ELEMENTS I
Teacher Manual

ELEMENTS I Teacher Manual

Contents
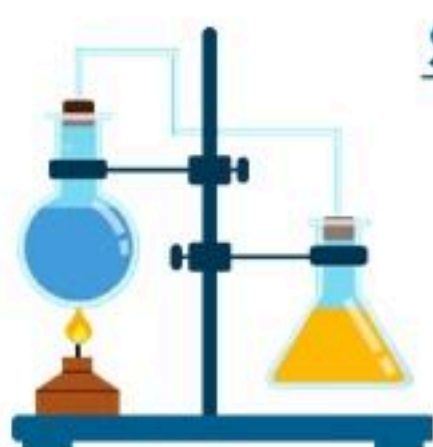
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AI ASSISTANT

Goals/Objectives

|	
English Language Arts Standards	Conventions of Standard English: students will be able to demonstrate command of the conventions of standard English grammar and usage
	Vocabulary Acquisition and Use: students will be able to determine or clarify the meaning of unknown and multiple-meaning words in phrases, choosing flexibly from an array of options
Language/ Reading Skills	Students will be able to... • demonstrate understanding of English grammar and usage elements such as: - adjectives, comparatives, quantifiers - singular/plural nouns and verbs - possession - simple negation - subject-verb agreement - pronouns - verb tenses - prepositions - active/passive voice - clauses • demonstrate understanding of vocabulary in terms of meaning, phonological structure, and grammatical role - use sentence-level context as a clue to the meaning of a word or phrase - use frequently occurring affixes as a clue to the meaning of a word - use frequently occurring root words (e.g., look) and their inflectional forms (e.g., looks, looked, looking)
Cognitive Skills	Students will be able to… • hold a sentence in working memory while retrieving picture-concept associations from their long-term memory to identify the correct response (memory) • use word order to comprehend simple and complex sentences (sequencing)
Social-Emotional/ Executive Function Skills	Students will be able to... • selectively focus and sustain attention on a lesson or an activity • inhibit impulsive responses • regulate emotional responses: e.g., excitement or frustration

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Exercise Screen
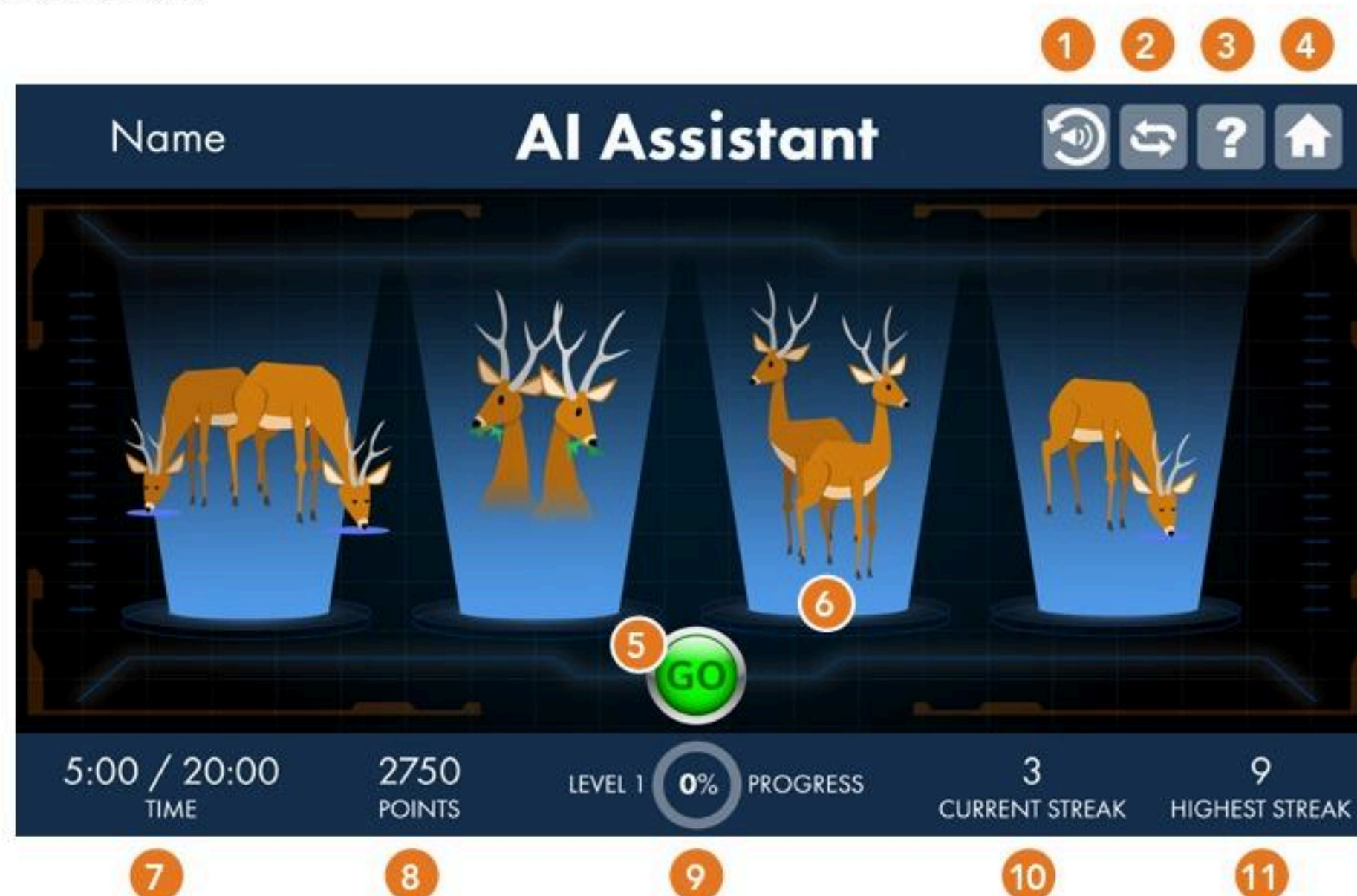
1 Replay
Repeats the sentence to be answered.

2 Autoplay
Turns Autoplay on or off; when "on" each click of the Go button presents a series of three or more questions.

3 Help
Provides access to Help options:
- **How to** replays initial instructions and models how to answer a question.
- **Progress** displays progress for each level and the entire exercise.

4 Home
Returns the student to the Exercise Selector screen.

5 Go
Presents a question or an Autoplay sequence of questions. When an Autoplay sequence is in progress, this counter shows how many questions remain.

6 Response Buttons
The student clicks the picture that most accurately represents the sentence.

7 Time
Shows Time Worked / Time Scheduled for the exercise.

8 Points
Shows total points awarded across all of a day's sessions.
- Correct answers: 2 points for each correct answer
- Autoplay bonus: double the usual points if all questions in a set are answered correctly.

9 Level Progress
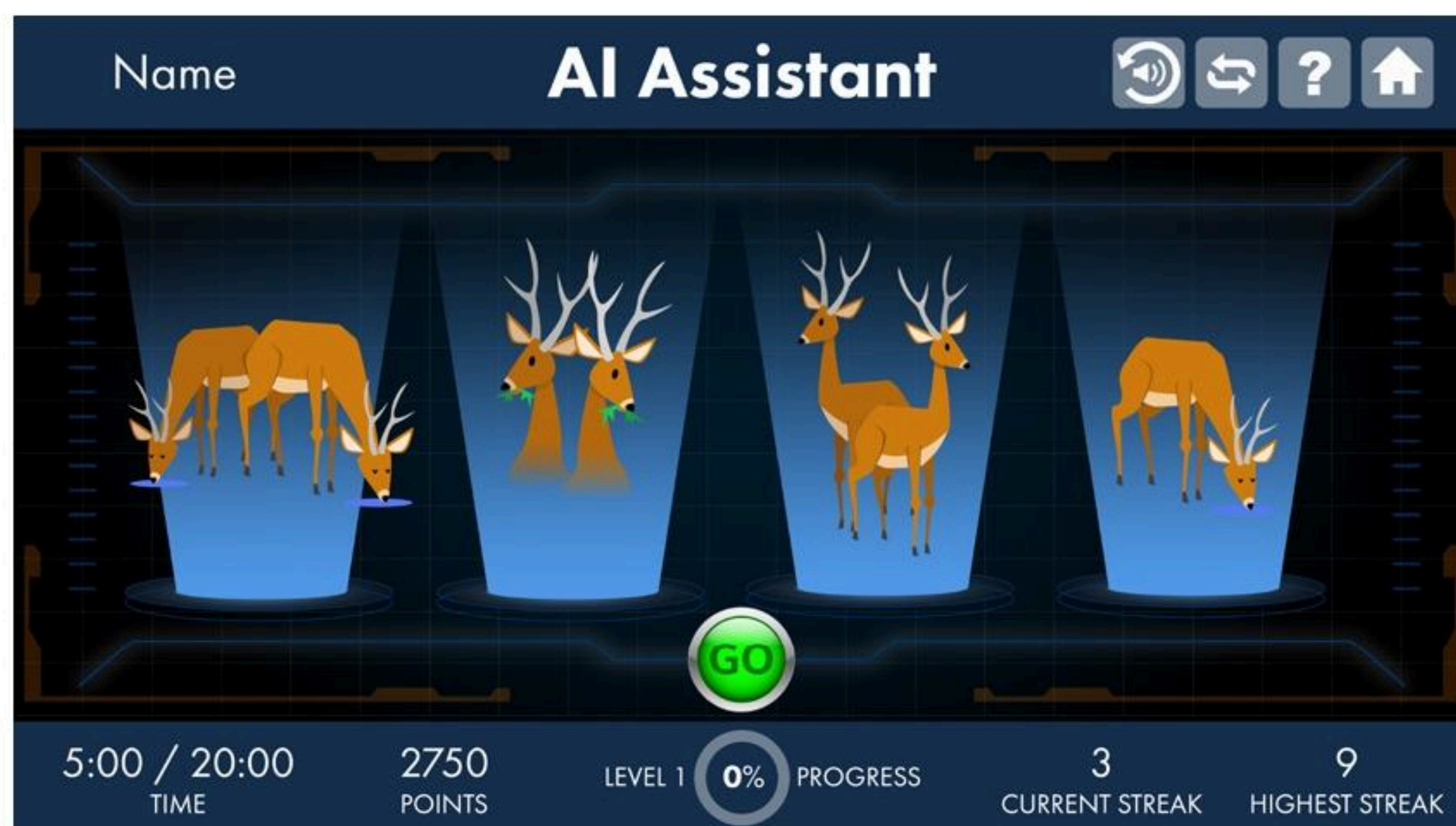Displays the current level and percent completion of the level.

10 Current Streak
Shows the number of consecutive correct answers since the last incorrect answer (or since the beginning of the session, if no answers have been incorrect).

11 Highest Streak
Shows the highest number of consecutive correct answers in this session.

Task

The exercise presents a holographic device with four empty platforms.

- Clicking the Go button activates the device.
- Two to four pictures appear on the platforms.
- The student hears a sentence.
- The student clicks the image that best represents the sentence.
- Corrective feedback is presented.
- The set of images disappear, setting the stage for the next sentence.

Content

Speech Processing Levels

Students progress through five speech processing levels in the exercise. In the early levels, AI Assistant presents questions and sentences in which the speech sounds have been digitally altered. As students progress through the exercise, the processing decreases, and eventually the sentences are presented using natural speech.

Icon Key

🔊	Audio
⬇	Download
EL	English Learner
✓	Quick Check
⚙	Settings
▶	Video

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Content

Language Structures

Within each processing level, AI Assistant covers a range of grammatical content that includes:

Language Structure	Example
Object Pronouns: Him & Her	Point to "him."
Description Words	Which is "heavy"?
Action Words	Which is "eat"?
Predicative Adjectives	The tub is full.
Comparative with More	Which one is more prickly?
Comparative with -er	Which one is bigger?
Quantifier: None	Look at these bowls with goldfish. Which bowl has none?
Quantifier: Some	Look at the boxes with carrots. Which box has some?
Singular Nouns	Choose the picture of the dog.
Plural Nouns	Choose the picture of the dogs.
Singular Nouns with Quantifier: A	Choose the picture of a dog.
Plural Nouns with Quantifier: Some	Choose the picture of some dogs.
Singular Auxiliary Verb: Is	The sheep is eating.
Plural Auxiliary Verb: Are	The sheep are eating.
Singular Verbs	The sheep eats.
Plural Verbs	The sheep eat.
Possession: Has	The cat has stripes.
Possession: Apostrophe-s	Which is the baby's bird?
Wh- Object Questions	What is the dog chasing?
Who vs. What	Who is by the door?
Simple Negation	The box is not open.

Language Structure	Example
Third Person Subject Pronouns	She is walking.
Active Voice	The cat is following the dog.
Passive Voice	The dog is being followed by the cat.
Passive Voice with Negation	The cat is not being followed by the dog.
Present Tense	The boy is opening the box.
Past Tense	The boy opened the box.
Future Tense	The boy will open the box.
Preposition: For	The box is being carried for the doctor.
Preposition: With	The box is being carried with the doctor.
Complex Negation	The dog that is not running is big.
Object Relative Clauses	The cat is chasing the dog that is big.
Object Relatives with Relativized Objects	The cat is following the dog that the mouse is leading.
Subject Relative Clauses	The dog that is black is following the cat.
Reduced Subject Relative Clauses	The teacher smiling is helping the girl.
Sentences with Subject Relative Clauses and Noun-Verb-Noun Endings	The dog that is following the cat is black.
Sentences with Reduced Subject Relative Clauses and Noun-Verb-Noun Endings	The girl helping the teacher is smiling.
Relative Pronouns with Double Function	The cat that the dog is following is black.
Sentences with Double Embedding	The dog that is following the cat that is black is white.
Cleft Sentences	It's the dog that the cat chases.

Content

AI Assistant Progression

Students do not work on all types of grammatical content in each processing level. AI Assistant adapts to students' performance introducing new content and removing mastered content, ensuring that students move through the content at an appropriate pace, while focusing on the content that is challenging.
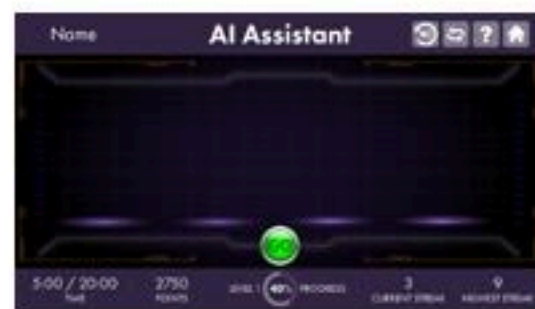
Motivational Levels

After each 20% of progress through the exercise, students "level up" and the screen changes slightly. These motivational levels are not connected to specific processing levels or content, only to percent completion.
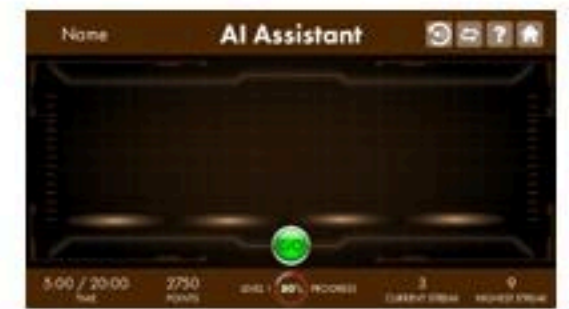
Level 1	Level 2	Level 3	Level 4	Level 5

Targeted Practice

This exercise uses built-in, responsive technology to detect when a student is struggling and administer targeted, inline instruction—right when the student needs it—without any external resources or assistance required. This helps reduce frustration as it quickly gets students back on track, so they can continue making progress.

AI Assistant provides a variety of targeted practice activities when needed. The student can receive 1 or 2 of these interventions at a time, depending on the task and the student's prior performance. Each intervention takes a few seconds to minutes to complete. The student's progression in the exercise stops temporarily while working through an intervention, then resumes when the student returns to the regular exercise content.

One type of intervention is a picture exploration activity where students are asked to click different parts of a picture, in response to specific questions. Students are provided immediate feedback as to whether their answer is correct or incorrect, followed by additional questions on the concept.

Answer the question by clicking part of the picture.

Who is taking a photo? Who is posing for the photo? Who is smiling?

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Did you know?

Reading comprehension is a complex skill that requires students to recognize individual words, access their meanings, and interpret grammatical structures—simultaneously! Readers must also draw on their background knowledge, in order to understand the message that the print conveys. Cognitive skills such as working memory are essential for keeping track of and integrating these various strands of information. Skilled reading demands that students construct a coherent and integrated mental representation of the text based on these many skills.

The AI Assistant exercise helps students become skilled readers by developing their understanding of the relationship between words, grammar, and meaning (language structures). It also helps increase the speed at which they identify and understand rapid, successive changes in sound (listening accuracy).

Students will see a variety of grammatical structures, but the following are some of the most common:

Subject-Verb Agreement: a singular subject takes a singular verb:

The child —— is smiling.

A plural subject takes a plural verb:

The children —— are smiling.

Passive-Voice - Negative: We use the passive voice when the subject is not important or when we do not know the subject. A sentence in the passive voice focuses on the action. To negate a sentence in passive voice, put "not" after the helping verb:

The window	was	not	broken	by	a rock.
subject	helping verb	negative	verb past participle	preposition	agent of the action

Subject and Object Relativization: in sentences with reduced subject relative clauses and noun-verb-noun endings, information related to the sentence topic is put into the middle of the sentence to give the reader more information and make clear distinctions:

The girl	helping the teacher	is smiling.
reduced subject relative clause		predicate

Which girl is smiling? The girl who is helping the teacher.

The ending "teacher is smiling" can make this type of sentence especially confusing. Students who don't recognize the role of the reduced subject relative clause may misinterpret this sentence as "the girl is helping and the teacher is smiling."

Exercise Overview

Acoustically Modified Speech

Have you ever worked with a student who had modifications for additional think time, extra wait time, or for teachers to speak more slowly? All of these modifications provide the student with extra time to make sense of information, also known as processing time. For students who struggle with processing speed, and for those learning a new language, slowing down the rate of speech and emphasizing specific sounds can help them develop accurate phonological representations while increasing comprehension.

Fast ForWord's acoustically modified speech technology—sometimes referred to as "glasses for the ears"—slows and emphasizes speech sounds so that students can hear all sounds in a word.

This technology can even stretch out sounds that are physically impossible for human speakers to stretch on their own.

"Why does everything sound so strange?"

Some speech sounds, such as the /b/ sound in the word "bat," have very fast transitional elements. When we say them aloud, these elements are easy to miss, but slowing them and emphasizing them (by presenting them at a higher volume) helps the brain process and respond to them more quickly.

The modified words and syllables in the Fast ForWord exercises may sound strange or mechanical to those who process sounds quickly. But for students who need a little extra time, the modified sounds and words will be easier to identify than natural speech. As students progress, the stretching and emphasis are reduced, pushing the brain to process at faster and faster rates until it can process natural speech.

▶ Why Does Everything Sound So Strange? (Student) in Student & Teacher Resources

▶ Why Fast ForWord Sounds the Way it Does (Teacher) in Student & Teacher Resources

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Introduce

Engage

When you're ready to introduce the exercise to your students, you can start by calling out how grammar impacts meaning. Say: Think of a time when you didn't hear something that someone said to you. What happened? Give an example, like: Have you ever played Simon Says? What happens if you don't hear or understand the instructions? Students can share what happens when they don't hear or understand directions or commands, with the idea being that they all come to the conclusion that you might miss something important if you aren't paying attention. Say: The same is true with this AI Assistant exercise; you have to be careful to pay attention to every word in the sentence and the order of the words.

Students will encounter subject-verb agreement tasks in AI Assistant, so it will be helpful to have students practice singular/plural subject-verb agreement rules before they begin. There's nothing like a good "Yes" question answered with a complete sentence to see if they understand subject-verb agreement.

For example, ask students: Does your friend like carrots? Do your friends like carrots? Write their responses on the board: "Yes, my friend likes carrots. Yes, my friends like carrots." Ask: Who is each sentence about? (my friend, my friends) Yes, 'my friend' and 'my friends' are the subjects of the sentences. Which is plural? Singular? What other word changes when you answer the questions and how does it change? (like > likes)

Encourage students to generate similar questions and repeat the activity. Continue the activity, but this time work with examples of irregular subject-verb agreement, especially subjects that are the same in both their singular and plural forms: *shrimp, salmon, squid, moose, deer, buffalo, aircraft, spacecraft,* etc.

Demo

1. Say: Today, we're going to practice identifying the picture that best answers a question or matches a statement. Together, we'll work on an exercise called AI Assistant. I'll get us started, and then I'd like for you to try.

2. Project the AI Assistant Introduction (English or Spanish) demo.

3. Describe the details you see in each picture.

4. Find the picture that best answers the question or matches the statement.

5. Explain why this is the best match, and how you ruled out the other options.

6. Click the correct picture.
   - Correct answer: a "ding" sound effect plays, the rollover light is replaced by a "golden glow" and points are awarded.
   - Incorrect answer: a "thunk" sound plays, the correct answer is highlighted with a white light, the incorrect answers are dimmed.

7. Keyboard shortcuts:
   - Go button: Space bar
   - Possible answers (left to right): Number keys 1-4

Direct students to log in and work individually on the AI Assistant Demo for approximately 10 minutes. This time period mimics the timing of the exercise once it's assigned. Debrief with students to ensure they understand the task and objective of the exercise. Ask, What did you notice? Have students share anything they have questions about.

AI Assistant includes instructional audio for the exercise introduction, instructions, and targeted practice. By default, these are presented in English. You can, however, select Spanish instructions for all, some, or individual students on the Manage page in mySciLEARN.

Facilitate and Encourage

Monitor Student Progress

Review AI Assistant reports regularly to monitor student progress. Use the data to determine which students are succeeding and which students might be struggling to make progress.

Where to look...	What to look for... what it means

PROGRESS: Elements I Exercise Progress - AI Assistant

The colored line shows student progress and their percent complete. Each dot indicates a day the student worked on the exercise.

Is the line going up?
The student is completing content accurately and making progress.

Is the line flat across several dots?
The student may be struggling and you need to find out why.

Are there long lapses between dots?
The student may be skipping this exercise.

USAGE: Usage Details - Schedule

Do you see half-filled gray circles?
The student is working on this exercise, but not meeting the scheduled time. Make sure that they have time to complete their daily schedule. If fatigue is an issue, taking breaks is okay.

Do you see red circles?
The student is skipping this exercise. Provide support to help them re-engage.

USAGE: Usage Details - Minutes/Trials

Are many days highlighted in red?
The student is not meeting their daily schedule. Check the Schedule tab in this report to investigate further.

Is the student answering fewer questions than usual?
They may be distracted or losing focus. In comparison to their previous activity, a low number of trials to minutes may indicate the student is not applying themselves to the task.

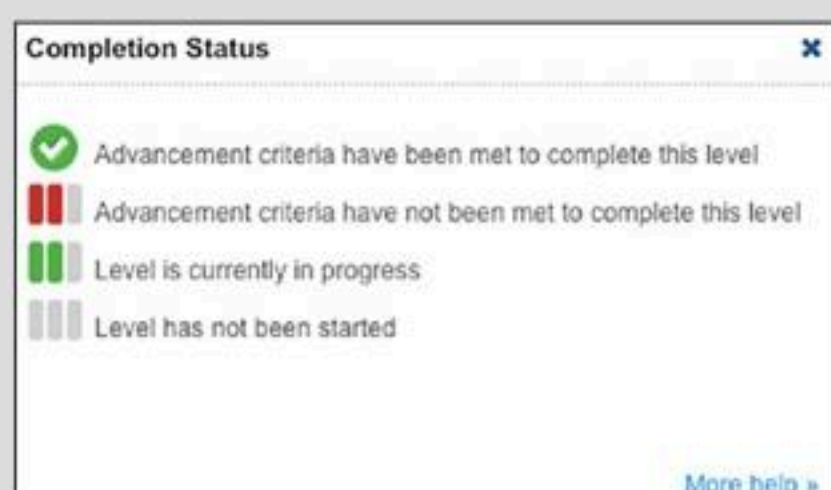**Is the student answering more questions than usual?**
They may be rushing. In comparison to their previous activity, a high number of trials to minutes may indicate the student is trying to amass points, or to progress more quickly, but rushing can result in mistakes. Ask them to turn Autoplay off. Remind them that making progress depends on accuracy, not speed.

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Facilitate and Encourage

Where to look...

PROGRESS: Progress Details - AI Assistant
Completion Status

Completion Status ✕

✅ Advancement criteria have been met to complete this level

🟥🟥 Advancement criteria have not been met to complete this level

🟩🟩 Level is currently in progress

⬜⬜⬜ Level has not been started

More help »

Percent Correct

To make progress, students must get around 90% correct on each level.

Number of Trials

The number varies depending on level. If a level must be repeated, the student may only be required to repeat a subset of the language structures, in which case the number of trials will be reduced.

Progress Details ❓ Expand All

▼ AI Assistant		Last Participation: 06/30/2020	
Level	**Completion Status**	**Percent Correct**	**Number of Trials**
Processing Level 1	🟥🟥	76%	90
	🟥🟥	90%	60
	✅	100%	20
Processing Level 2	🟥🟥	83%	140
	🟥🟥	77%	69
	🟥🟥	79%	53
	🟥🟥	68%	38

PROGRESS: Errors - AI Assistant
Content the student is struggling with is indicated in red.

Errors - All Time ❓ Expand All

▼ AI Assistant		
Errors Occurred In:	**% Errors**	**Errors Out of Attempts**
Action Words	7%	2 of 30
Example: *Which is "eat"?*		
Active Voice	37%	18 of 49
Example: *The cat is following the dog.*		

What to look for... what it means

Are there red bars under Completion Status?

When the student doesn't achieve a high enough percentage of correct answers they will repeat a level (or at least repeat those language structures they are struggling with). It is important to note how close the student is to meeting the advancement criteria. Often, simply explaining this to the student can result in more focused attention on the repeated level. If a student has to repeat a level several times, they may need more support.

Percent Correct - Is percent correct above 80%?

The student is close to the criterion for progressing (80% or 90% correct, depending on the question group). Encourage them to avoid mistakes by slowing down, thinking about each question, and using the Replay button.

Is the percent correct well below 80%?

The student may be struggling with one or more language structures. Go to the Errors section of this report to determine where the student needs additional support.

When a level is repeated, does the number of trials decrease?

This indicates that the student has mastered some language structures at this level, and is making progress.

When a level is repeated, does the number of trials stay the same?

The student has not mastered additional language structures. If their percent correct increases, this indicates that they are learning from their mistakes, and may just need more practice. Remind them to listen to and observe the corrective feedback to better understand "why" their answer was wrong before moving on to the next question.

Otherwise, go to the Errors section of this report which can help you determine where the student needs additional support.

Are specific language structures highlighted in red?

Consider providing the student with instruction on the specific vocabulary and/or language structures with which they are struggling.

The "Adjust Instruction/Intervene" section in this teacher manual provides suggestions for how to support students who might be struggling with AI Assistant.

⬇ Elements I Progress Monitoring Chart in Student & Teacher Resources

Adjust Instruction/Intervene

Differentiation Activities

Differentiating instruction requires continually striving to know and to respond to each student's needs in order to maximize learning. Use the data in AI Assistant reports to adjust instruction to meet each student's needs and respond to variance among learners. The activities below are suggestions to support students who might be struggling with their progress in AI Assistant.

Does the student understand the exercise goal/task?

Observe the student as they work through the exercise demo to determine where their understanding may be breaking down. Make sure the student clearly understands the task of the exercise. Ask: Can you tell me what this exercise wants you to do? If needed, explain how the exercise works. Say, The computer will ask you a question or make a statement. You must click the picture that best answers the question or matches the statement.

Listen along with a student while they work on the exercise. Say: Repeat the sentence back to me and explain why you would choose one picture over the others before you click the picture. This will help you identify if the student is having trouble with listening comprehension, paying attention, and/or understanding the vocabulary or grammatical concepts presented.

Are there words in the sentence that the student doesn't know?

Engage the student in an offline activity, such as flashcards, that focuses on the specific vocabulary they are struggling with.

Facilitate and Encourage

☑ **Is the student noticing the details in the pictures that provide clues to the correct answer?**

Discuss the importance of listening and looking closely at the details of each possible answer before choosing. Remind students that they can hear the sentence again by clicking the "Replay" button before answering.

While viewing a set of pictures in AI Assistant, say: It's important to notice little things about pictures. Ask questions relevant to the picture, such as, Who are the characters? What are the characters doing? What objects are shown? How could you describe the objects? Where do you think this scene might be taking place? What is happening in this picture?

Provide students with verbal sentence frames as needed: The character is _____. The object is _____. This picture is happening in/at/by/on _____. In this picture _____ is/are _____.

☑ **Is the student using their memory skills/capacities?**

Ask the student to repeat the sentence back to you. If they are having difficulty remembering sentences, here are some games to help build memory and focused attention. Give your student a 3 letter word to spell out loud. Then ask them to spell it backwards out loud. See if they can spell 4 or even 5 letter words backwards!

If the student can't spell yet, then you can play a following directions game like Simon Says. Both of these games help students to practice using their memory and attention skills while having fun which can build motivation and skills to improve progress in this exercise.

☑ **Is the student struggling with a specific language structure?**

Look at the Error Report to determine the specific language structure and provide an activity that focuses on the specific concept with which they are struggling.

Write out a sentence from the exercise and show the student how they can modify the sentence and still have the same meaning. For example, "The girl is being looked at by the tall boy." means the same as "The tall boy is looking at the girl."

Facilitate and Encourage

Adjust Instruction/Intervene

Student Resources

You may decide to use any or all of these monitoring sheets with your students:

Elements I Streaks & Completion Chart in Student & Teacher Resources
Explain to students that accuracy is the key to moving through the content in Fast ForWord. Because streaks record the number of correct answers in a row, this chart can help students self-monitor for accuracy. After they complete their exercises for each day, have students record their highest streaks and percent complete in each exercise, then challenge them to exceed those numbers tomorrow. Students will need one copy every 5 days.

Elements I Completion Chart in Student & Teacher Resources
Students can self-monitor their progress in each Elements I exercise by filling in the bar each day with their actual completed percentage. This provides students with an overall view of how much content they've completed compared to how much they have left to do. Students will need one copy.

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OCEAN EXPLORER

Goals/Objectives

|	
English Language Arts Standards	The listening accuracy and auditory sequencing skills addressed by this exercise precede those addressed by typical reading standards, but are essential for learners to: • recognize rapidly changing sounds, which is important for phoneme discrimination • recognize and remember the order of a series of sounds, which is critical for mapping sound sequences to letter sequences when decoding or spelling.
Language/ Reading Skills	Students will be able to... • identify rapidly changing sounds (listening accuracy) • correctly recognize and remember the order of a series of sounds (auditory sequencing)
Cognitive Skills	Students will be able to... • hold a sound sequence in working memory while recalling visual symbol-sound associations from long-term memory (memory) • focus and sustain attention (attention) • process tonal sweeps (processing)
Social-Emotional/ Executive Function Skills	Students will be able to... • selectively focus and sustain attention on a lesson or an activity • inhibit impulsive responses • build confidence in listening skills • manage ability to process rapid, complex information

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Exercise Screen
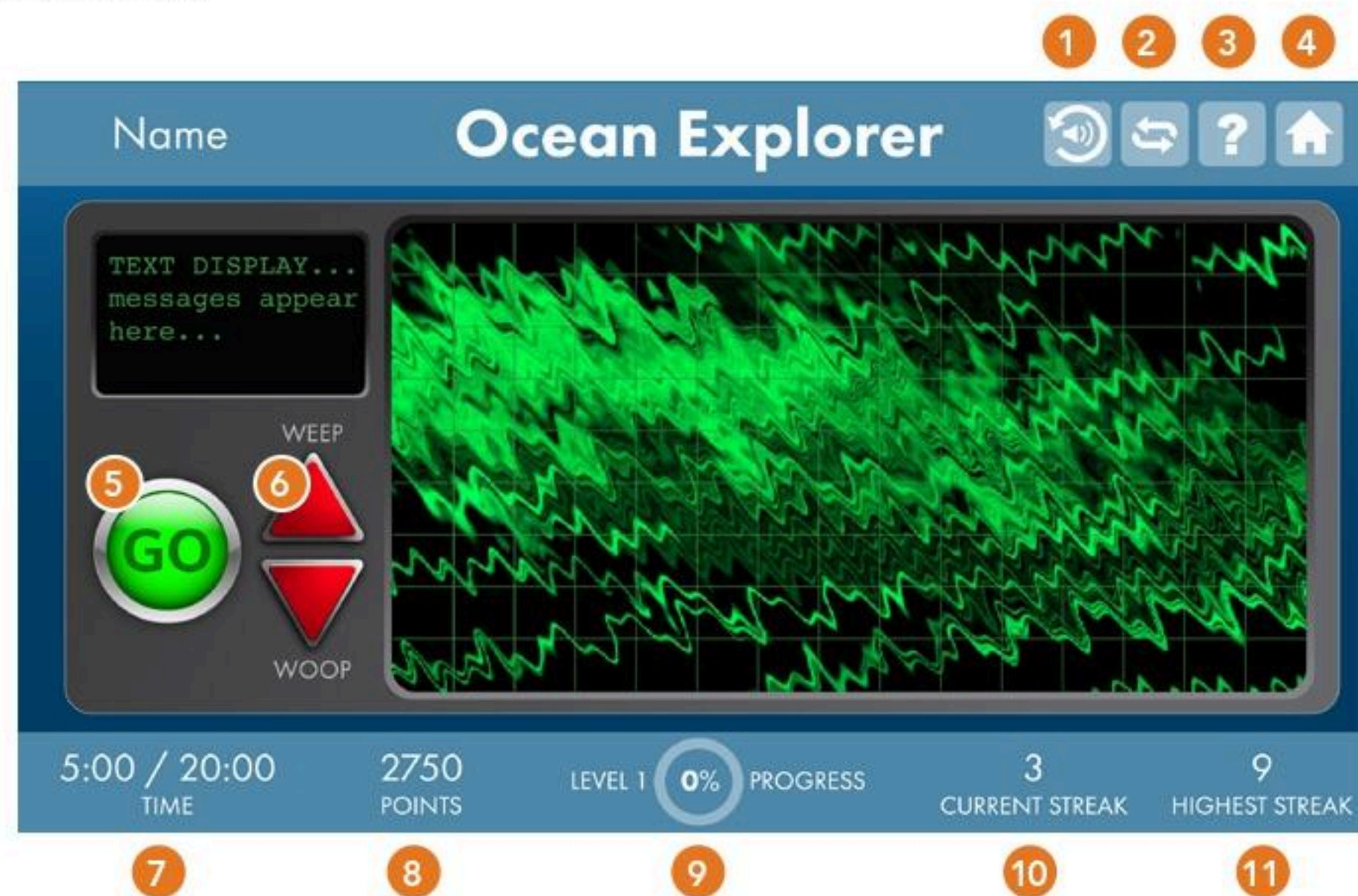
① Replay
Repeats the sound or sequence of sounds.

② Autoplay
Turns Autoplay on or off; when "on" each click of the Go button presents a series of three or more trials.

③ Help
Provides access to help options:
- **How to** replays initial instructions and provides a model trial.
- **Practice** allows students to listen closely to the current stimuli without affecting their progress.
- **Progress** displays progress for each level and the entire exercise.

④ Home
Returns the student to the Exercise Selector screen.

⑤ Go
Presents a question or series of Autoplay questions. When an Autoplay sequence is in progress, this counter shows how many questions remain.

⑥ Response Buttons
Responds to a question by clicking the up and down arrows in the right order, to match the sound or sequence of sounds presented.

⑦ Time
Shows Time Worked / Time Scheduled for the exercise.

⑧ Points
Shows total points awarded across all of a day's sessions.
- Correct answers: 1 point for each correct answer
- Autoplay bonus: double the usual points if all questions in a set are answered correctly.

⑨ Level Progress
Displays the current level and percent completion of the level.

⑩ Current Streak
Shows the number of consecutive correct answers since the last incorrect answer (or since the beginning of the session, if no answers have been correct).

⑪ Highest Streak
Shows the highest number of consecutive correct answers in this session.

Task

In Ocean Explorer, students listen to frequency-modulated sweep sounds that change their pitch, going from low to high (an up sweep or "Weep") or from high to low (a down sweep or "Woop"). Many speech sounds (phonemes) include sweeps. For example, to distinguish /b/ from /d/, one must be able to distinguish and recognize the sweep components of those speech sounds.

Ocean Explorer begins with single sweeps, then progresses to paired sweeps. Students must click the Go button to hear a sweep or a pair of sweeps. If they hear a single sweep, they must click the up or down arrow to match that sound. If they hear a pair of sweeps, they must click the up and down arrows in the right order to match the pattern of sounds.

While students work through the exercise, the screen shows a distorted image overlaid with a grid. At first, the image is completely obscured. Each time students get three correct answers in a row, cells within the grid reveal a clearer image. If students get answers incorrect, cells may revert to the distorted image.

On this journey, you will listen for sounds like "Weep" and "Woop." Click the Go button to hear the sounds.

"Weep" Hear that? That was "Weep." These sounds go up. For "Weep," click the up button.

Icon Key						
	Audio	Download	English Learner	Quick Check	Settings	Video

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Content

As students progress in Ocean Explorer, the exercise presents paired sweeps that change in frequency, duration, and inter-stimulus interval (ISI—the between the paired sweeps).

Frequency: Each frequency sweep starts at a base frequency, measured in Hertz (Hz) or cycles per second. The exercise rotates through three base frequencies, to promote generalization to natural human speech.

- Low (500 Hz)
- Middle (1000 Hz)
- High (2000 Hz)

Duration: Each frequency sweep also varies in length or duration, measured in milliseconds (ms). As students progress, they move from longer to shorter sweeps, which increases the difficulty of the task. Changes to the sweep duration push the brain to process very rapid transitions, such as those found in natural speech.

- 80 ms
- 60 ms
- 40 ms
- 35 ms
- 30 ms

Inter-stimulus Interval (ISI): When a pair of frequency sweeps is presented, there may be a silent pause or gap between the two. This gap is also known as the inter-stimulus interval or ISI, and it is measured in milliseconds (ms). As students progress, the gap gets shorter (dropping from 500ms to 0ms—no gap at all). This increases the difficulty of the task. Changes to the ISI push the brain to process sounds more rapidly.

Ocean Explorer Progression
The task changes and gets more difficult in several ways:

- At first, students start by working through introductory levels that provide instructions, modeling, and supports (audio feedback and/or visual cues) to introduce the frequency sweeps and the tasks. As students progress through the introductory levels, the supports are gradually removed.

- In the standard levels, within each base frequency, students advance through 5 sets with progressively shorter durations. Within each set, students advance through 45 stages with progressively shorter ISIs. This progression challenges students to improve their rate of auditory processing.

- Ocean Explorer adapts to students' performance. If students are doing well, they may skip some stages; if they are struggling, they may need to work on more of the stages. If a student gets stuck for an extended period, they may be shifted to work on a different frequency or provided with targeted practice.

Content

Motivational Levels

Students work to reveal a different picture in each of five motivational levels. After each 20% of progress through the exercise, the picture for the current level is completely revealed. These motivational levels are not connected to content, only to percent completion.
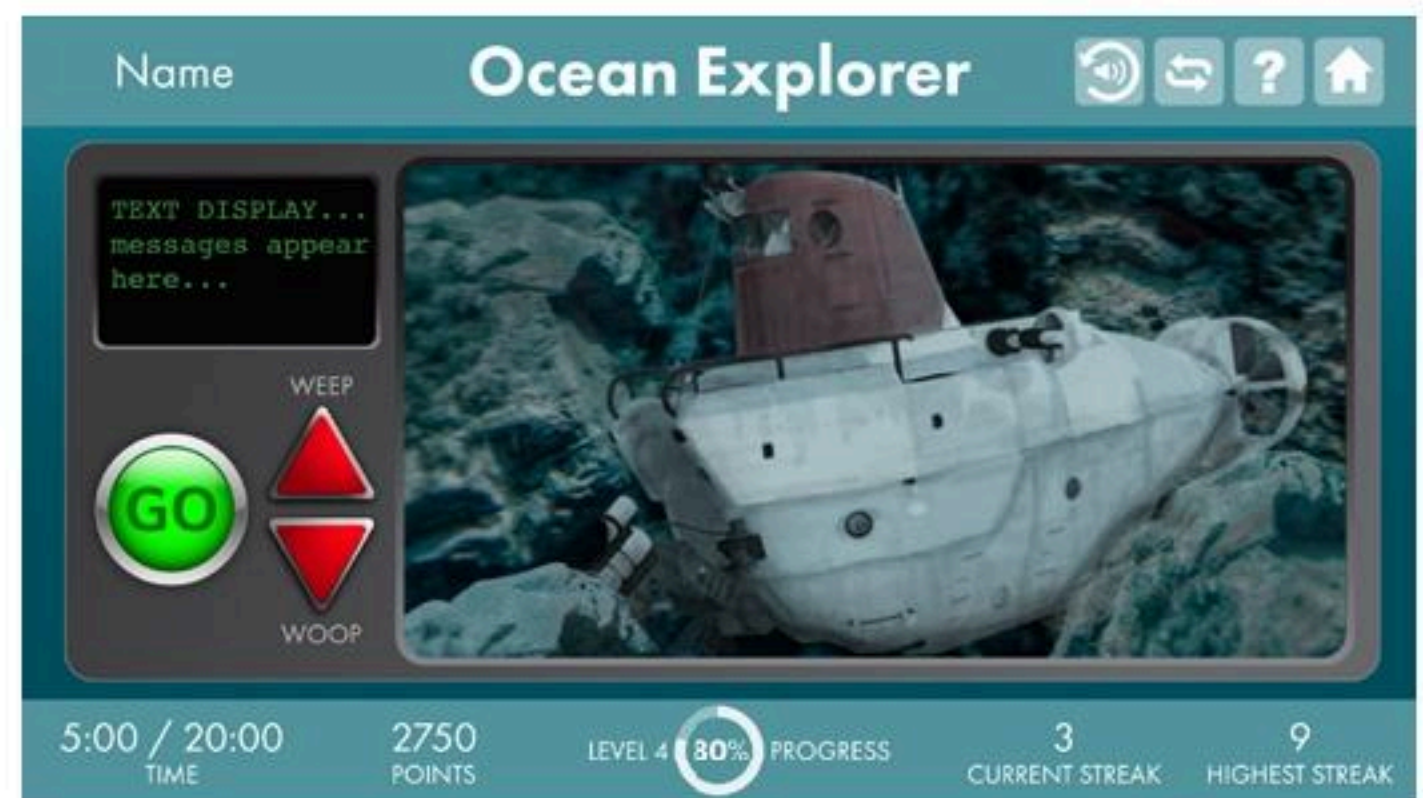

Level 1

Level 2

Level 3

Level 4

Level 5

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Targeted Practice

This exercise uses built-in, responsive technology to detect when a student is struggling and administer targeted, inline instruction—right when the student needs it—without any external resources or assistance required. This helps reduce frustration as it quickly gets students back on track, so they can continue making progress.

Ocean Explorer provides a variety of in-product interventions, such as: coaching, modeling, extended sweeps, alternative instructions and tasks, and modified progressions.

One type of intervention, Paired Sweep Alternate Stimuli, introduces the mechanics of the task and sound/button mappings using familiar, distinguishable animal sounds and words before progressing to frequency sweeps.

Students are provided immediate feedback as to whether their answer is correct or incorrect.

Students' progression in the exercise stops temporarily while working through an intervention, then resumes when they return to the regular exercise content.

🔊 Let's try something new. See the chicken? The up button is now the chicken button. Click the chicken button. See the cow? The down button is now the cow button. Click the cow button. Nice job! Click Go to hear a sound. Click the chicken or cow button to make the same sound.

🔊 Now, Go will make two sounds. Here's what you do. Listen carefully. What was the order? Click the buttons in the same order. First, let's practice. I will talk you through. Click Go. We heard a cluck, then a moo. So, click the chicken button, then click the cow button. Remember: Hear two sounds? Make two clicks.

Ocean Explorer

Name

TEXT DISPLAY...
messages appear
here...

GO

| 5:00 / 20:00 | 2750 | LEVEL 1 0% PROGRESS | 3 | 9 |
| TIME | POINTS | | CURRENT STREAK | HIGHEST STREAK |

Exercise Overview

Acoustically Modified Speech

Have you ever worked with a student who had modifications for additional think time, extra wait time, or for teachers to speak more slowly? All of these modifications provide the student with extra time to make sense of information, also known as processing time. For students who struggle with processing speed, and for those learning a new language, slowing down the rate of speech and emphasizing specific sounds can help them develop accurate phonological representations while increasing comprehension.

Fast ForWord's acoustically modified speech technology–sometimes referred to as "glasses for the ears"–slows and emphasizes speech sounds so that students can hear all sounds in a word.

This technology can even stretch out sounds that are physically impossible for human speakers to stretch on their own.

> ## "Why does everything sound so strange?"

Some speech sounds, such as the /b/ sound in the word "bat," have very fast transitional elements. When we say them aloud, these elements are easy to miss, but slowing them and emphasizing them (by presenting them at a higher volume) helps the brain process and respond to them more quickly.

The modified words and syllables in the Fast ForWord exercises may sound strange or mechanical to those who process sounds quickly. But for students who need a little extra time, the modified sounds and words will be easier to identify than natural speech. As students progress, the stretching and emphasis are reduced, pushing the brain to process at faster and faster rates until it can process natural speech.

▶ Why Does Everything Sound So Strange? (Student) in Student & Teacher Resources

▶ Why Fast ForWord Sounds the Way it Does (Teacher) in Student & Teacher Resources

Did you know?

In Ocean Explorer, students identify and sequence frequency sweeps–sounds that change in pitch from low to high ("Weeps") or high to low ("Woops"). What does this have to do with being a good listener and reader? The frequencies and durations of the frequency sweeps resemble some of the rapid transitions in the sounds of the English language.

To understand speech, it's important to quickly be able to tell frequency sweeps apart. Although we are unaware of such frequency sweeps when we hear someone talk, many of the common speech sounds, such as /b/, /d/, /g/, /p/, and /t/, have a frequency sweep component. Our brains have to be able to identify these frequency sweeps in order to understand what someone is saying. For example, one sweep is all that differentiates /b/ from /d/, and that makes the difference between hearing *bad* and *dad*.

A frequency sweep that passes by in a fraction of a second can be critical for correctly identifying a speech sound, recognizing a word, and understanding a sentence. It can be especially difficult to hear these sounds when the language is unfamiliar or the speaker is unclear or when listening in a noisy environment. Robust and rapid auditory processing is critical for students who are learning through spoken language. It is also critical for building the speech sound representations that are the basis of early reading skills like phonological awareness and phonics. Ocean Explorer improves students' ability to recognize frequency sweeps quickly and accurately.

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Facilitate and Encourage

Introduce

Engage

To introduce the exercise to your students, you can start by explaining to students that they will be listening to frequency-modulated sweep sounds. Say: Have you ever had a song you know so well that you can recognize it after just a few notes have been played? The human auditory system can do amazing things when it is well tuned. It has to be well tuned to understand speech sounds, because it has to process more than 700 sounds per minute in typical spoken language! This exercise tunes your auditory system to quickly distinguish one of the important components of many speech sounds—frequency sweeps. The sounds presented are actually sound sweeps that cover the frequencies in human speech. The object is to listen carefully and determine whether the sound sweeps you hear are up or down sweeps. We will listen together and share strategies you might use to tell the difference.

Demo

1. Say: Today, we're going to practice matching the sound or sequence of sounds presented to you. Together, we'll work on an exercise called Ocean Explorer. I'll get us started, and then I'd like for you to try.

2. Project the Ocean Explorer Introduction (English or Spanish) demo.

3. Follow along with the demo, which explains how the exercise works.

4. Encourage choral response or hand-raising. Ask those who can hear the difference to share their strategies (i.e. closing their eyes, humming to themselves, assigning an environmental sound to the sweeps for a memory association). Have students encourage each other by seeing who can get the most correct answers in a row.

5. Keyboard shortcuts:
   - Go button: Space bar
   - "Weep" answer: Up arrow
   - "Woop" answer: Down arrow

Direct students to log in and work individually on the Ocean Explorer Demo for approximately 10 minutes. This time period mimics the timing of the exercise once it's assigned. Debrief with students to ensure they understand the task and objective of the exercise. Ask, What did you notice? Have students share anything that they have questions about.

Ocean Explorer includes instructional audio for the exercise introduction, instructions, and targeted practice. By default, these are presented in English. You can, however, select Spanish instructions for all, some, or individual students on the Manage page in mySciLEARN.

Monitor Student Progress

Review Ocean Explorer reports regularly to monitor student progress. Use the data to determine which students are succeeding and which students might be struggling to make progress.

Where to look...	What to look for... what it means

PROGRESS: Elements I Exercise Progress - Ocean Explorer

The colored line shows student progress and their percent complete. Each dot indicates a day the student worked on the exercise.

Is the line going up?
The student is completing content accurately and making progress.

Is the line flat across several dots?
The student may be struggling and you need to find out why.

Are there long lapses between dots?
The student may be skipping this exercise.

USAGE: Usage Details - Schedule

Do you see half-filled gray circles?
The student is working on this exercise, but not meeting the scheduled time. Make sure that they have time to complete their daily schedule. If fatigue is an issue, taking breaks is okay.

Do you see red circles?
The student is skipping this exercise. Provide support to help them re-engage.

USAGE: Usage Details - Minutes/Trials

Are many days highlighted in red?
The student is not meeting their daily schedule.

Is the student answering fewer questions than usual?
They may be distracted or losing focus. In comparison to their previous activity, a low number of trials to minutes may indicate the student is not applying themselves to the task.

**Is the student answering more questions than usual?**
They may be rushing. In comparison to their previous activity, a high number of trials to minutes may indicate the student is trying to amass points which can result in careless answers and mistakes. Ask them to turn Autoplay off. Remind them that making progress depends on accuracy, not speed.

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Facilitate and Encourage

Where to look...

PROGRESS: Progress Details - Ocean Explorer

Completion Status
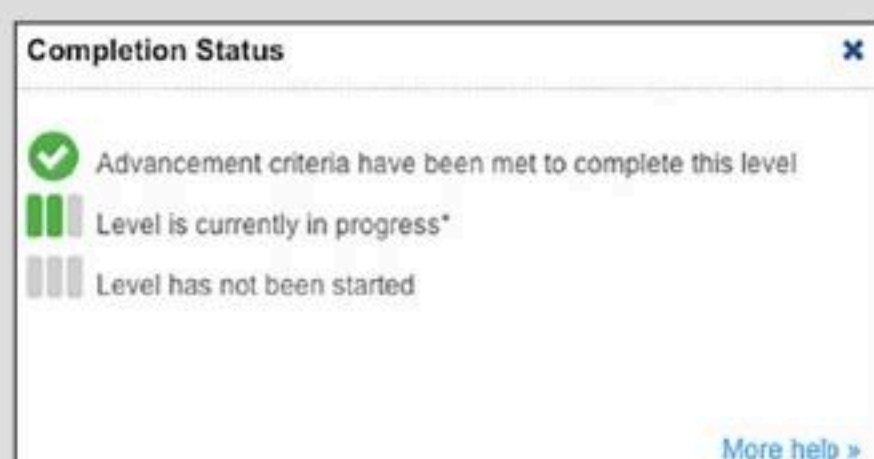
Number of Trials
The number trials needed varies by level:

<u>Introductory Levels</u>

Minimum trials:
- Identify Single Sweeps: 27
- Sequence Paired Sweeps with Audio Feedback and Visual Cues: 9
- Sequence Paired Sweeps with Audio Feedback: 63
- Sequence Paired Sweeps: 27

<u>Standard Levels</u>

- Minimum trials = 69.
- As students progress to more difficult levels (shorter sweeps), the number of trials required to master a level generally increases.

What to look for... what it means

Has the student taken too many trials without passing a level?

Students who need more than 3 to 4 times the minimum trials to pass the introductory levels, or more than 200 trials to pass a standard level with 80ms sweeps may be struggling to understand the task, or they may be having auditory processing and/or memory difficulties. As students progress to shorter sweeps, they typically need 200 or more trials to complete a level. At these levels, it is important to maintain motivation and make sure the student is applying themselves.

When students reach content that is especially difficult for them, their progress will slow and completing a level will take more trials. At these times, monitor the student's progress graph and celebrate even small increases.

The "Adjust Instruction/Intervene" section in this teacher manual provides suggestions for how to support students who might be struggling with Ocean Explorer.

⬇ Elements I Progress Monitoring Chart in <u>Student & Teacher Resources</u>

Facilitate and Encourage

Adjust Instruction/Intervene

Differentiation Activities

Differentiating instruction requires continually striving to know and to respond to each student's needs in order to maximize learning. Use the data in Ocean Explorer reports to adjust instruction to meet each student's needs and respond to variance among learners. The activities below are suggestions to support students who might be struggling with their progress in Ocean Explorer.

> ### ✅ Does the student understand the exercise goal/task?
>
> Observe the student as they work through the exercise demo to determine where their understanding may be breaking down. Make sure the student clearly understands the task of the exercise. Ask: Can you tell me what this exercise wants you to do? If needed, explain how the exercise works. Say, The computer will play a sound. If you hear a single sweep, you must click the up or down arrow to match the sound. If you hear a pair of sweeps, you must click the up and down arrows in the right order to match the pattern the computer played.

> ### ✅ Is the student aware that this exercise uses the *3-Forward/1-Back Rule* to make forward progress?
>
> The *3-Forward/1-Back Rule* means the student needs to get 3 responses correct in a row to move forward. When they get a wrong answer it will move them back. Highlight streaks with the student to show them the importance of consistency and accuracy. Use the Three-in-a-Row Worksheet to help the student visualize their progress and become more focused on accuracy and consistency.

> ### ✅ Does the student have simple sequencing skills?
>
> Start by using pairs of words, such as *orange-apple*, *big-little*. Say the word pair and have the student repeat it back to you in the same order. Vary the order of the words in the pair: *orange-apple, apple-orange, apple-apple, orange-orange*. Then switch to "Weep-Woop" as the word pair, and randomly speak one of the four possible variations with the student repeating the sequence for you. Next, using a small sheet of paper, draw an arrow pointing up and a downward pointing arrow below. Again, say the "Weep-Woop" variations and have the student point at the appropriate arrow sequence.

Facilitate and Encourage

✓ **Does the student have the skills needed to detect the different directions and frequencies of the sweeps?**

Practice with the student focusing on sweep sequence identification. This can best be done by having the student use the Early Level Ocean Explorer demos. Have the student close their eyes while you control the exercise and they focus on listening to each sound sweep sequence. In Practice mode, randomly select different sequences until the student can demonstrate a high rate of accuracy, then allow the student to work in the demo. If the student's accuracy dips, repeat these steps before allowing them to work independently.

✓ **Does the student struggle to differentiate between tones?**

Sit with the student while they work on the exercise. Ask the student what they hear. If they can't verbalize the sounds correctly, have them find a word that they can equate with the low tone and the high tone (a popular option is *Me* and *Joe*). Once students have created their own vocabulary word for each tone, direct the student to listen for them as they play along with the computer.

✓ **In later levels, as the sweeps get shorter with less time in between them, is the processing load beyond what the student can handle?**

An extended flat line on a student's progress graph is evidence that they may not yet be able to handle the increased processing load. Encourage them by reminding them that they have made excellent progress and that many students hit a plateau just like this in Ocean Explorer. Remind the student of the best practices for making progress in this exercise: focus, listen intently, and identify the sequence BEFORE clicking the answer. If Autoplay is on, have the student turn it off so that they can choose when to start each trial. This can help prevent students from getting incorrect answers, feeling discouragement, and giving in to frustration. Encourage the student to use the Replay feature to get their ears used to the shorter and closer together sweep sequences.

Facilitate and Encourage

Adjust Instruction/Intervene

Student Resources

You may decide to use any or all of these monitoring sheets with your students:

⬇ Three-in-a-Row Worksheet in Student & Teacher Resources
Explain to students that accuracy is the key to moving through the content in this exercise. Students make progress based on the *3-Forward/1-Back Rule*: they move forward when they get 3 answers in a row correct, but they move backward when they get 1 answer incorrect. Because streaks record the number of correct answers in a row, this sheet can help students self-monitor for correct answers by providing the visual feedback that some students need to register their number of correct answers in a row. This sheet is useful for daily monitoring. Students will likely need one copy per day.

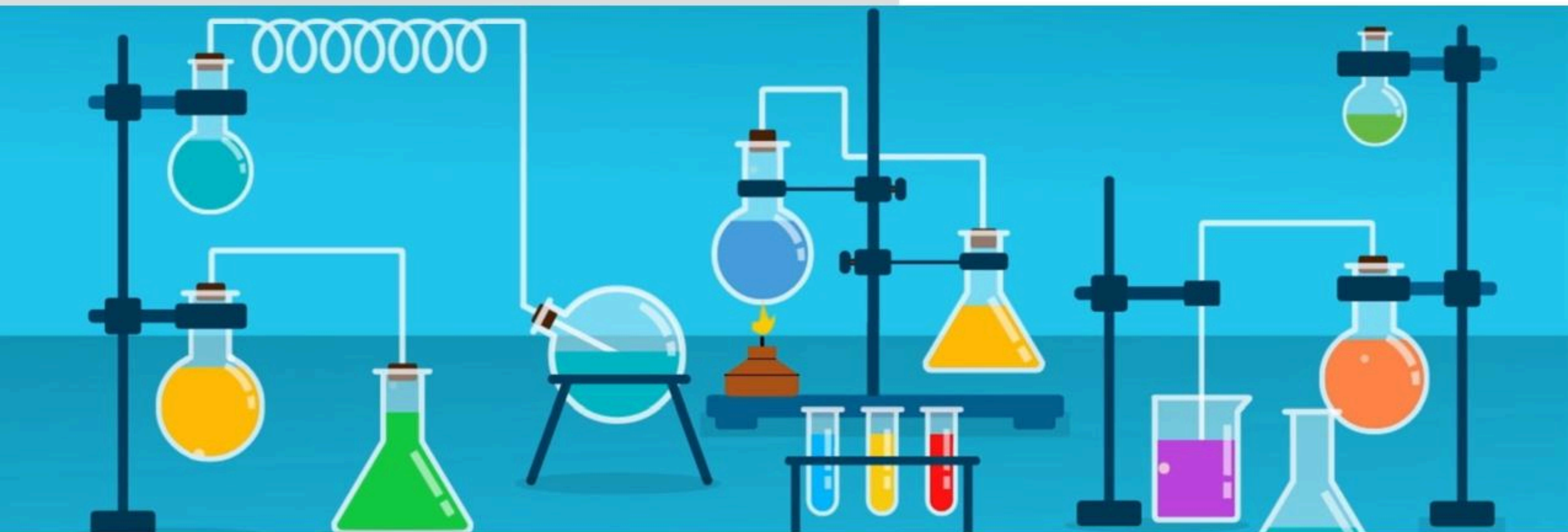⬇ Elements I Streaks & Completion Chart in Student & Teacher Resources
Explain to students that accuracy is the key to moving through the content in Fast ForWord. Because streaks record the number of correct answers in a row, this chart can help students self-monitor for accuracy. After they complete their exercises for each day, have students record their highest streaks and percent complete in each exercise, then challenge them to exceed those numbers tomorrow. Students will need one copy every 5 days.

⬇ Elements I Completion Chart in Student & Teacher Resources
Students can self-monitor their progress in each Elements I exercise by filling in the bar each day with their actual completed percentage. This provides students with an overall view of how much content they've completed compared to how much they have left to do. Students will need one copy.

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SONOLAB

Goals/Objectives

|	
English Language Arts Standards	Phonological Awareness: students will demonstrate an understanding of spoken words, syllables, and speech sounds (phonemes)
Language/ Reading Skills	Students will be able to... • identify speech sounds in a quick and efficient manner (phonological fluency) • distinguish between syllables that differ by a single phoneme (phonological accuracy)
Cognitive Skills	Students will be able to... • rapidly process auditory details (auditory processing) • remember speech sounds and recognize when a sound pattern has changed (phonological memory)
Social-Emotional/ Executive Function Skills	Students will be able to... • focus attention on a lesson or an activity • refrain from making impulsive responses • manage excitement and frustration

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Exercise Screen
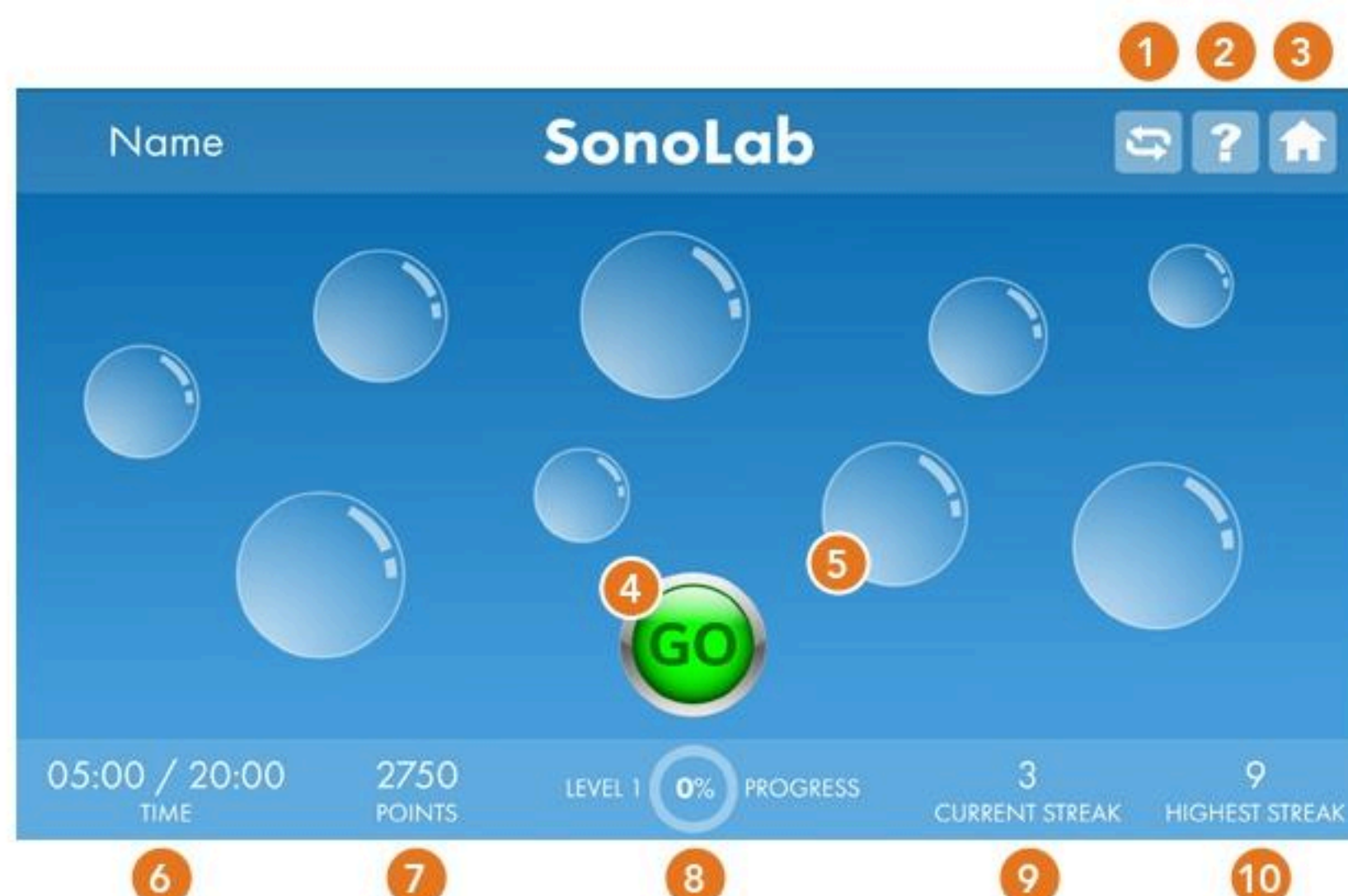
1 Autoplay
Turns Autoplay on or off; when "on" each click of the Go button presents a series of three or more trials.

2 Help
Provides access to Help options:
- **How to** replays initial instructions and provides a model trial.
- **Practice** allows students to listen closely to the current stimuli and take practice trials without affecting their progress.
- **Progress** displays progress for each level and the entire exercise.

3 Home
Returns the user to the Exercise Selector screen.

4 Go
Presents a question or series of Autoplay questions. When an Autoplay sequence is in progress, this counter shows how many questions remain.

5 Response Buttons
Bubbles (or other objects) that are clicked when the user hears the syllable change. If the response is correct, the object disappears. When all objects have been cleared, the screen is refreshed with a new batch.

6 Time
Shows Time Worked / Time Scheduled for the exercise.

7 Points
Shows total points awarded across all of a day's sessions.
- Correct answers: 2 points for each correct answer
- Autoplay bonus: 2 points for each correct answer, if all answers in an Autoplay sequence are correct.

8 Level Progress
Displays the current level and percent completion of the level.

9 Current Streak
Shows the number of consecutive correct answers since the last incorrect answer (or since the beginning of the session, if none have been incorrect).

10 Highest Streak
Shows the highest number of consecutive correct answers in this session.

Task

At the beginning of the exercise, students answer each question as follows:

Click the "Go" button to start the trial. The active bubble begins glowing and pulsing, while a series of syllables plays. For example, "ki-ki-ki-ki-gi."

Listen closely! As soon as the syllable changes, click the active bubble.

In each trial, the initial syllable is repeated from 3 to 8 times, before the syllable changes. When the syllable changes, the student must respond quickly. This combination of patiently waiting, then rapidly responding, helps students learn to stay focused and refrain from acting impulsively.

Motivational Levels

After each 20% of progress through the exercise, students "level up" and the screen changes slightly. These motivational levels are not connected to specific processing levels or content, only to percent completion.

Level 1

Level 2

Icon Key

Audio   Download   English Learner   Quick Check   Settings   Video

FAST FORWORD®
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Content

Students progress through 6 sound sets. Each set is focused on a pair of syllables that differ by a single phoneme.

SonoLab Progression

Within each sound set, students progress through 18 stages. Across these stages, the following changes occur:

- At first, the syllables are modified, so that they are easier to tell apart. This support is gradually reduced, until the syllables resemble natural speech.
- The maximum repetitions of the alternate syllable increases from 6 to 8, after Stage 9.
- The syllable presentation becomes more rapid. Time between the syllables (inter-stimulus interval; ISI) is reduced from 500ms to 300ms.
- The time allowed for a response is shortened.

SonoLab adapts to the students' performance within each sound set, moving them up and down between stages. Students also cycle between sets. A different set is presented at the beginning of each day, and/or when the student is struggling to progress. Each set is closed after its highest stage is passed.

SOUND SETS	
Target Syllable	Alternate Syllable
/gi/	/ki/
/chu/	/shu/
/si/	/sti/
/ge/	/ke/
/do/	/to/
/ba/	/da/

Level 3

Level 4

Level 5

Acoustically Modified Speech

Have you ever worked with a student who had modifications for additional think time, extra wait time, or for teachers to speak more slowly? All of these modifications provide the student with extra time to make sense of information, also known as processing time. For students who struggle with processing speed, and for those learning a new language, slowing down the rate of speech and emphasizing specific sounds can help them develop accurate phonological representations while increasing comprehension.

Fast ForWord's acoustically modified speech technology—sometimes referred to as "glasses for the ears"—slows and emphasizes speech sounds so that students can hear all sounds in a word. This technology can even stretch out sounds that are physically impossible for human speakers to stretch on their own.

> "Why does everything sound so strange?"

Some speech sounds, such as the /b/ sound in the word "bat," have very fast transitional elements. When we say them aloud, these elements are easy to miss, but slowing them and emphasizing them (by presenting them at a higher volume) helps the brain process and respond to them more quickly.

The modified words and syllables in the Fast ForWord exercises may sound strange or mechanical to those who process sounds quickly. But for students who need a little extra time, the modified sounds and words will be easier to identify than natural speech. As students progress, the stretching and emphasis are reduced, pushing the brain to process at faster and faster rates until it can process natural speech.

▶ Why Does Everything Sound So Strange? (Student) in Student & Teacher Resources

▶ Why Fast ForWord Sounds the Way it Does (Teacher) in Student & Teacher Resources

Did you know?

Phonological fluency affects reading fluency. If students are unable to quickly and easily distinguish between all the sounds presented in a word, they may mispronounce or misremember words in a passage. Building phonological memory and fluency with SonoLab can help students strengthen reading skills by training them to hear all of the sounds in a syllable or word.

Phoneme: the smallest unit of sound in a word. Phonemes include all the distinct units of sound (consonants and vowels) used by the speakers of a language: /b/ /a/ /t/.

Syllable: a cluster of sounds that includes exactly one vowel: *bat* = 1 syllable.

Phonological memory: the ability to hold speech-based information in memory. We rely heavily on our phonological memory when reading and spelling. Students with poor phonological memory are unable to remember and then repeat nonsense words of increasing length and complexity. They tend to forget parts of a word or confuse the sounds and/or sequence of sounds in a word.

Phonological fluency: the ability to identify and manipulate speech sounds quickly and efficiently, such as, distinguishing between the syllables /ba/ and /da/.

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Targeted Practice

This exercise uses built-in, responsive technology to detect when a student is struggling and administer targeted, inline instruction—right when the student needs it—without any external resources or assistance required. This helps reduce frustration as it quickly gets students back on track, so they can continue making progress.

SonoLab provides a variety of in-product interventions, such as: explanations, easier questions, coaching and focus mode. One type of intervention, Practice Mode, allows students to review a sound set by actually practicing and getting feedback on their efforts, without earning points or having it affect their progress.

The sounds in SonoLab may be hard to tell apart. Can you hear the difference?

Click each of the Go buttons at least two times, listen for the sound that is different, and click as soon as you hear it.

Name **SonoLab**

shu-shu-chu   shu-shu-shu-shu-chu   shu . . . chu

GO   GO   GO

5:00 / 20:00   2750   LEVEL 1 40% PROGRESS   3   9
TIME   POINTS   CURRENT STREAK   HIGHEST STREAK

Facilitate and Encourage

Introduce

Engage

To introduce the exercise to your students, you can start by explaining to students that they will be listening to two syllables that sound almost alike. Say: In this exercise, you will be asked to choose between two syllables that sound almost alike, such as /ba/ and /da/. This seems like it should be very easy but these types of syllables can be difficult for our brains to tell apart, especially in some listening situations like in a noisy room, or when listening to someone who mumbles or who talks very quickly. If you don't hear these sounds clearly, you might misinterpret what someone is saying. For example, if you don't hear the difference between "my friend's bad" instead of "my friend's dad" you could be very confused about a situation.

SOUND SETS	
Target Syllable	Alternate Syllable
/gi/	/ki/
/chu/	/shu/
/si/	/sti/
/ge/	/ke/
/do/	/to/
/ba/	/da/

Students will encounter **easily confusable pairs** of syllables in SonoLab, so it will be helpful to have students practice the sounds prior to working on the exercise. Explain how the exercise works. Say: You will hear a series of syllables, and you will click an image on the screen when you hear the syllable change. We are going to practice listening to these sounds before you work on this exercise.

1. Ask students to close their eyes and listen to you say the two sounds /ki/ and /gi/.
2. Have them repeat the sounds with you. Talk about changes in the shape of their mouth and jaw when they say each of the two sounds.
3. Block your mouth with your hand or a piece of paper (so that students can't guess an answer by reading your lips), or ask students to keep their **eyes closed and listen carefully** while you say /ki/. Ask the student to raise their hands when they hear the syllable change to /gi/.
4. Practice this same routine with the other sound sets.

Demo

1. Say: Today, we're going to practice listening for small changes in sounds. Together, we'll work on an exercise called SonoLab. I'll get us started, and then I'd like for you to try.
2. Project the SonoLab Introduction (English or Spanish) demo.
3. Follow along with the demo, which explains how the exercise works.
4. Click the bubble when you hear a different syllable:
   - Correct Answer: the bubble pops, you hear a "ding" and the bubble disappears.
   - Incorrect Answer: if the bubble is clicked too early or too late, you hear a "thunk" and the bubble remains on the screen.
5. Keyboard shortcuts:
   - Go button: Space bar
   - Answer: Down arrow

Direct students to log in and work individually on the SonoLab Demo for approximately 10 minutes. This time period mimics the timing of the exercise once it's assigned. Debrief with students to ensure they understand the task and objective of the exercise. Ask, What did you notice? Have students share anything that they have questions about.

SonoLab includes instructional audio for the exercise introduction, instructions, and targeted practice. By default, these are presented in English. You can, however, select Spanish instructions for all, some, or individual students on the Manage page in mySciLEARN.

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Facilitate and Encourage

Monitor Student Progress

Review SonoLab reports regularly to monitor student progress. Use the data to determine which students are succeeding and which students might be struggling to make progress.

Where to look...

PROGRESS: Elements I Exercise Progress - SonoLab

The colored line shows student progress and their percent complete. Each dot indicates a day the student worked on the exercise.

USAGE: Usage Details - Schedule

USAGE: Usage Details - Minutes/Trials

Days of Use	Date	AI Assistant Min	AI Assistant Trials	Ocean Explorer Min	Ocean Explorer Trials	SonoLab Min	SonoLab Trials	Space Salvage Min	Space Salvage Trials
126	07/08/2020	-	-	16	39	-	-	38	-
125	07/07/2020	-	-	15	39	15	96	39	15
124	07/06/2020	-	-	-	-	15	53	-	15
123	07/05/2020	-	-	15	62	0	-	62	-
122	07/03/2020	-	-	15	42	0	-	42	-
121	07/02/2020	-	-	-	-	0	-	-	-
120	07/01/2020	-	-	15	60	1	1	60	-
119	06/30/2020	15	83	15	49	-	-	49	15

What to look for... what it means

Is the line going up?
The student is completing content accurately and making progress.

Is the line flat across several dots?
The student may be struggling and you need to find out why.

Are there long lapses between dots?
The student may be skipping this exercise.

Do you see gray circles partially filled?
The student is working on this exercise, but not meeting the scheduled time. Make sure that they have time to complete their daily schedule. If fatigue is an issue, taking breaks is okay.

Do you see red circles?
The student is skipping this exercise. Provide support to help them re-engage.

Are many days highlighted in red?
The student is not meeting their daily schedule. Check the Schedule tab in this report to investigate further.

Is the student answering fewer questions than usual?
They may be distracted or losing focus. In comparison to their previous activity, a low number of trials to minutes may indicate that the student is not applying themselves to the task.

Is the student answering more questions than usual?
They may be rushing. In comparison to their previous activity, a high number of trials to minutes may indicate the student is trying to amass points, or to progress more quickly, but rushing can result in mistakes. Ask them to turn Autoplay off. Remind them that making progress depends on accuracy, not speed.
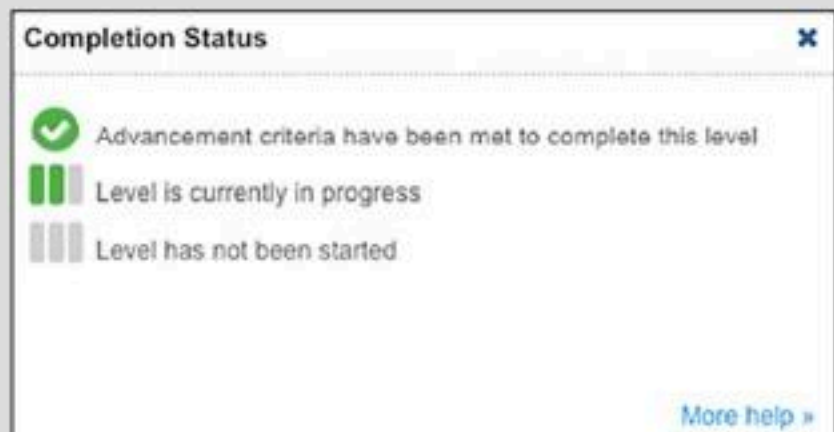
Facilitate and Encourage

Where to look...

PROGRESS: Progress Details - SonoLab

Completion Status

Number of Trials

The number needed varies by level:

Training Level

Average range for students making good progress:

- 9 - 28

Standard Levels

Average range for students making good progress:

- /gi/ - /ki/: 60 - 170
- /chu/ - /shu/: 70 - 170
- /si/ - /sti/: 40 - 110
- /ge/ - /ke/: 40 - 150
- /do/ - /to/: 40 - 180
- /ba/ - /da/: 60 - 190

What to look for... what it means

Has the student taken too many trials without passing a level?

High performers can complete each level in fewer than 100 trials.

- A student who is still working on a level after more than 150-200 trials may be struggling.
- If a student has taken more than 200 trials, it is important to make sure the student is applying themself and maintains their motivation and attention.
- When students reach content that is especially difficult for them, their progress will slow and completing a level will take more trials. At these times, monitor the student's progress graph and celebrate even small increases.

The "Adjust Instruction/Intervene" section in this teacher manual provides suggestions for how to support students who might be struggling with SonoLab.

Elements I Progress Monitoring Chart in Student & Teacher Resources

FAST FORWORD®
by Carnegie Learning

Adjust Instruction/Intervene

Differentiation Activities

Differentiating instruction requires continually striving to know and to respond to each students' needs in order to maximize learning. Use the data in SonoLab reports to adjust instruction to meet each student's needs and respond to variance among learners. The activities below are suggestions to support students who might be struggling with their progress in SonoLab.

☑ Does the student understand the exercise goal/task?

Observe the student as they work through the exercise demo to determine where their understanding may be breaking down.

☑ Does the student frequently "miss" the correct answer because they have difficulty with timing and rhythm?

Unlike many of the other exercises, this one requires a fast response time so timing is everything! Ask the student to tap their foot every time they hear the syllable repeated to help them improve their timing. If the student has trouble using a mouse or iPad consider switching to a keyboard and use the keyboard shortcuts. You may also ask the student to close their eyes while they listen to help them focus.

☑ Does the student easily lose focus?

Choose an object near the student to focus on and ask them if they can hold their eyes on the object for 3 seconds without looking away. Have the student prove that they can. Ask the student if they can hold their eyes on the same object for 5 seconds. If they can, have them focus for 7 seconds. Affirm the student's ability to concentrate for that amount of time. Then explain that one answer in SonoLab rarely takes more than 7 seconds of concentration. Finally, ask the student to turn off Autoplay so they determine when their 7 seconds of concentration begins. When the student has the discipline to resume with Autoplay, allow them to do so.

Facilitate and Encourage

Adjust Instruction/Intervene

Student Resources

You may decide to use any or all of these monitoring sheets with your students:

Three-in-a-Row Worksheet in Student & Teacher Resources
Explain to students that accuracy is the key to moving through the content in this exercise. Students make progress based on the *3-Forward/1-Back Rule*: they move forward when they get 3 answers in a row correct, but they move backward when they get 1 answer incorrect. Because streaks record the number of correct answers in a row, this sheet can help students self-monitor for correct answers by providing the visual feedback that some students need to register their number of correct answers in a row. This sheet is useful for daily monitoring. Students will likely need one copy per day.

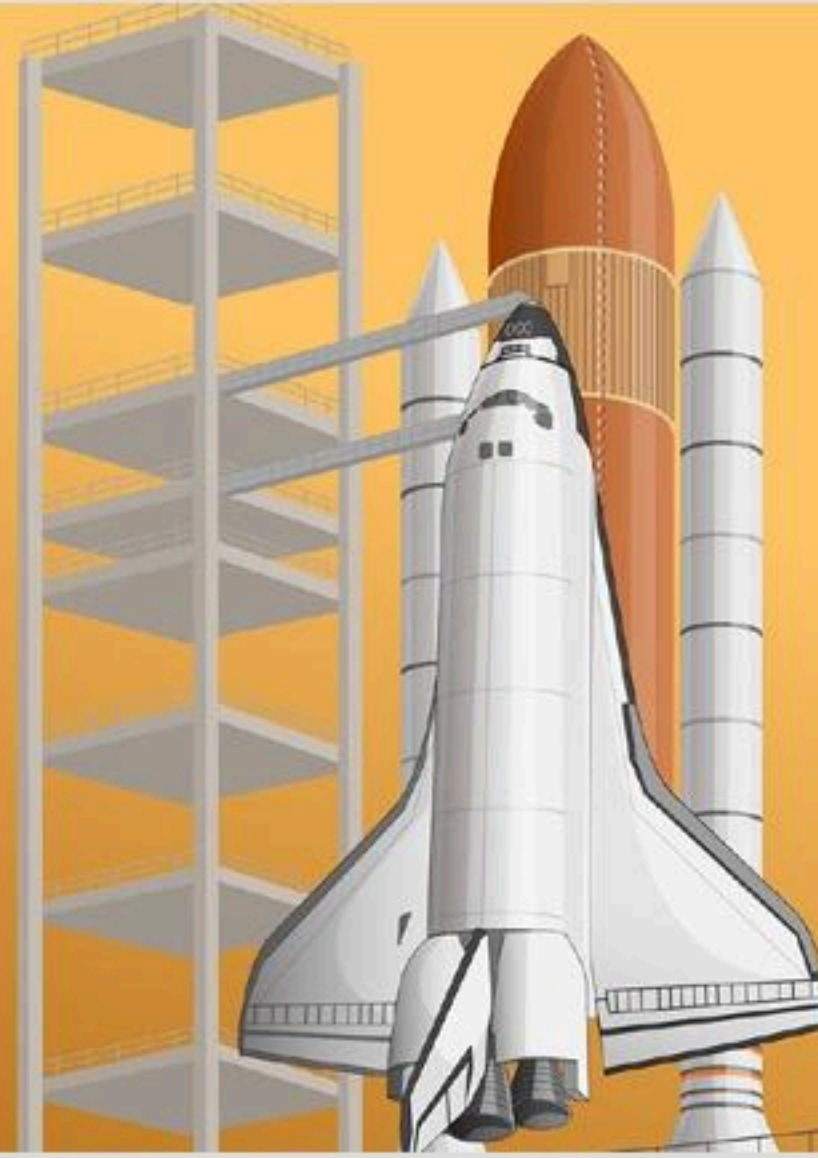Elements I Streaks & Completion Chart in Student & Teacher Resources
Explain to students that accuracy is the key to moving through the content in Fast ForWord. Because streaks record the number of correct answers in a row, this chart can help students self-monitor for accuracy. After they complete their exercises for each day, have students record their highest streaks and percent complete in each exercise, then challenge them to exceed those numbers tomorrow. Students will need one copy every 5 days.

Elements I Completion Chart in Student & Teacher Resources
Students can self-monitor their progress in each Elements I exercise by filling in the bar each day with their actual completed percentage. This provides students with an overall view of how much content they've completed compared to how much they have left to do. Students will need one copy.

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SPACE SALVAGE

Goals/Objectives

English Language Arts Standards	Phonological Awareness: students will be able to demonstrate understanding of spoken words, syllables, and sounds (phonemes)
Language/ Reading Skills	Students will be able to... • discriminate between sounds and to correctly identify sounds and sound sequences (listening accuracy) • understand and recall the order of sounds and words (auditory word recognition) • recognize and manipulate units of sound in spoken language such as words, syllables, onset and rime, and phonemes (phonological/phonemic awareness)
Cognitive Skills	Students will be able to... • use auditory and visual-spatial working memory to locate pairs of matching syllables or words (memory) • focus and sustain attention (attention) • improve auditory processing for syllables and visual-spatial processing for locations associated with sounds (processing)
Social-Emotional/ Executive Function Skills	Students will be able to... • selectively focus and sustain attention on a lesson or an activity • enhance student agency through retention strategy building • increase confidence in memory capacity training • regulate emotional responses (e.g., excitement or frustration)

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Exercise Screen

Name **Space Salvage**

5:00 / 20:00 TIME | 2750 POINTS | LEVEL 1 0% PROGRESS | 3 CURRENT STREAK | 9 HIGHEST STREAK

❶ Help

Provides access to help options:
- **How to** replays initial instructions and provides a model trial.
- **Progress** displays progress for each level and the entire exercise.

❷ Home

Returns the user to the Exercise Selector screen.

❸ Response Buttons

Plays the sound of a syllable or word; after finding another object with the same syllable or word, clicking the first object again will confirm the match and clear the two objects from the screen.

❹ Click Counter

Displays the number of clicks allowed to find and confirm all of the matches.

❺ Time

Shows time worked/time scheduled for the exercise.

❻ Points

Shows total points awarded across all of a day's sessions:
- Correct answers: 2 points for each correct answer
- Bonus points: If all objects are cleared in fewer than the allowed clicks, the number remaining on the click counter is added to the student's score.

❼ Level Progress

Displays the current level and percent completion of the level.

❽ Current Streak

Shows the number of consecutive correct grids passed since the last incorrect grid (or since the beginning of the session, if none have been incorrect).

❾ Highest Streak

Shows the highest number of consecutive correct grids passed in this session.

Task

The exercise screen shows a debris field in outer space, with 4, 8, or 16 identical objects organized in a grid pattern. Students listen to syllables or words and match them together to clear the grid within the maximum number of clicks remaining.

- Click an object to hear the syllable or word associated with that object.

- Then click another object to try to find the object with the matching syllable or word. If it plays the same syllable or word as the first object, you have found a match.

- Click again on the first object to confirm the match. If it is a match, the objects are removed. If it is not a match, the objects remain on the screen.

🔊 Collect the space debris by finding matching pairs. First, click an object and listen to the sound. Then click another object and listen to the sound. When you find a match, click again on the object that first played the sound you heard.
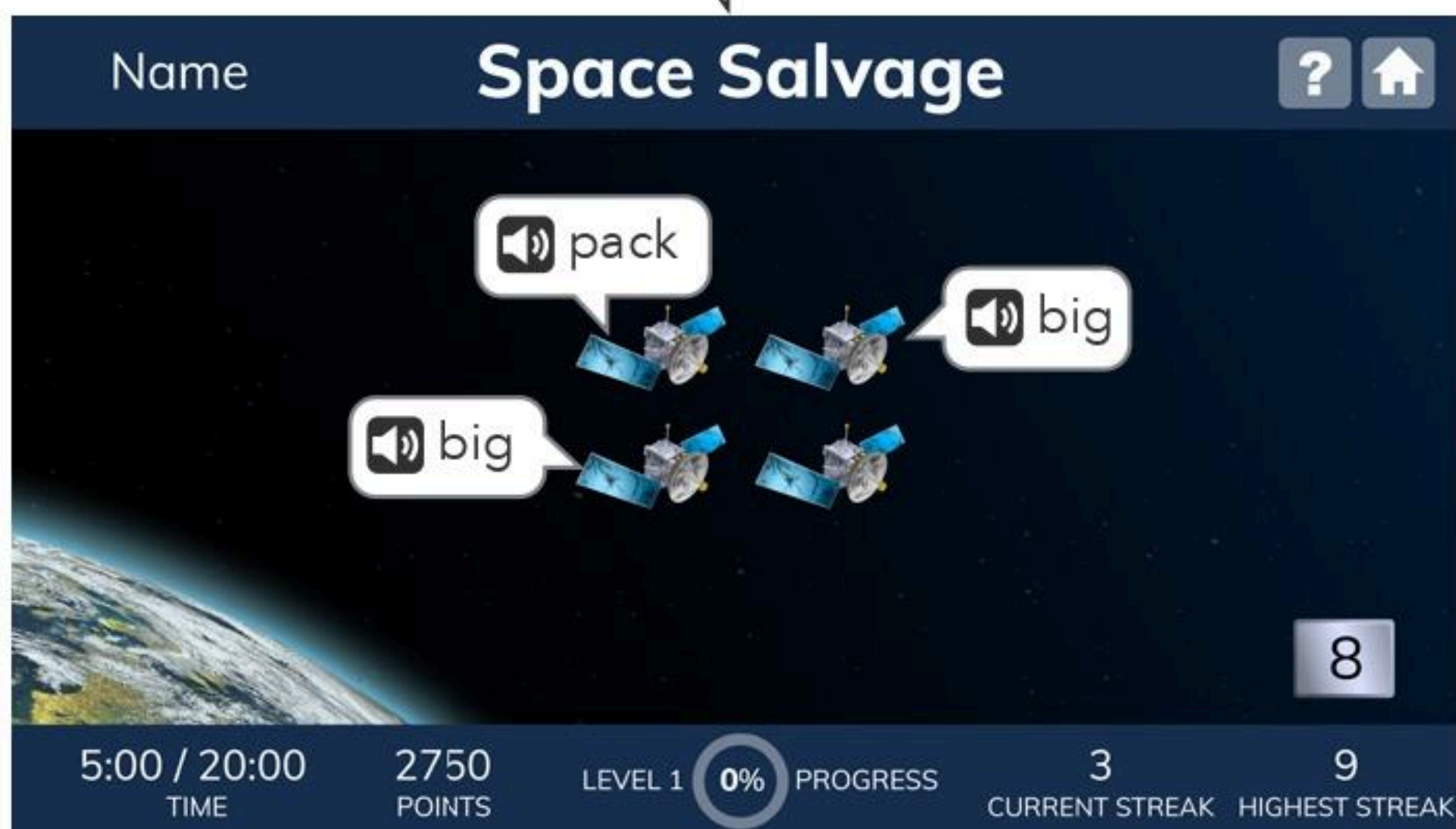
🔊 Look at the counter. Each time you click an object, the number goes down by one. To advance in Space Salvage, you must make all of the matches before the counter goes down to zero.

Icon Key	🔊 Audio	⬇ Download	🌐 English Learner	✓ Quick Check	⚙ Settings	▶ Video

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Content

Space Salvage Progression

As students work through the exercise it changes in a few ways:

- it begins with speech sounds that have been digitally altered; as students progress through the exercise, the processing level decreases, and eventually the syllables or words are presented using natural speech
- the grid size increases: 4, 8, and 16 objects

Introductory Level

Students begin by working through an introductory level that provides instructions, modeling, and supports (audio feedback and/or visual cues). It uses speech processing level 1, with a subset of highly differentiated words from the standard levels, and all three grid sizes. This level helps students learn the task and determine an effective strategy for making matches.

Introductory Set CVC Words
pack
big
tug
dip
gap
pit
cut
tick

Standard Levels

Syllables or words differ only by initial and/or final consonants. All four sets are repeated in each of the 5 speech processing levels and all three grid sizes.

Set 1 CVC Words	Set 2 CVC Words	Set 3 CVC Words	Set 4 CV Syllables
big	buck	back	ba
bit	bud	bag	cha
dig	but	bat	da
dip	cup	cab	ga
kick	cut	cap	ka
kid	duck	cat	la
kit	dug	gap	pa
pick	pub	pack	ra
pig	pup	pat	sa
pit	tub	tack	sha
tick	tuck	tag	ta
tip	tug	tap	za

Exercise Overview

Content

Motivational Levels

After each 20% of progress through the exercise, students "level up" and the screen changes slightly. These motivational levels are not connected to specific processing levels or content, only to percent completion.

Level 1   Level 2   Level 3   Level 4   Level 5

Targeted Practice

This exercise uses built-in, responsive technology to detect when a student is struggling and administer targeted, inline instruction—right when the student needs it—without any external resources or assistance required. This helps reduce frustration as it quickly gets students back on track, so they can continue making progress.

Space Salvage provides a variety of targeted interventions, such as: coaching, strategy walk-throughs and modeling, and motivational messages. The student's progression in the exercise stops temporarily while working through an intervention, then resumes when the student returns to the regular exercise content.

One type of intervention, Alternate Stimuli, allows students to learn how to complete the task and discover strategies for clearing the grids using number names instead of phonetically confusable syllables or words. It should be easier for students to distinguish between familiar number names and remember them. Students are provided immediate feedback as to whether their answer is correct or incorrect.

The objects in this debris field are a little different. The sounds they make are numbers. Find the objects with the matching numbers.

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Acoustically   Modified   Speech

Have you ever worked with a student who had modifications for additional think time, extra wait time, or for teachers to speak more slowly? All of these modifications provide the student with extra time to make sense of information, also known as processing time. For students who struggle with processing speed, and for those learning a new language, slowing down the rate of speech and emphasizing specific sounds can help them develop accurate phonological representations while increasing comprehension.

Fast ForWord's acoustically modified speech technology—sometimes referred to as "glasses for the ears"—slows and emphasizes speech sounds so that students can hear all sounds in a word.

This technology can even stretch out sounds that are physically impossible for human speakers to stretch on their own.

"Why does everything sound so strange?"

Some speech sounds, such as the /b/ sound in the word "bat," have very fast transitional elements. When we say them aloud, these elements are easy to miss, but slowing them and emphasizing them (by presenting them at a higher volume) helps the brain process and respond to them more quickly.

The modified words and syllables in the Fast ForWord exercises may sound strange or mechanical to those who process sounds quickly. But for students who need a little extra time, the modified sounds and words will be easier to identify than natural speech. As students progress, the stretching and emphasis are reduced, pushing the brain to process at faster and faster rates until it can process natural speech.

▶ Why Does Everything Sound So Strange? (Student) in Student & Teacher Resources

▶ Why Fast ForWord Sounds the Way it Does (Teacher) in Student & Teacher Resources

Did you know?

In Space Salvage students match objects representing different, but similar sounding syllables or words together. Why did we choose the syllables and words used in this exercise? Space Salvage challenges the brain to distinguish syllables that represent common English language sound combinations and are very similar to one another—such as *big*, *dig* and *pig*. To do this, the brain has to be able to separate individual sounds of /b/, /i/, and /g/ that make up the word *big*.

Space Salvage exercises students' auditory processing ability so that they can distinguish these individual sounds and differentiate them from one another in closely related combinations. The words *big*, *dig* and *pig* vary by only their initial consonant sounds—/b/, /d/, and /p/—but the words have entirely different meanings. Confusing similar-sounding words impedes comprehension and can be very embarrassing.

Being able to hear and absorb information clearly is essential for rapid word recognition, helping the brain to accurately store and quickly recall content. The more accurately and precisely the sounds for each word are received and transmitted in the first place, the better the brain will be able to record it and relate it to other experiences. When the brain makes an attempt to recall the information about each different word—*big*, *dig* and *pig*—a clear image of each word, based on its distinct sounds, meanings and other associations will enable the brain to access the information faster and more easily. The increased speed in word recognition improves the ability to remember the words practiced and generalize to other similar words that might be easily confused or misread.

Introduce

Engage

To introduce the exercise to your students, you can start by explaining to students that they will be playing a memory matching game with sounds. Say: Have you ever been in a funny or embarrassing situation because you misheard a word? It happens to all of us—you've been singing along to a song in front of your friends when suddenly everyone looks at you funny and shakes their heads—you've got the words wrong. What's the funniest thing you know you misheard? Ask students to share some of their stories or share some of your own examples of when this has happened to you. The Space Salvage exercise encourages good listening and memory skills to locate and pair matching sounds in syllables and words that sound very similar to one another.

Demo

1. Say: Today, we're going to practice clicking objects, listening to the syllable or word they make, and then matching them together to clear a grid. Together, we'll work on an exercise called Space Salvage. I'll get us started, and then I'd like for you to try.

2. Project the Space Salvage Introduction (English or Spanish) demo.

3. Follow along with the demo, which explains how the exercise works.

4. Click the objects that match:
   - Correct answer: a "ding" plays and a pair of nets pop out from the edge of the screen and drag the matching objects off screen.
   - Incorrect answer: no sound plays and the objects remain on the screen.

5. Encourage students to share their strategies for working through the grid and remembering what they hear.

6. Keyboard shortcuts: there are none for this exercise.

Direct students to log in and work individually on the Space Salvage Demo for approximately 10 minutes. This time period mimics the timing of the exercise once it's assigned. Debrief with students to ensure they understand the task and objective of the exercise. Ask, What did you notice? Have students share anything they have questions about.

Space Salvage includes instructional audio for the exercise introduction, instructions, and targeted practice. By default, these are presented in English. You can, however, select Spanish instructions for all, some, or individual students on the Manage page in mySciLEARN.

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Facilitate and Encourage

Monitor Student Progress

Review Space Salvage reports regularly to monitor student progress. Use the data to determine which students are succeeding and which students might be struggling to make progress.

Where to look...

PROGRESS: Elements I Exercise Progress - Space Salvage

The colored line shows student progress and their percent complete. Each dot indicates a day the student worked on the exercise.

What to look for... what it means

Is the line going up?
The student is completing content accurately and making progress.

Is the line flat across several dots?
The student may be struggling and you need to find out why.

Are there long lapses between dots?
The student may be skipping this exercise.

USAGE: Usage Details - Schedule

Do you see half-filled gray circles?
The student is working on this exercise, but not meeting the scheduled time. Make sure that they have time to complete their daily schedule. If fatigue is an issue, taking breaks is okay.

Do you see red circles?
The student is skipping this exercise. Provide support to help them re-engage.

USAGE: Usage Details - Minutes/Trials

Are many days highlighted in red?
The student is not meeting their daily schedule. Check the Schedule tab in this report to investigate further.

Is the student answering fewer questions than usual?
They may be distracted or losing focus. In comparison to their previous activity, a low number of trials to minutes may indicate the student is not applying themselves to the task.

Is the student answering more questions than usual?
They may be rushing. In comparison to their previous activity, a high number of trials to minutes may indicate the student is trying to amass points, or to progress more quickly, but rushing can result in mistakes. Remind them that making progress depends on accuracy, not speed.

Where to look...	What to look for... what it means

PROGRESS: Progress Details - Space Salvage Completion Status

Completion Status	✕
✅ Advancement criteria have been met to complete this level	
⏸ Level is currently in progress	
⏸ Level has not been started	
	More help »

Number of Trials

The number of trials (clicks) needed varies by level:

Training Level
- Minimum trials = 78

Standard Levels
- Minimum trials = 120
- Average range of trials for students making good progress = 700 - 1400

Progress Details ❓ Expand All

▶ AI Assistant	Last Participation: 03/25/2020
▶ Ocean Explorer	Last Participation: 03/25/2020
▶ SonoLab	Last Participation: 03/24/2020
▼ Space Salvage	Last Participation: 03/29/2020

Level	Completion Status	Percent Correct	Number of Trials
Introductory Level	✅	59%	44
Processing Level 1	✅	50%	464
Processing Level 2	✅	48%	530
Processing Level 3	⏸	57%	272
Processing Level 4	⏸	0%	0
Natural Speech	⏸	0%	0

Has the student taken too many trials without passing a level?

Students who need more than 160 trials to pass the training level, or more than 1700 trials to pass a standard level may be struggling to approach the task strategically, or they may be having auditory processing and/or memory difficulties

The "Adjust Instruction/Intervene" section in this teacher manual provides suggestions for how to support students who might be struggling with Space Salvage.

⬇ Elements I Progress Monitoring Chart in Student & Teacher Resources

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Facilitate and Encourage

Adjust Instruction/Intervene

Differentiation Activities

Differentiating instruction requires continually striving to know and to respond to each student's needs in order to maximize learning. The activities below are suggestions to support students who might be struggling with their progress in Space Salvage.

✓ **Does the student understand the exercise goal/task?**

Observe the student as they work through the exercise demo to determine where their understanding may be breaking down. Make sure the student clearly understands the task of the exercise. Ask: Can you tell me what this exercise wants you to do? If needed, explain how the exercise works. Say, Click the images on the screen, listen to the sounds, and match them together to clear the grid.

✓ **Can the student repeat the sound they are trying to find?**

When the student can hold the word in their working memory it will increase their success with this exercise.

✅ **Is the student attempting to find matches in a haphazard way?**

The student has a limited number of clicks to find a match. The more they click around randomly looking for a sound match, the more clicks they lose and the less progress they will make. The student needs to make all of the matches before the click counter goes to zero to advance to the next level. Clicking randomly will decrease the number of available clicks more quickly than using a strategy.

Listen with the student and observe them as they complete the task. Guide the student in using the following strategies:

- Teach the student to use a left-to-right, top to bottom strategy. After clicking the first sound, the student should hold that sound in their memory while they go left-to-right seeking the matching sound. Clicking in a pattern can help the student remember the sound for each location on the grid.

- Have the student remember the first sound clicked and then click until they find the matching sound. If the student can't remember the original sound, have the student click the location again to commit it to memory.

- Alternatively, have the student continually whisper to themselves the first sound clicked until the matching sound is located. When the student finds the match to the sound they are whispering, have them go back and click the original location to complete the match. Repeat this process with the next sound.

✅ **Is the student confused by the speech processing—do they think they should be able to understand words that their ears are not detecting?**

Work with the student to listen for "sounds" vs "words." Simulate environmental sounds (beep of a horn, moo of a cow, roar of a lion, etc.) and have the student repeat what they hear. The student will almost always be good at this. Go through several examples and then transition to the kinds of sounds students hear at the earliest levels of the exercise. For example, when the word *cap* is heard at processing level 1, the student will usually hear it as *cowp*. At this point, ask the learner to repeat the sound they hear 5 times. This gives the student the opportunity to refocus on repetition as a strategy for improving their working memory. Transition the student to working in the demos and have the student repeat the first sound they hear 3 to 5 times before clicking other space debris objects on the screen.

Adjust Instruction/Intervene

Student Resources

You may decide to use any or all of these monitoring sheets with your students:

Elements I Streaks & Completion Chart in Student & Teacher Resources
Explain to students that accuracy is the key to moving through the content in Fast ForWord. Because streaks record the number of correct answers in a row, this chart can help students self-monitor for accuracy. After they complete their exercises for each day, have students record their highest streaks and percent complete in each exercise, then challenge them to exceed those numbers tomorrow. Students will need one copy every 5 days.

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