



SKY GYM

Teacher Manual

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Goals/Objectives

English Language Arts Standard(s)

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

Icon Key



Audio



Download



English Learner



Quick Check

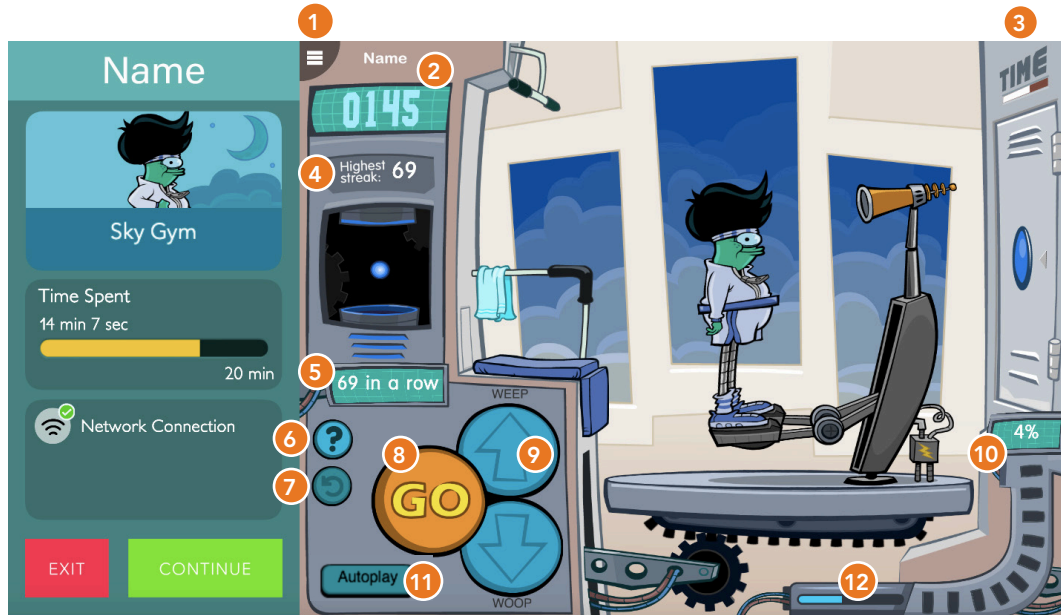


Settings



Video

Exercise Screen



1 Menu

Shows:

- Time Spent / Time Scheduled for the exercise.
- Network connection status.
- Exit: Returns student to the Assignments dashboard.
- Continue: Returns student to the exercise.

2 Points

Shows total points awarded across all of a day's sessions.

- Correct answers: 1 point for each correct answer.
- Bonus points: 10 points for 6 streaks of correct answers.
- Autoplay bonus: double the usual points if all questions in a set are answered correctly.

3 Time

Fills in from left to right to show the amount of time spent vs. the time scheduled for the exercise.

4 Highest Streak

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

5 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).

6 Help

Allows students to listen closely to the current sound sweeps and take practice attempts without affecting their progress.

7 Replay

Repeats the sound or sequence of sounds.

8 Go

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

9 Answer Buttons

Respond to a question by clicking the up and down arrows in the right order to match the sound or sequence of sounds presented in the target sequence.

10 Progress Meter

Tracks and celebrates every 10% of exercise content completion. Shows actual percent complete for the exercise.

11 Autoplay

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

12 Feeder Meter

Tracks and celebrates every 1% of exercise content completion.

Exercise Overview

Task

In Sky Gym, 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.

Sky Gym 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 correct order to match the pattern of sounds.

Content

As students progress in Sky Gym, the exercise presents paired sweeps that change in frequency, duration, and inter-stimulus interval (ISI—the silence 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 separately, even when they occur very close together.

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.
- Sky Gym 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.

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 the student back on track, so they can continue making progress.

Sky Gym 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. correct or incorrect.



 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 two "clucks." Click the chicken button two times. We heard a cluck, then a moo. So, click the chicken button, then the cow button. Remember. Hear two sounds? Make two clicks.

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.

Exercise Overview

Did you know?

In Sky Gym, 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 is important to be able to quickly 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 /p/ from /b/-and that makes the difference between hearing “pat” and “bat.”

A frequency sweep that passes by in a fraction of a second can be critical to 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, 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. Sky Gym improves students’ ability to recognize frequency sweeps quickly and accurately.

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 Sky Gym. I'll get us started, and then I'd like for you to try.*
2. Project the Sky Gym Introduction (English or Spanish) demo.
3. Follow along with the demo, which explains how the exercise works.
4. Click the correct arrows:
 - Correct answer: a "ding" plays and points are awarded
 - Incorrect answer: a "thunk" sound effect plays
5. 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.
6. Keyboard shortcuts:
 - Go button = Space bar
 - "Weep" answer = Up arrow
 - "Woop" answer = Down arrow

Direct students to log in and work individually on the Sky Gym 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.



Sky Gym includes instructional audio for the exercise introduction and instructions. 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

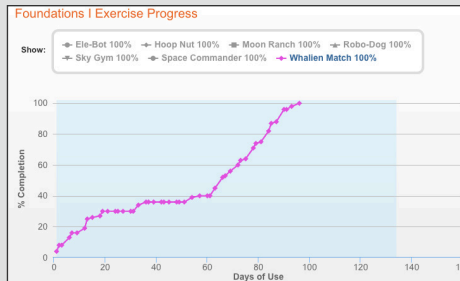
Monitor Student Progress

Review Sky Gym 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: Foundations I Exercise Progress - Sky Gym

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

Schedule		Minutes/Questions			Start Time		Time/Exercise		
Days of Use	Date	Ele-Bot	Hoop Nut	Moon Ranch	Robo-Dog	Sky Gym	Space Commander	Whalien Match	
122	07/03/2020	●	○						
121	07/02/2020		○						
120	07/01/2020		●	○					
119	06/30/2020	●	●						
118	06/29/2020			●					

Schedule

See if the student has met their daily schedule, and check what's planned for the next few days:

- Time completed
- Time not completed
- Exercise Skipped
- Planned for day

[More help >](#)

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, add some breaks to their schedule.

Do you see red circles?

The student is skipping this exercise. Provide support to help them re-engage.

USAGE: Usage Details - Minutes/Questions

Schedule		Minutes/Questions				Start Time				Time/Exercise					
Days of Use	Date	Ele-Bot		Hoop Nut		Moon Ranch		Robo-Dog		Sky Gym		Space Commander		Whalien Match	
		Min	Ques	Min	Ques	Min	Ques	Min	Ques	Min	Ques	Min	Ques	Min	Ques
56	04/13/2020	18	17	14	64	-	-	14	96	14	82	-	-	-	-
55	04/12/2020	-	-	-	-	6	41	-	-	-	-	0	-	0	-
54	04/09/2020	-	-	-	-	-	-	10	53	9	52	-	-	11	298
53	04/08/2020	12	15	10	26	-	-	-	-	8	53	-	-	-	-
52	04/07/2020	-	-	-	-	8	43	7	28	7	4	7	4	-	-

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.

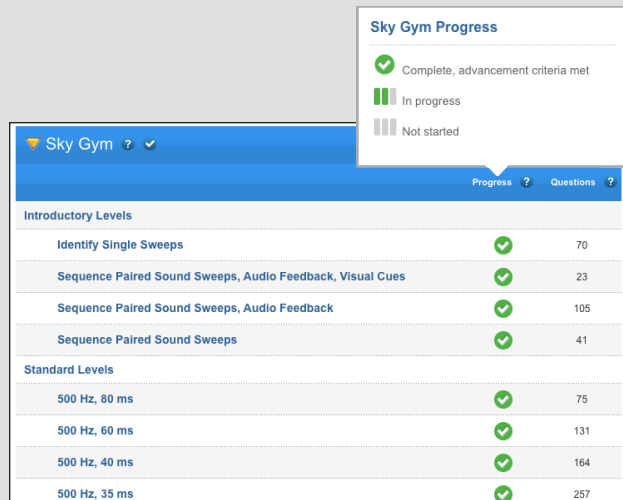
Is the student answering more questions than usual?

They may be rushing. In comparison to their previous activity, a high number of questions to minutes may indicate that the student is trying to amass points or progress through the content without actually learning it. 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 - Sky Gym Completion Status



Questions

The number of questions needed varies by level:

Introductory Levels

Minimum questions:

- Identify Single Sound Sweeps: 27
- Sequence Paired Sound Sweeps, Audio Feedback, Visual Cues: 9
- Sequence Paired Sound Sweeps, Audio Feedback: 63
- Sequence Paired Sound Sweeps: 27

Standard Levels

Minimum questions: 69

- As students progress to more difficult levels (shorter sweeps), the number of questions required to complete a level generally increases.

What to look for... what it means

Has the student used too many clicks without passing a level?

Students who need more than 3 to 4 times the minimum questions to pass the introductory levels or more than 200 questions to pass a standard level with 80 ms sound sweeps may be struggling to understand the task, or they may be having auditory processing and/or memory difficulties.

As students progress to shorter sound sweeps, they typically need 200 or more questions to complete a level. Make sure students remain motivated and are applying themselves. When students reach content that is especially difficult for them, progress will slow more questions will be needed to complete a level. Monitor the student's Progress graph and celebrate small advances.

See the "Adjust Instruction/Intervene" section in this teacher manual for suggestions on supporting struggling students.



Foundations I Progress Monitoring Chart in [Student & Teacher Resources](#)

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 Sky Gym 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 Sky Gym.



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? ?

Explain 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, charting this can help the student self-monitor by providing visual feedback of their number of correct answers in a row. 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 need help identifying the sound sweeps?

Show the student how to use Help mode within the exercise. Have the student click the Help button to see all four possible sequences of sound sweeps at the current frequency (Hz), duration (length of each sound sweep), and ISI (time between sound sweeps). When Help opens, have the student click a Go button to hear the corresponding sequence of sound sweeps. Using Help does not affect the student's standing in the exercise.

Facilitate and Encourage



Can the student distinguish between the four patterns of the paired sound sweeps (up/up, down/down, down/up, up/down)?

Practice with the student focusing on sweep sequence identification. This can best be done by having the student use the Early Level Sky Gym demos. Have the student close their eyes while you control the exercise and they focus on listening to each sound sweep sequence. 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.



Is the student struggling to hear the difference between the current sound sweeps?

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.



Does the student have basic sequencing skills?

Start by using pairs of words, such as "orange-apple" and "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. Randomly say one of the four possible variations, and have the student repeat that sequence aloud. Next, using a small sheet of paper, draw an arrow pointing up and an arrow pointing down right below it. Again, say the "Weep-Woop" variations and have the student point at the appropriate arrow sequence.

Facilitate and Encourage



Does the student struggle in later levels, as the sweeps get shorter with less time in between them?

An extended flat line on a student's progress graph is evidence that they may not 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 Sky Gym. 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 question. This can help prevent students from getting incorrect answers, feeling discouragement, and giving in to frustration. Encourage the student to use the Replay button to get their ears used to the shorter and closer together sweep sequences.



Is the student unable to consistently get 3 correct answers in a row?

Challenge the student to "Beat the Teacher." The goal of this activity is to achieve accuracy and get streaks of correct answers. 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.

1. On a sheet of paper, make two columns, then put your name on the top of one column and the student's name on the top of the other column. Or use the [Beat the Teacher](#) Worksheet.
2. Listen along with the student during the exercise.
3. When the student gets three in a row correct, record one point for the student. When the student makes an error, record a point for yourself.
4. At the end of the intervention, total the points for each column. Calculate the number of student points earned minus the number of teacher points earned. This number represents the total number of steps forward the student has progressed.
5. Have the student set a points goal to help them strive for even greater consistency and faster progress.

Facilitate and Encourage

Adjust Instruction/Intervene

Student Resources

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



Beat the Teacher 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. If a student is unable to consistently get 3 correct answers in a row, use this chart to play “Beat the Teacher”—a fun way to motivate the student and provide extra practice while observing their skill level. This sheet is useful as an intervention. Students will need one copy at your discretion.



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. Since streaks record the number of correct answers in a row, this chart is helpful for self-monitoring of 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.



Foundations I Streaks & Completion Chart in [Student & Teacher Resources](#)

Explain to students that accuracy is the key to moving through the content in *Fast ForWord*. Since streaks record the number of correct answers in a row, this chart is helpful for self-monitoring of 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 chart every 5 days.



Foundations I Completion Chart in [Student & Teacher Resources](#)

Students can self-monitor their progress in each Foundations 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.