



Hearing Screening Guide

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Support Material

Understanding Sound Scouts results (infographic)

Quiet Please, testing in progress (poster)

Speech in Noise Test - target items (printout)

Why are hearing checks important for students?



An estimated **1 in 10 children** suffer from hearing loss which left undetected can lead to speech, learning and behavioral problems.

The World Health Organization recommends that **all children should have their hearing screened around the time they start school.**



- Every child starting school should have their hearing tested.
- Any child identified with learning or behavioral problems should have their hearing tested.

Types of hearing loss

Conductive hearing loss (middle/outer ear) occurs when something interferes with sound travelling to the inner ear. Usually temporary, it's often caused by fluid from middle ear infections but can also result from ear wax build-up or a foreign object lodged in the ear canal.

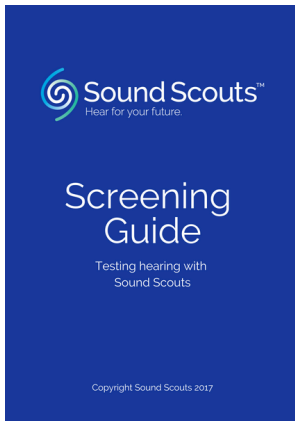
It's estimated that around four out of five children will experience a middle ear infection at least once. Hearing loss can occur even after symptoms resolve because fluid can remain in the ear.

Sensorineural hearing loss (inner ear) results from damage to the inner ear and is permanent. It's often present from birth but can also be acquired through exposure to loud noise, some medicines, some viral infections, and head injuries. It exists on a spectrum, ranging from mild to profound. Hearing aids, or for those with profound loss, Cochlear implants, can reduce the impact of a hearing loss.

Difficulty Hearing in Noise is a hearing issue that can occur despite a person receiving normal results in an audiogram. While hearing in quiet may be normal, hearing in noisy environments, such as the classroom or a restaurant, may be extremely difficult.

Difficulty hearing in noise can be caused by a number of things including (but not limited to): auditory processing disorder, a developmental delay, a speech/language issue, attention deficit and English as an additional language (or bi-lingual/multilingual capabilities).

What you will need



Screening Guide



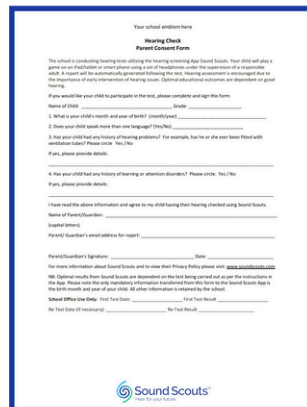
Good quality adult headphones



Apple or Android tablet loaded with the Sound Scouts App



Internet access



Parent permission note



Alcohol wipes

WARNING:
Using suitable good quality adult headphones is vital to ensuring that the Sound Scouts test results are reliable.

Choosing the right headphones

Choosing the right headphones and using them in the correct way is an important part of ensuring a reliable result when screening with Sound Scouts.



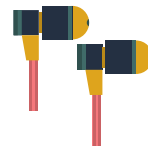
Use good quality adult headphones.



Do not use gaming or surround sound headphones.



Do not use a splitter as they can reduce the sound levels heard by the person being tested.



In the interests of hygiene do not use earbuds when screening in schools.



Sound Scouts recommends:

**Sennheiser HD 300 or
Sennheiser HD 400S Headphones**

These are over-ear headphones, ideal for use when screening in a school environment.

Planning a screening session



1 Obtain parental permission

Parental permission is required to screen children. You can use and modify the permission note template in our school resources or create your own.



2 Organise for staff and volunteers to help

Create a roster of staff and/or parent and community volunteers to help supervise screening.



4 Estimate how much time you will need

Each test takes 8 minutes. Allowing for changeover between students, each supervising adult can screen 6-7 students per device per hour.



3 Students can be screened in small groups

Up to four students can be screened at the same time with a minimum of two adult supervisors.



5 Schedule screening in a quiet room

Ensure a quiet room is available for screening.

Setting up the screening environment



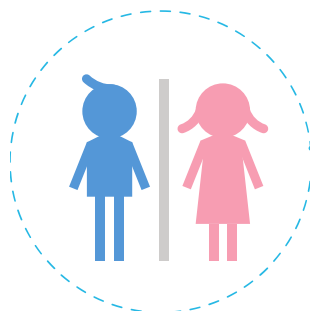
1 Download Sound Scouts to a touch screen device.

Ensure devices are fully charged, have notifications switched off and have the latest version of Sound Scouts downloaded from the App Store, Google Play or the Microsoft Store.



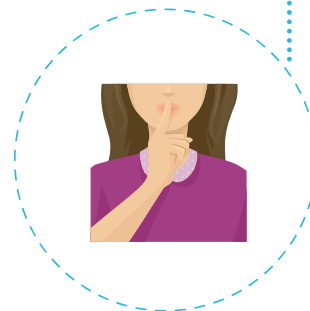
2 Use good quality adult headphones.

Please read our guidance on 'Choosing the right headphones.' Over ear headphones are best for screening in schools. Ensure headphones are plugged in properly before getting started.



4 Ensure children are ready to focus

Before starting the test make sure children are well rested, have been to the restroom and have **blown their nose**.



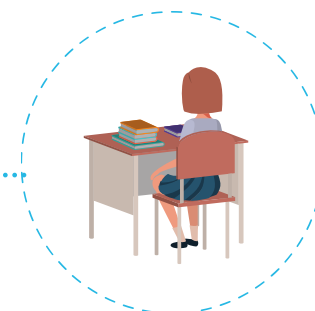
3 Test in a quiet place

Test in a quiet indoor space that's free from distractions. Noisy air conditioners or appliances may impact the results. A Rug or carpet on the floor is preferable.



5 Keep screens and headphones clean between tests

Use alcohol wipes to clean screens and headphones between tests. Disposable headphone protectors also help to stop the spread of germs.



6 Set up the space to minimize distraction

If more than one student is being screened in the same room, position desks so children are facing away from each other to avoid distraction.

Supervising a Sound Scouts test



1 Set the volume to maximum

Before starting each test set the volume to maximum or to the highest comfortable listening level.



2 Start a New Session

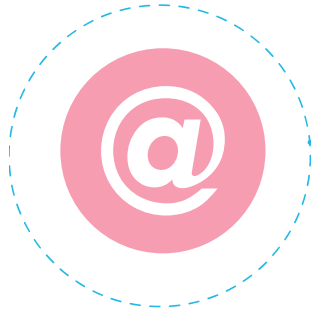
To begin go to **New Session**. Read and carefully follow the instructions on each page.

NB: We recommend supervisors complete a test to understand how it works.



3 Supervisor setup

Supervising adults must carefully complete a short game-based activity that should be done in the same environment the children will be tested in. This activity calibrates the sound levels. 'Manual Setup' is the recommended option.



4 Player setup

Select Create Player. Enter the required details. Select the language the Client/Player is most comfortable with (tap the drop down arrow for options including Latin-American Spanish and Mandarin)



5 Explain to children how the game works

Tell the child that the sounds will get quieter, and sometimes they may not be able to hear anything and that this is OK. Advise them to wait and only tap the screen when they hear the sounds.



6 Ask the child to select the five words they know best

When selecting the words for the first activity we recommend the child says each word out loud. The Supervisor should guide them to choose the five items they're most familiar with.



7 Trial Run

Use the Trial Run to ensure that the children understand how to interact with the three test activities. Do not test children who cannot complete the trial activities.



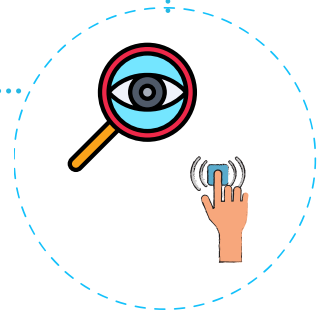
8 Headphones

The children should be using the same headphones as those used by the Supervising adult. Ensure the headphones are sitting correctly on or over the ears.



10 Intervene if the child is not interacting

If the child is not responding you can ask them what they hear, and tap or slide the matching object for them. Demonstrating once or twice should be enough to prompt play. If further assistance is required, exit the test and use the Trial Run with the headphones out to deliver further explanation.



9 Supervisors should supervise

During the test supervisors should watch for on screen alerts. They should also watch to ensure the child isn't tapping repeatedly when no sounds are presented. Supervisors can prompt players to only tap when they hear a sound.



11 To end a test session

If anything happens during the test that may impact the results (e.g. persistent loud noise or child unwilling to complete), **you can either exit the game by tapping on the top right corner of the screen 3 times OR terminate the App by using the method appropriate to the device (i.e. Apple vs Android).**

How is the Sound Scouts hearing test structured?

Sound Scouts incorporates three separate test activities in the same 8 minute game:

1 Speech-in-Quiet (Calibration)

2 Tone-in-Noise

3 Speech-in-Noise

The Sound Scouts hearing test is an interactive game for mobile devices built around these three tests, with the calibration task providing one of the test metrics as well as being used to set the level of the targets (stimuli) for the following two test activities.

Each Player's results are compared with the results of players of the same age with normal hearing.

Part One: Speech-in-Quiet (Calibration)

- Adult with good hearing completes a short game based activity to help establish sound levels for the test.
- The speech in quiet activity uses two syllable words (e.g. popcorn, rainbow, ice cream, football).
- Supervising adult guides the child to select 5 items they recognise visually and verbally (adult can ask the child to say each word out loud). Child can select from 10 items.
- Child to complete the same test for one ear and a similar test for the second ear (using the selected words).
- Child to slide the spoken 'target' item into the scene.
- Items become progressively harder to hear until the child reaches their threshold ie. the lowest volume at which they can hear.
- Volume adapts automatically based on the child's responses so the child should only miss every second item once they reach their threshold (provided they are responding reliably).





Part Two: Tone-in-Noise

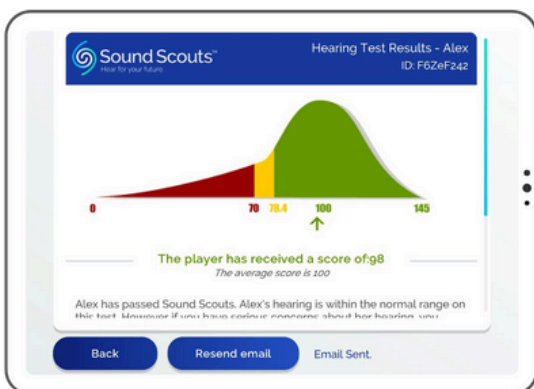
- Children are asked to listen for the beep from a 'helicopter's sound tracker' and to press the red button when they hear the sound.
- The children are visually rewarded when they correctly identify the sound.
- The test ends when the child reaches their threshold and maintains consistent responses for a period of time OR after the set maximum number of presentations is made.

Part Three: Speech-in-Noise

- Children are asked to listen to the spoken words and then drag the corresponding target item into the scene.
- The items can be placed anywhere in the scene and will adapt in size depending on where they are placed.
- There is background dialogue throughout this section. The player must focus on the target items, which become increasingly difficult to hear against the background noise.





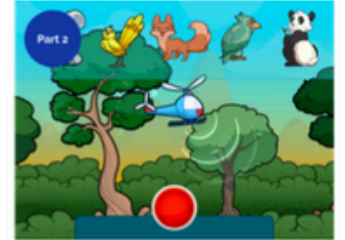


- This test assesses the players ability to hear in noise. Some children may be able to hear in quiet but due to language, concentration or processing issues, they may struggle to hear in noise.



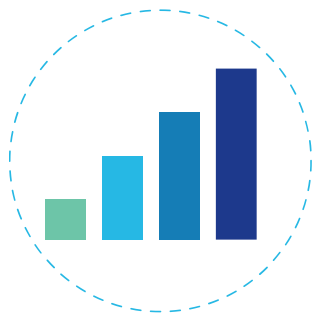
Results

- When the child finishes the game the test results are immediately returned to the supervising adult on the device and via email.
- The child's results are assessed against normal results for children of the same age.
- Please RETEST all children who receive a 'Fail' or 'Borderline' result before taking further action.

Script examples for Supervisors

	<p>"In this game, we have to practice good listening. So, as soon as I put the headphones on, or you put on your headphones, neither of us can talk. We both have to try and be as quiet as we can!"</p> <p>OR</p> <p>"You're going to play a listening game, so you have to listen carefully for the special sounds."</p>
	<p>"In the first game, there are hot air balloons, and the lady will say the name of a picture and you have to drag it up onto the balloon.</p> <p>Sometimes her voice will be loud, and sometimes it will be VERY quiet. Sometimes, she will even try and trick you and she won't say anything at all! If you can't hear her say a word – don't press anything, just wait until you hear the next word.</p> <p>After the hot air balloons finish, the same thing will happen with some sailing boats."</p>
	<p>"In the 2nd game, there is a helicopter searching through the forest for hidden animals. When the helicopter sees one, it will make a funny noise, like this [make noise]. As soon as you hear that funny noise, press the red button and it will show you the animal you found! Only press the red button if you hear the noise."</p>
	<p>"In the last game, there are some people having a picnic in the park – BUT they've forgotten some things. There are going to be lots of voices because a radio is playing. While they talk, someone will tell you which things they are missing from the picnic. When you hear the name of something, drag it up from the bottom into the picnic area."</p>
	<p>"Sometimes, when you're playing the game, you might see a picture of a lady that looks like this [demonstrate pose with hand behind ear]. If you see that picture, it means that maybe you have to try a little bit harder to listen carefully."</p>

After the test



1 Results are delivered immediately

You can view the results on the device and they can also be emailed to the address entered in Setup or added after testing.



2 Clean the device and headphones

Wipe down screens and headsets and replace headphone protectors if applicable.



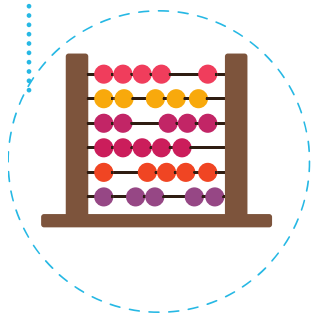
4 Stored results can be accessed through 'Past Sessions'

To retrieve a session go to 'Past Sessions,' select the session and if a connection is available the results will be processed.



3 If you don't receive results...

If the device is not connected to a Wi-Fi network the test data will be stored and can be processed when a connection becomes available. You will not receive results until you connect to Wi-Fi. Phone hot spots can be used.



5 Incomplete session

Results won't be processed if the player does not complete all three activities.



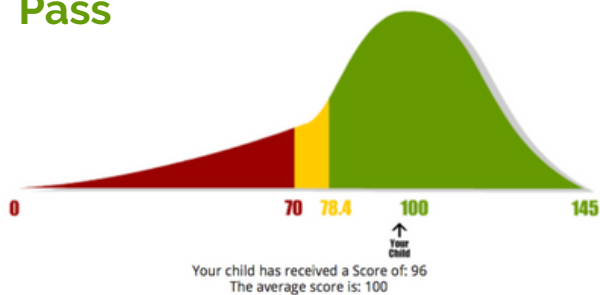
6 Read the report carefully and follow the next steps

If a child receives a fail or borderline result please **RETEST** after 24 hours. Follow the recommendations in the report unless advised otherwise by the Sound Scouts team.

Understanding results

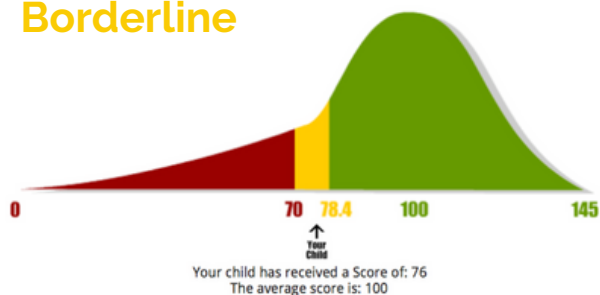
When the hearing check is complete a report is automatically generated. The report is viewable on the device and is also sent via email (when an address is provided).

Pass



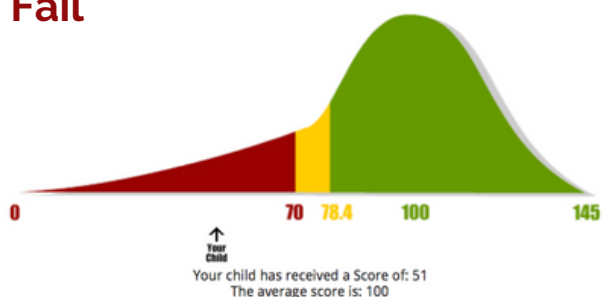
If the child receives a **Pass** the Report will state that the child has passed the Sound Scouts hearing check. This means that the child's results are within the normal range for children of the same age. If you have ongoing concerns about the child's hearing we strongly recommend seeing your doctor or a hearing professional.

Borderline



If the child receives a **Borderline** result, hearing may be on the edge of normal. When a Borderline result is received it is recommended that the child is retested after 24 hours. If the child receives a similar result further investigation may be necessary.

Fail



If the child receives a **Fail** result, we recommend retesting after 24 hours. If the child receives a second Fail result, then further diagnostic assessment is recommended.

NB: If there are reservations about the result i.e. the result is not in line with other indicators, we recommend re-testing or seeking further diagnostic assessment.

Failing the Screening - Next Steps

Students who fail the hearing screening may be flagged as having an issue in one of the following areas:

Middle / Outer ear (Conductive hearing loss)

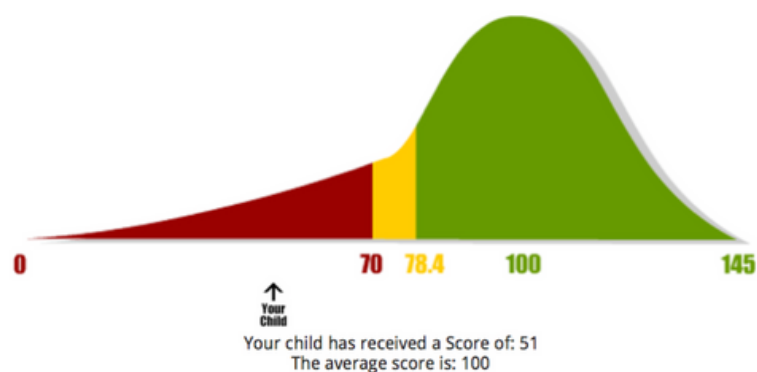
If the child receives a fail result with an indication of a middle/outer ear, or conductive hearing loss Sound Scouts recommend that the carer follow up with a visit to their doctor. A conductive loss may be caused by things such as a build up of wax or fluid, and in most cases, with the appropriate treatment, hearing will return to normal.

Inner ear (Sensorineural hearing loss)

If the child receives a fail result with an indication of an inner ear, or sensorineural hearing loss, the report recommends follow up with an audiologist or hearing center.

Difficulty Hearing in Noise

If the child receives a fail result with an indication of difficulty hearing in noise, the possible causes need to be considered. Difficulty hearing in noise can be caused by poor attention, language disorders, English as an additional language (EAL/D) and Auditory Processing Disorders (APDs), which are related to the brain's ability to process sounds. Children who experience difficulty hearing in noise can typically hear in quiet environments but struggle in noisy environments like the classroom or playground. By determining the most likely possible cause, the child's care team can determine who best to see for further assessment.



Things to consider before testing with Sound Scouts

To complete Sound Scouts, the Supervisor must determine if the child can identify 5 words from the list of 10 spondee items. Provided they can identify 5 words (we suggest they say them out loud) then they should be able to undertake the test. For these children who cannot be tested in their primary language, please use the Trial Run with the headphones OUT to ensure they understand each of the three activities. You may need to repeat several times.

Note: Latin-American Spanish and Mandarin versions are available.

The second activity, the helicopter game, is largely language independent so provided the children understand what to do ie tap the red button when they hear the stimuli (target sound), they will be able to complete this activity.

If the children can do the first two activities it should be possible to determine if they have a hearing loss.

It is likely children who speak English as an additional language, who are testing in English, may get a borderline or fail result due to the final listening in noise activity. This is a common outcome and is due to the children having to process complex audio, bilingually. The child's Report will note that the child has received a result 'outside the normal range due to difficulty hearing in noise' which can be caused by the child speaking more than one language.

The list of speech in noise target items can be made available and used to assist children in reviewing the items prior to testing. Be careful not to over-expose children to the target words.

If the children CANNOT identify 5 words then it's best to wait until they can, use the Automatic Audiometer (provided that the suitable equipment is available) or seek another type of hearing assessment.

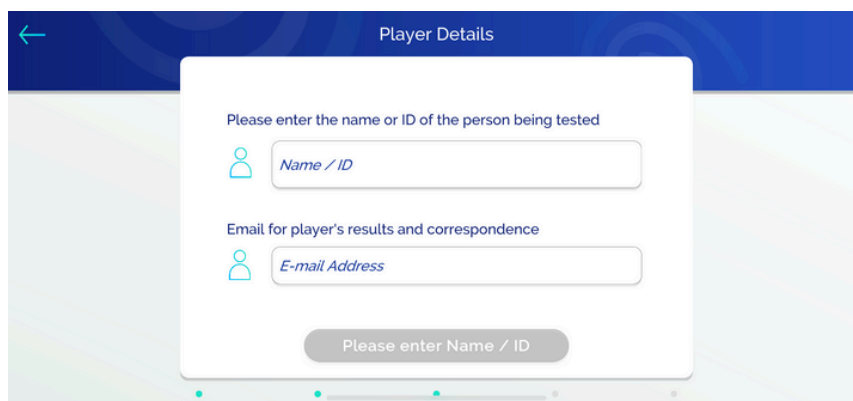
In relation to children with **cognitive** issues Supervisors should confirm that they are able to successfully complete the Trial Run activities before undertaking a full test. Those children who cannot independently complete the Trial Run activities should NOT be tested with Sound Scouts.



Recommendations for school screening programs

Sound Scouts recommends a couple of simple steps for schools to follow when it comes to organizing Sound Scouts Reports and ensuring the right information is sent to parents.

We suggest sending all Sound Scouts Reports to one school email address. When starting a screening session the app will ask for an email address. Make sure everyone supervising the hearing tests knows which email address to enter and that it is entered correctly. This email should be monitored for correspondence from the Sound Scouts team during testing. The Sound Scouts Integrated Management Platform, SSIMPL can also be used for test management.



If a child passes the test on their first attempt this report can be sent to the parents/ caregiver and no second test is required.

If a child fails or receives a borderline result on their first test they will need to be re-tested. Do not send the report to their parents/caregivers at this stage.

If on a child's second test they pass, we suggest that you only send the parents the second report (ie. the pass result). In this instance the first test result was likely to be caused by uncertainty or loss of attention when completing the test.

If a child fails or receives a borderline result on the second test, we suggest sending the reports from both the first and second test to the parents/caregivers.

If a child requires a second test, this should not be completed on the same day as their first test. We recommend at least a 24 hour window between first and second tests (although we do appreciate this may not always be possible).

When testing large cohorts, it is useful to set up a spreadsheet with headings similar to below:

First Name	Surname	Class	Permission Note Received	Test 1 Date	Test 1 Result	Test 2 Date	Test 2 Result	Parent Email	Report/s Sent	Notes
John	Green	1A	Yes	10.08.2020	PASS	NA	NA	email1@gmail.com	Yes	Pass Result Report Sent
Jill	Brown	1B	Yes	10.08.2020	FAIL	12.08.2020	PASS	email2@gmail.com	Yes	Pass Result Report Sent
Nick	White	1A	Yes	10.08.2020	BORDERLINE	12.08.2020	FAIL	email3@gmail.com	Yes	Both Reports Sent
Ella	Purple	1C	Yes	10.08.2020	FAIL	12.08.2020	FAIL	email4@gmail.com	Yes	Both Reports Sent
Jamie	Pink	1B	Yes	10.08.2020	BORDERLINE	12.08.2020	BORDERLINE	email5@gmail.com	Yes	Both Reports Sent
Kim	Red	1C	Yes	10.08.2020	FAIL	12.08.2020	BORDERLINE	email6@gmail.com	Yes	Both Reports Sent
Nathan	Yellow	1A	Yes	10.08.2020	PASS	NA	NA	email7@gmail.com	Yes	Pass Result Report Sent

'Sound Scouts levels the playing field by enabling children with hearing loss to be identified and the risks associated with hearing loss to be managed.'

Meriel, Special Educator - Hearing



Need more information?

 contact@soundscouts.com

 www.soundscouts.com