitating discussion among their groupmates.
- **Full linguistic repertoire (FLR)**: Students can discuss and ask each other questions in their home language to support their mental models of the text.

SETTING THE PURPOSE - Before Reading
Review ideas from Inquiry Space **Guiding Question:** *What might robots be able to do for us in the future?* **Word in the Spotlight:** *assemble:* to put together
METACOGNITIVE DISCUSSION - During Reading
Use the prompt card and DR routines to read aloud and discuss: **Text Chunk #1:** page 56, top paragraph under heading "Future of robotics" and the section called "Personal Robots," including the picture captions for the "Dash and Dot" image. **Text Chunk #2:** p. 56, Robot Builders caption; page 57, "Self-assembling furniture" section. **Text Chunk #3:** page 57, remaining captions
SYNTHESIZING KNOWLEDGE - After Reading
Exemplar answer:

Robots may be able to do a variety of functions in the future. They may become our personal assistants to help humans with any number of jobs. Some robots may be able to assemble themselves into furniture, while others can help save our planet by stopping pollution. Some future robots can be so small they'll be able to explore the cells of our body.

UtS Lesson C

Uncover the Structure Lesson Plan C: Elaborative

Text: Drones Text 3 (Complete)

Reminders for Every Lesson:

- Invite participation from **at least two students** each time you pause to discuss, rotating strategically to hear from as many students as possible. **Every student** should have a chance to share their ideas **at least once** during the lesson.
- **Encourage students to talk to each other**, not just to the teacher. During each routine, after the first student contributes, a second student should, when appropriate and whenever possible, be invited to add to or respond to the first student.
- Remember to give **wait time**: after inviting students to participate, wait 3-4 seconds to allow some thinking time.

Text 3 (complete)

[1]Have you ever seen a drone? [2]These remote-controlled machines fly in the air and are controlled by people from afar. [3]Drones are popular machines that can be very small or as large as a plane. [4]Police, news crews, and scientists use them in their jobs. [5]But drones aren't brand new and people have used them for over 200 years! [6]The first drone was a balloon that Austrian soldiers used to drop bombs on an Italian city in 1839. [7]In 1915, drones were being used by the British army in order to make land maps during World War I. [8]Then, the U.S. military began using them in the 1940s, but they were seen as expensive toys until the 1980s. [9]Later, in the 1990s, the first tiny drones were created. [10]Now, companies like Amazon are developing drones to deliver packages to customers. [11]People are finding lots of new ways to use these fascinating machines.

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Text: “Drones Text 3 (Complete)”
Step One. Review the Text
“We’ve read a couple of different versions of a text about drones. Now we will revisit one of them. We’ve already read this text a couple of times, and we’ve learned a lot about drones from it. Let’s quickly re-read it together.” **Teacher reads aloud.**
Step Two. Stating the Structure of the Text
“Now, we’re going to ‘uncover the structure’ of this text. That means we are going to figure out how the author has organized the ideas in this text so that we can understand them. When writing, authors make choices about how they communicate ideas to help their readers learn.” “There are lots of different ways that authors can organize their thoughts, but as we learn about robots, we are just going to focus on a couple.” **[Show the two graphic organizers: sequence and compare/contrast]** used in this module, and ask students to choose the one that is most appropriate for this text. Students should recognize that this text is organized sequentially.] “Sometimes, an author might put events in order, or sequence, to explain how something happens over time. They might tell what happens first in a process, then talk about what happens next until they reach the last part of the process. An author chooses the structure that best fits the ideas they want to communicate to their readers.” “The text we are reading today uses the sequence structure to organize ideas about drones.”
Step Three. Identifying Cue Words for Structure
“There are some words that authors sometimes use to signal, or show us, how they are organizing a text. Let’s take a moment to look back at our text and see if we can find a few. Some examples of words that signal sequence are **first, next, then, finally**. The author might use other clues, like dates, to show the order something happened in as well. *Teacher will have students reread the text to locate a few examples, which they should circle or highlight on their papers.* Continue in this way for a few more examples, pointing out the relationship between ideas and how cues in the text alert the reader to the correct sequence. Cue words should be added to the Inquiry Space for later reference. **For example:** “Let’s reread this sentence together: *Then, the U.S. military began using them in the 1940s, but they were seen as expensive toys until the*

1980s."

*"*The word **then** at the beginning of the sentence tells me that this event happened after the example in the previous sentence. If I'm thinking about the sequence, or order, of these events, I know that drones were used in 1915 by the British during World War I, and *then* they were used by the U.S. military in the 1940s."

Step Four. Discussion

"Now, I'm going to ask you a few questions about this text. In order to answer these questions, you will have to think about how the ideas in the text are organized, or structured."
Teacher should ask 2-3 of the following (depending on time):

"We learned in this text that the British Army used drones in World War I, but what happened before that in this text?"

"We also learned that the first tiny drones were developed in the 1990s. What happened after?"

"When was the first drone created?"

"What's happening now?"

Teacher calls on students to share, prompting them to refer back explicitly in the text to explain their thinking.

Step Five. Graphic Organizer

"Now we are going to take what we learned and put all the ideas from the text into our graphic organizer so that we can really see how this text uses the structure."

As a group, the teacher and students will work together to complete the **sequence graphic organizer**, paying close attention to the sequence of ideas in the text. The teacher will transcribe student responses into a shared document. ***In later lessons, teachers could release this responsibility to their students based upon ability and comfort.*

"Awesome! So we've 'uncovered' the structure of this text. We know that this text uses the structure of sequence to organize ideas about the development of drones."

Step Six. Summarizing

"Now, we're going to practice summarizing this text. When we summarize, we want to explain the ideas in the text to someone else who hasn't read it so that they can understand it. That means we want to explain it in a way that uses the same structure that the author used."

"Using your graphic organizer, summarize what you learned about drones from this text."

Teacher gives students a minute to practice with their partners.

"Before we go, we are quickly going to write a summary of what we learned together. What should we begin with?"

Teacher will prompt students as the group writes a summary together, which the teacher will record to include on the Inquiry Space for future reference. As the teacher guides students through the shared-writing exercise, make sure to include structural cue words and appropriate academic vocabulary from the text and module.

Example: *First, drones were used to drop bombs in 1839. Then, British soldiers used drones to make maps in World War I. Next, the US army used drones in World War II. Now, companies are finding new ways to use drones to help people.*

SW Lesson F

Sentence Workshop Lesson F (Blueprint)
Robots Module

Mystery Sentence: In the future, robots may be able to build entire houses or help find a cure for cancer because scientists are working hard every day to develop new robot technology. **Sentence #1:** In the future, robots may be able to build entire houses or help find a cure for cancer. **Sentence #2:** Scientists are working hard every day to develop new robot technology.
Word Cards for Sentence #1: If you are making the cards beforehand, it might be helpful to group them by chunk, paperclip each chunk, and have them ready to go in the order they'll appear in the lesson. [Note: some cards consist of entire phrases as indicated by the brackets.] *houses, entire, robots, build* *[find a cure for cancer], [may be able to], or* *future, the, in*
Word Cards for Sentence #2: *new, scientists, robot, develop, technology* *are, to, hard, working* *every, day*
Mystery Sentence: *because*

Note: Be sure the SW prompt card is visible to the whole group. Use it to guide the discussion of each sentence.

Build Sentence #1
• Teacher prompts students to build the first sentence. ***Word Cards:*** *houses, entire, robots, build* • Students may build: ***"Robots build entire houses."*** • Teacher prompts students to expand sentence:

Word Cards: *[find a cure for cancer], [may be able to], or*

- Students may build:
  "Robots may be able to build entire houses or find a cure for cancer."

- Teacher prompts students to expand sentence:

  Word Cards: *future, the, in*

- Students may build:
  "In the future, robots may be able to build entire houses or find a cure for cancer."

- Use the SW prompt card to discuss the sentence.

Note: Continue to give students time to add /rearrange words, providing support or feedback as necessary. Allow students 1-2 attempts to arrange words; after two unsuccessful attempts, intervene using one of the steps provided in the elaborative plan.

Manipulate Morphosyntactic Structure of Sentence #1

- Teacher asks students how the sentence would need to be changed if we said *Years ago* instead of *In the future.*

- Teacher and students work together to change all of the verb tenses to the past tense:

  "Years ago, robots built entire houses and found a cure for cancer."
  or something like:
  "Years ago, robots were able to build entire houses and find/found a cure for cancer."

Building Sentence #2

*Note: Teacher removes the word cards from Sentence #1 and places them off to the side (but keep them in a nested stack, in order, to make it easier to quickly re-build mystery sentence later).

- Teacher prompts students to build sentence #2:

  Word Cards: *new, scientists, robot, develop, technology*

- Students may build:

"Scientists develop new robot technology."

- Teacher prompts students to expand sentence:

  Word Cards: *are, to, hard, working*

- Students may say:
  "Scientists are working hard to develop new robot technology."

- Teacher prompts students to expand sentence:

  Word Cards: *every day*

- Students may say:
  "Scientists are working hard every day to develop new robot technology."
  "Every day, scientists are working hard to develop new robot technology."

- Use the SW prompt card to discuss the sentence.

Note: Continue to give students time to add /rearrange words, providing support or feedback as necessary. Allow students 1-2 attempts to arrange words; after two unsuccessful attempts, intervene using one of the steps provided in the elaborative plan.

Build Mystery Sentence & Discuss Meaning

*Note: Teacher places the word cards from sentence #1 back on the table so that both sentences are arranged in front of the students. Do not ask students to rebuild the sentence.

- Teacher helps students briefly discuss the ideas in the sentences, helping students see how the ideas in both sentences are connected.

- Teacher prompts students to combine the two sentences using the word *because* (see word card below).

  Word Card: *because*

- Students build the mystery sentence:

  "In the future, robots may be able to build entire houses or help find a cure for cancer because scientists are working hard every day to develop new robot technology."

- Teacher and students add the mystery sentence to the Inquiry Space.

Inquiry Space (IS)

Ideas for planning the IS maintenance days

Note to teachers:

While the rest of the K.L.I. components are highly structured, the Inquiry Space, by its very nature, has to be flexible and customizable for each group. Think of this as your "playground" where you and your students have freedom to spend time playing with the big ideas about your topic that have come up across previous lessons. We haven't provided specific lesson plans for IS days. Instead, we provide these ideas below as starting points as you plan for these days.

Menu of Options

During an IS day, you can do one of these activities, a combination of several of them, or design something of your own that accomplishes the goal of this component. Keep in mind that the goal of the Inquiry Space component is to: *re-engage with the vocabulary and concepts your group has been collecting from lesson to lesson so that students can notice and discuss how these ideas fit together.*

1. Review and re-organize the Inquiry Space
    - Show the current version of the group's Inquiry Space.
    - Ask them to work with a partner or individually to re-read all the entries that are there.
    - Then have them work with a partner to identify a few sorting categories they could use to move the entries around into meaningful groups. For instance, maybe there are three entries about robots helping save people and two entries about robots helping the environment. You could move these into groups and label each one (ways robots help people; ways robots help the environment).

2. Review and connect new words
    - Show the current version of the group's Inquiry Space
    - Ask students to read all the entries and look for new vocabulary words they have learned.
    - After students have each found their list of new words, ask each student to pick one word to share with the group. They have to explain where the word is found on the Inquiry Space and what it means (related to the inquiry topic). You could also ask them to create an action or movement for the word to help the group remember it.
    - For each word, draw lines that connect to other words on the Inquiry Space and create a sentence that shows how the words are related. For example, you might draw a line between the words *survivor* and *sensor* and develop the sentence: "Robots use sensors to find survivors after a natural disaster."

3. Revisit the overarching inquiry questions
    - Show the current version of the group's Inquiry Space.
    - Chorally read all the entries as a group to review all the ideas.
    - Then show students the questions from the Day 0 lesson that you used to launch the module.

- Using one question at a time, ask students to work with a partner to find at least two entries on the Inquiry Space that help answer the question.
- The partners can share their ideas with the group, and then color-code or re-arrange the entries into groups based on the question they help answer.

4. Paraphrase the most important or most interesting ideas
    - Show the current version of the group's Inquiry Space and chorally read the entries aloud to review
    - Ask students to pretend they are explaining what they have learned to a friend or relative who hasn't been in the group. They have to pick ONE really important idea and explain it in their own words, in a way that will make sense to their friend or relative (this is a great opportunity for students to explain their new knowledge in a home language or dialect). Alternatively, you can ask them to pick the one idea that is most interesting to them that they think will also be interesting to their friend or relative.
    - Students work in partners or individually to come up with two sentences for their friend or relative. If needed, you can give them a sentence starter to get them started.
    - They share with the group and then record their sentences on the Inquiry Space as new entries.