



Discovery Reading Implementation Guide

(DRAFTv5_July 2022)

Overview and Purpose of the Component

The *Discovery Reading* (DR) component helps students build new content knowledge and enhance their metacognitive comprehension skills. A typical Discovery Reading lesson is designed to take approximately 20 minutes of instructional time and consists of three parts:

1. Setting the Purpose (before reading)
2. Metacognitive Discussion (during reading)
3. Synthesizing Knowledge (after reading)

Before reading, the teacher begins each lesson by introducing one new concept/word that will be encountered in the text and then poses a guiding question, related to the inquiry topic. The question is designed such that students must form an accurate, comprehensive mental model of the text in order to effectively answer it.

During reading, the teacher uses scaffolds to help students read portions of a topic-related book, one short chunk at a time (usually 1-2 paragraphs). After each chunk, the group monitors their understanding and builds new knowledge using a structured discussion routine. The routine is guided by a series of thinking prompts on the Discovery Reading prompt card.

At the end of each lesson, the students and teacher generate a written answer to the guiding question. The answer is added to the group's ongoing Inquiry Space to help synthesize knowledge across lessons.

Materials and Resources

In addition to this implementation guide, the following resources are used when implementing Discovery Reading.

Prompt Card. The prompt card is central to each DR lesson. It supports the metacognitive routines that enable students to construct mental models while reading. Each student should have their own copy of the prompt card during the DR lesson.

Topic-Related Books. Two or three high-quality books have been selected for each K.L.I. module for use during Discovery Reading.

Elaborative Lesson Plans. These lesson plans are written to give teachers a sense of the language and rhythm of a well-paced DR lesson. These plans contain detailed guidance on how to implement the three parts of Discovery Reading, including suggested verbiage, question strategies, and sample answers. They are not, however, intended to be used as scripts. As teachers become more familiar with the structure and routines of DR, the need for these detailed plans should decrease. An example elaborative plan is found at the end of this manual.

Blueprint Lesson Plans. As teachers become more familiar with the DR component, they will no longer need the detailed information provided in the elaborative lesson plans. The blueprint lesson plans, unlike the elaborative plans, simply contain the “bones” of each lesson in the form of the Guiding Question, vocabulary to pre-teach, and recommended text chunks.

Implementation of the Component

Part 1: Setting the Purpose

Before reading the text each day, teachers lead students in three brief activities. First, the group reviews an important concept from the Inquiry Space that relates to the upcoming text. This is a way to link ideas learned in previous lessons to the content and concepts students will learn in the current lesson. For example, a teacher might say, “Looking at our Inquiry Space, we have already learned some cool things about [topic]. We learned that [restate idea from wall]. Today we are going to learn even more about...” This helps teachers frame and situate the current reading content.

Next, teachers introduce the “Guiding Question” that students will answer at the end of the lesson. Teachers might say something like, “By the end of our reading today, we will be able to answer this question. So let’s read carefully to help ourselves build an understanding of that question.” This routine helps set a purpose for that day’s reading by focusing students on the big ideas to pay attention to during reading.

Finally, teachers pre-teach one high-leverage vocabulary word that is relevant to that day’s reading. This word is referred to on the DR prompt card as the Word in the Spotlight. Selected words are typically words found in a variety of academic and authentic texts, are morphologically complex, and are important for building a mental model of that section of the text. The table below provides teachers with multiple, meaningful ways to quickly pre-teach these words.

Table 1: Ideas for Introducing the Word in the Spotlight in Discovery Reading

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| <p>Visual Presentation- Prepare a word card to present the word, to include:</p> <ul style="list-style-type: none"> · the vocabulary word in large, bold print · a concise, student friendly definition · a large, eye-catching visual that clearly represents the word · a sentence using the word in context <p>Introduce the word, its meaning, and a sentence with the word used in context. Then ask students to repeat the word and meaning and think of another sentence that uses the word.</p> | <p>Student Explanations and Translanguaging- After presenting the word, invite students to explain the concept to each other in their own words, using their own examples. If students share a common first language, they can explain the word to each other in their home language, and when possible, share examples of how the word would be translated in their home language.</p> |
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| <p>Gestures- To help reinforce the meaning of new vocabulary, teach students a gesture specific to each word, or have students act out the word for each other.</p> | <p>Cognates- Whenever possible, the teacher (or students) can provide a translation of the word in students’ home language that has a similar etymological derivation. For example, the verb <i>collapse</i> in English has the Spanish cognate <i>colapsar</i>.</p> |
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The setting the purpose portion of the DR lesson should take only 2-3 minutes. An important feature of the K.L.I. intervention is that students will encounter new ideas repeatedly, over several texts, across weeks of instruction. Their knowledge will build iteratively (in small layers that deepen over time). Thus, teachers should not feel the need to spend long periods of time pre-teaching one word. Students will learn a little bit about the word on the first encounter, a little more when they see it again, and so on.

The teacher should keep the lesson’s vocabulary words and guiding question visible to students throughout the lesson. For example, the guiding question can be written on an anchor chart or on the board, and the teacher could place sticky notes with the vocabulary words next to the students to reference while they read. The key is that there is a visual way for students to reference these words and the guiding question throughout the lesson.

Part 2: Metacognitive Discussion

Next, the teacher leads students in reading a few short, predetermined chunks of the text. The chunks should be kept short (usually 1-2 paragraphs, but can be shorter as needed, even a single sentence can be a chunk if it communicates a lot of information crucial for the reader’s mental model of the text).

A typical DR lesson will include about 3 chunks. For two of these chunks, the teacher can read aloud as students follow along. For the third chunk, the teacher can select one of the options below (Table 2) to scaffold the students’ reading, taking into account the complexity of the text, length, time constraints, and students’ needs.

Table 2: Options for Scaffolding When Reading Text Chunks in Discovery Reading

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| <p>Teacher Reads- consider using this for longer, more complex chunks of text. Students follow along in their texts while the teacher reads aloud.</p> | <p>Choral Reading- students and teacher read aloud in unison.</p> |
| <p>Alternating Paragraphs- students and teacher trade back and forth.</p> | <p>Partner Reading- students take turns reading to/listening to a partner.</p> |
| <p>Silent Reading with “finished” signal- students read silently at their own pace and give an established signal (finger up, on nose, etc.) to</p> | <p>Monitoring Tools- allow students to use small sticky notes or a pencil while reading to mark places in the text that they need to</p> |

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| indicate they are ready to move on. | monitor and repair during the discussion. |
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At the end of every chunk, the students and teacher take turns using the thinking routines shown on the DR prompt card (Figure 1) to engage in a discussion about the text. The thinking routines on the prompt card create opportunities for students to practice and explicate (make explicit using language) a few important metacognitive processes: comprehension monitoring, paraphrasing or self-explanation, self-questioning, and selectively attending to important ideas. The prompts on these cards may sound similar to reading strategies typically used in comprehension instruction, but we call them “thinking routines.” The purpose of these routines is to help students construct a mental model of the text.

After every text chunk, stop and:

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|  | Monitor and repair | Wait a minute! One idea that was confusing for me was... |
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Plus, choose at least one more thought routine:

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|  | 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... |

Figure 1: Discovery Reading Prompt Card for Metacognitive Discussions

At every stopping point, two routines from the prompt card should be used. The teacher or discussion leader should:

- Always invite students to “Monitor and Repair.” If students do not express they have any confusion, you can move on or quickly model an example of monitoring/repairing for them (if needed).
- Pick one more of the other thinking routines to practice in addition to Monitor and Repair. Use your best judgment based on the content of each chunk. For example, if a lot of new information was presented, “Tell what you learned” or “Quiz Me” may be the best routine to practice. Or, if the text chunk requires a lot of visualizing, “Tell what you see” is most appropriate. If the daily vocabulary word appears in that chunk, you should always do “Word in the Spotlight” as the other routine (and you can do that one before “Monitor and Repair” if it makes sense to do so).
- Try to use all five thought routines at least once during each lesson.

The prompt card should always be placed in a location that is visible to all students and the teacher throughout each lesson. Ideally, each student will have a copy of the card. At each stopping point, teachers should *model the language used on the card* and *encourage students to use the same language*. Students should refer to the routine by its name (appearing in column 2 of the prompt card) every time it is practiced. The third column is similar to a sentence starter, and the teacher should model and encourage students to communicate their thinking for that routine using the wording in that column. This consistent language helps students internalize the routines so that over time, they will use these metacognitive processes independently.

This portion of the lesson should be fast-paced and allow for a gradual release of responsibility (GRR). In the beginning as students are learning these routines, or in the beginning of a module when students are just getting acquainted with the topic, more teacher modeling (e.g., thinking aloud) may be needed. For example, teachers may often take the first turn in modeling the thought process routine on the prompt card, and then allow the students to take a turn practicing that same routine. Over time, responsibility is gradually released to the students to lead the discussion and take turns with one another in practicing each routine. In later lessons, a student discussion leader can be designated for each chunk to facilitate the discussion instead of the teacher.

Teachers should be sure that at least two students are able to talk at each stopping point (ideally, two students per thinking routine, when time permits), and that across the three stopping points in the lesson, every student has had at least one opportunity to share ideas with the group. Importantly, the teacher does not need to take a turn on every thinking routine. When the teacher takes a turn, they should model using the prompt card language succinctly. If a student has provided a reasonable contribution using the routine, the teacher does not need to add another example unless it is an intentional opportunity to model something for the group. The teacher should encourage students to talk to each other, not just to the teacher.

Table 3 lists ways that teachers can give all students the opportunity to participate during the discussion points in the lesson.

Table 3: Ways to Facilitate Discussion in Discovery Reading

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| <p>Provide think time and select a volunteer- after the teacher poses a question or prompt, students are given a few moments to quietly think of ideas to share with the group</p> | <p>Turn and talk- after teacher poses a question or prompt, students share their responses with a partner, then share their <i>partner's</i> responses</p> |
| <p>Pre-select a student discussion leader- prior to reading a text chunk, teacher chooses an individual student and asks them to be ready to jump in and lead the discussion when it is time (this is a highly recommended strategy for scaffolding toward increased student leadership of the prompt card routines)</p> | <p>Students lead- (over time, after the teacher has gradually released responsibility) a student leads the discussion, modeling the thinking on the prompt card and calling on peers to take turns completing the thought routines, as if the teacher is not even there</p> |

Part 3: Synthesizing Knowledge

At the end of each lesson, teachers will direct students back to the guiding question from the beginning of the lesson. Teachers will lead students in discussing their ideas about how to best answer the question. As students talk, the teacher will record their responses for the group. If students need support, the teacher should direct the students back into the text to find evidence that addresses the question. The teacher should also, whenever possible, reinforce the vocabulary for the day in the written response.

Eventually, the writing of the response to the question may transfer over to students as they become more adept at using the routines to construct their mental models. However, this section of the lesson should take no more than 3-5 minutes. If students have formed a strong mental model of the text during Part 2, they should be able to answer the guiding question without too much difficulty.

The Word in the Spotlight and the written response to the question should be added to the Inquiry Space after each lesson.

Leveraging Students' Full Linguistic Repertoire (FLR)

This intervention focuses on reading comprehension in English, but there are many opportunities for students to access and use their full range of language knowledge during all three parts of a DR lesson. For example, when the teacher is setting the purpose for the lesson, students can share cognates from their home languages for the word in the spotlight. They can also support each other by restating the guiding question in their home language. During the metacognitive discussion for each chunk of text, students can engage in the thinking routines on the DR prompt card in their home language. This is particularly useful when students help each other clarify the concepts in the text using their full language knowledge. Finally, students may find it helpful to use their home languages when formulating an answer to the guiding question during the last part of the DR lesson.

Example Lessons

Two sample elaborative lessons are provided. The first example is a lesson early in a module when the teacher is providing a high level of support. The second example shows what a lesson might sound like when students have taken on more responsibility later in a module.

Discovery Reading Lesson Title: Animal Communication_Lesson A (Elaborative, High Teacher Support)

Book: *How Do Animals Communicate?*

Pages: 6-7

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.
- Remember to give **wait time**: after inviting students to participate, wait 3-4 seconds to allow some thinking time.

SETTING THE PURPOSE - Before Reading (~2-3 minutes)

Ideas from Inquiry Space to Review Before Reading:

- “For the next few weeks, we are going to be learning all about how animals communicate with each other and adding our new knowledge to this Inquiry Space [show the Inquiry Space to students]. Since this is our first lesson on this topic, we don’t have anything here yet, but it’s going to get all sorts of interesting information added over the next few weeks. Today during Discovery Reading we are going to read from a book called *How Do Animals Communicate?*” 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 that animals communicate, and why do they communicate this way? So 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. It’s actually a word that’s in our guiding question, and it’s a really important word to help us understand this whole module. This word is **communicate**. Repeat after me: **communicate**.” (Students say the word.) “Good. To communicate is to exchange information, ideas, or feelings with others. Humans do this by talking, or by writing messages to each other. But we don’t always have to talk to communicate, right? We can communicate with our bodies, such as by smiling, nodding, frowning, or even making silly faces.” (Teachers may find it helpful to briefly turn to pages 4-5 of the book to show examples of human communication.) “In this module we will learn about how animals communicate with one another.” Add the vocabulary word to the Inquiry Space for later reference.

METACOGNITIVE DISCUSSION - During Reading (~10-12 minutes)

Text Chunk #1: page 6, the first paragraph on that page + the caption underneath the frog picture.

- “We are going to read the first paragraph on this page before we stop and discuss using our prompt card. I will read aloud and you can follow along in your book. Let’s start.” [Teacher reads chunk aloud]
- 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 and begin with ‘Word in the Spotlight’ because I think our vocabulary word appeared on this page! Who spotted our new vocabulary word here? When you share, be sure to say ‘Our word was used in this sentence’, and then read the sentence to us!”
 - “Yes, (student name), thank you for reading the sentence for us. So what does it mean that animals *communicate* where to find food and warn each other of danger?” Call on a student to respond and briefly discuss.
- “Now, who would like to use the word *communicate* 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 *communicate* means!”
- “Now let’s do ‘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 in that paragraph or in the caption made you say ‘wait a minute!’”
 - Call on one student to share and another to help that student work out their confusion.
 - If no one volunteers, you can take a turn, for example: “Hmm, well I wanted to talk about something that was a little tricky for me. In the caption underneath the picture of this bright spotted frog, it said that the bright colors warn predators that eating these frogs will kill them. Predators is kind of a big word. The frog’s bright colors are warning these predators that if they eat these frogs, they will be killed. So maybe predators are like other animals that want to eat the frog? What do you think?”
 - Allow students to discuss, potentially offering a follow-up to push students: “But how is this an example of *communication*? Remember, our guiding

question is to think about ways animals communicate, and why they communicate.”

Text Chunk #2: page 6, second paragraph, plus the caption about the hippopotamus.

- “Let’s read some more. Listen and follow along as I read.”
- “OK, here let’s start with Monitor and Repair. Who would like to share one thing that made you say ‘Wait a minute’? What was an idea that was confusing for you?”
 - “(Student name), thank you for sharing. (Student name), can you help (student name) figure out their confusion?”
 - Give students a moment to talk through their confusion, providing guidance as necessary.
- “Let’s do ‘Tell what you see’ next. As we read this section of text, what did you picture animals doing or looking like in your mind? When you answer, be sure to use the prompt card and say, “When I was reading this part of the text, I pictured...”
 - Call on one student to share.

Text Chunk #3: page 7, the paragraph and the caption underneath the photo of the calves.

- “For this section, let’s read together chorally. Everyone follow along and let’s read it aloud together.”
- “Let’s do 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.”
- “As our last step, let’s practice Tell What You Learned. We sure learned a lot on these pages! Turn to your partner and each of you take turns sharing one new thing you learned from the text. It can be from this section or anything we read today.”
 - Debrief or allow students to share out if time permits.

SYNTHESIZING KNOWLEDGE - After Reading (~3-5 minutes)

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

What are some ways that animals communicate, and why do they communicate this way? 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:

Animals communicate using their bodies and their five senses such as sight, smell, taste, hearing, and touch. They communicate so that they can send different messages to each other, such as to scare off other animals, to be friendly, or to attract a mate.

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

Book: *How To Talk to a Tiger and Other Animals*

Pages: p.32-33 (Tarsier, Farting Fish)

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 (~2-3 minutes)

Ideas from Inquiry Space to Review Before Reading:

- “Today during Discovery Reading we are going to read some more from our book called *How To Talk to a Tiger and Other Animals*. Let’s start by looking at our Inquiry Space to review some of the things we have learned about space pollution. 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: How do some animals communicate using sound humans can't hear? 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 undetectable. (Say and show the word to students.) When something (or someone) is undetectable it is unable to be seen, heard, or discovered by others. For example, some noises made by animals can be hard to hear and they are often undetectable to their predators. Can one person share a quick example of how they have seen or heard that word before? 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 undetectable 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 (~10-12 minutes)

Text Chunk #1: page 32- bottom first paragraph on “*The Tarsier’s Silent Scream*”

- “I am going to read this page 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 32- bottom first paragraph 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.
 - The discussion leader might say something like this: “*Okay, we always start with ‘Monitor and Repair.’ 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.
 - 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.

Text Chunk #2: page 32- bottom second paragraph on “*The Tarsier’s Silent Scream*”

- “Let’s pick another discussion leader for the next chunk.” (Choose a student). Teacher reads text aloud.
- 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, undetectable.*” 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 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). “*Here’s my question: ...*”

Text Chunk #3: page 33- bottom two paragraphs on *“Farting Fish: Yes. Seriously”*

- **“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). **Let’s read this last paragraph together chorally.”**
- Like above, discussion leader should begin the conversation, using prompt card language: *“Let’s do 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.”*
- Then, the discussion leader chooses one final thought routine. They might say something like: *“Let’s use ‘Tell What You Learned’ for this last part.”* Discussion leader can ask for peers to explain something they learned, using the prompt card language, or they can model for the group with their own example.

SYNTHESIZING KNOWLEDGE - After Reading (~3-5 minutes)

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

How do some animals communicate using sound humans can’t hear? 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:

Animals like the tarsier, a type of primate, use screeches in ultrasound to communicate and find their favorite foods such as moths or katydids. By using these ultrasound noises, they are undetectable by their predators. These sounds are at a higher frequency which does not make them detectable by the human ear.