



TESTING GUIDE



Free software for testing eye tracking & low level sensory perceptual skills



ICEPT DEMO



ICEPT TESTING



ICEPT TRAINING



www.icept.co.nz

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Version 3.1

Downloading

- Testing can only be done on the **iPad** and is a **FREE** download.
- The iCept application can be found on the iTunes App Store under “icept testing”.
- Testing should be done using 9.7” screen (original size) or a 10.5” at most.



What Does It Measure?

- It measures key aspects of *visual and auditory development*.
- There are 4 visual tests & 4 auditory tests.

Who is it For?

- Any student with a learning difficulty, dyslexic AND non-dyslexic.
- Students 7 to 17 years of age. The test may be too difficult however for some 7 year old students with significant developmental delays or very poor attention.
- iCept Testing should **NOT** be used for students under 7 years of age.
- For students over 17 years, the results will be compared against a 17 year old student.
- After 17 years of age visual perceptual skills will tend to plateau until around age 30-35 years. After this they start to decline, especially over 50! (How many 50-year-old formula one racing car drivers do you know of?)

Setup

- The iPad should be placed at about 40-50cm.
- Earphones are advised for the auditory tasks, but testing can also be done without earphones if done in a quiet place.
- Set volume to **full** WITHOUT headphones and **half** (8 clicks) WITH headphones.



Analyzing Results

- Individual findings are compared against a database (age normal control group) of 700 students who are defined as being no more than 6 months behind in reading, spelling, & math (determined by the class teacher and school SENCO). Also, there could be no history of dyslexia or head injury such as concussion.
- The results are classified as “Above”, “Borderline” or “Below”.
- **Above:** $\geq 26^{\text{th}}$ percentile
- **Borderline:** 16th to 26th percentile
- **Below:** $\leq 16^{\text{th}}$ percentile

Comments on Testing

- Teachers or clinicians may be surprised at the difficulty of the tests.
- *The reason they are difficult is that academic tasks such as reading require a high level of skill!*
- If a study fails to find a problem this may be because the test is *too easy* (poor sensitivity) or because the test fails to adequately target the problem areas (poor specificity).
- The iCept test procedures take a while to complete because they are **developmental tests**. This means that sometimes a student may get the presentation right and other times they may not. How often they are successful is a measure of how developed the skill is for age. This requires multiple presentations to assess.

Start Testing

- Click on the **ICEPT TESTING** button.
- Before testing tap on **“Add New”** in top left & enter student details (see Figure 1).
- Tap on **“Start New”** and run the tests on the Task Menu starting with Eye Track (the longest test).
- If a test is completed then the results are automatically saved!
- Total testing time takes approximately 40 minutes but may be longer for some students.
- If it is difficult to complete all the testing at one time then testing can be continued later. To continue later tap on the **“Continue”** button and this will keep all the test results grouped together under the same date.
- If the results are split between dates the software will make training recommendations based on the last two dates.
- To modify the student details tap on **“Modify”**.
- To view results tap on **“Results”**.
- To delete a student tap on **“Move to Inactive”**, select the student and tap on **“Delete”**.

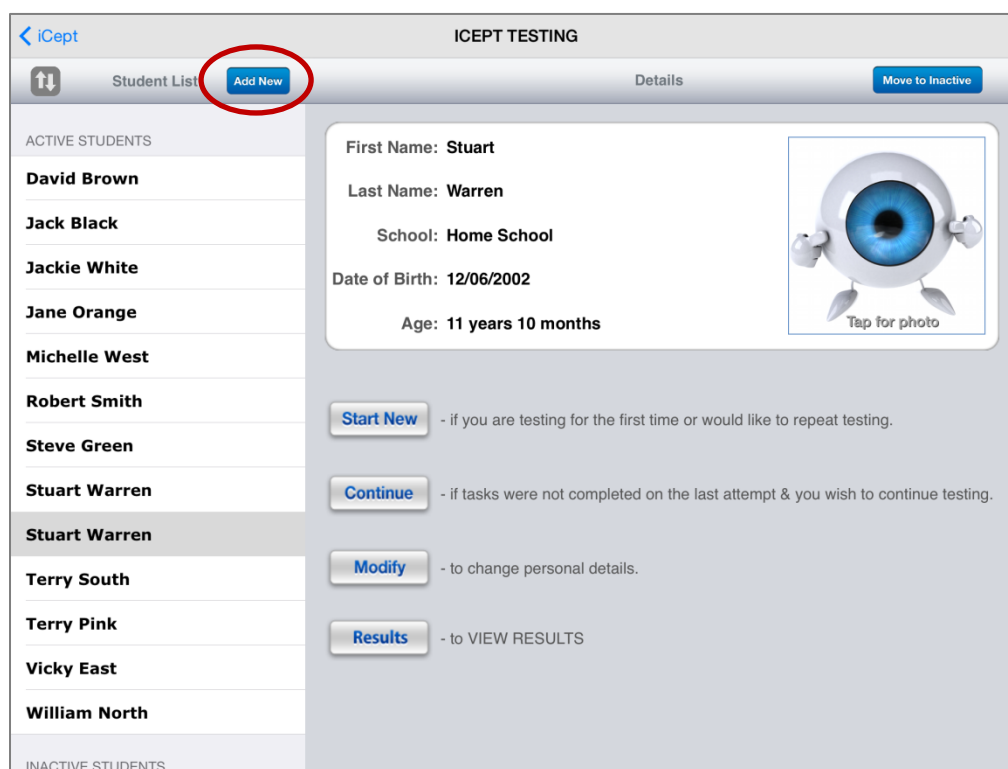


Figure 1.

NOTE:

1. **No test data will be lost when doing an iOS upgrade.**
2. The appearance of the user interface may change if Apple releases a significant iOS upgrade. This is outside the developers control but should not alter the functionality of the software.



Task Menu

- The iCept tasks can be viewed on the Task Menu (see Figure 2).
- Before starting, tap on “**About**” to learn about the test.
- A **voice-over** explains the test (can be turned off) and a practice run is given (except Visual Spatial).
- After completing each test the **results are hidden** by default and a dancing eye is seen but this can be turned off (see Figure 3)
- All results can still be viewed later.

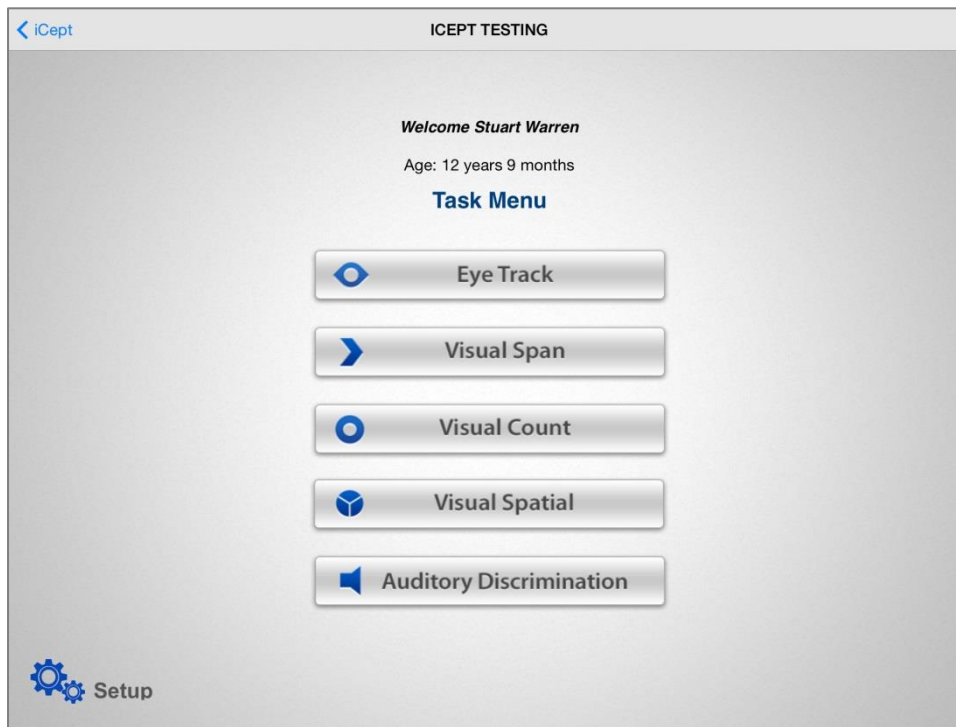


Figure 2.

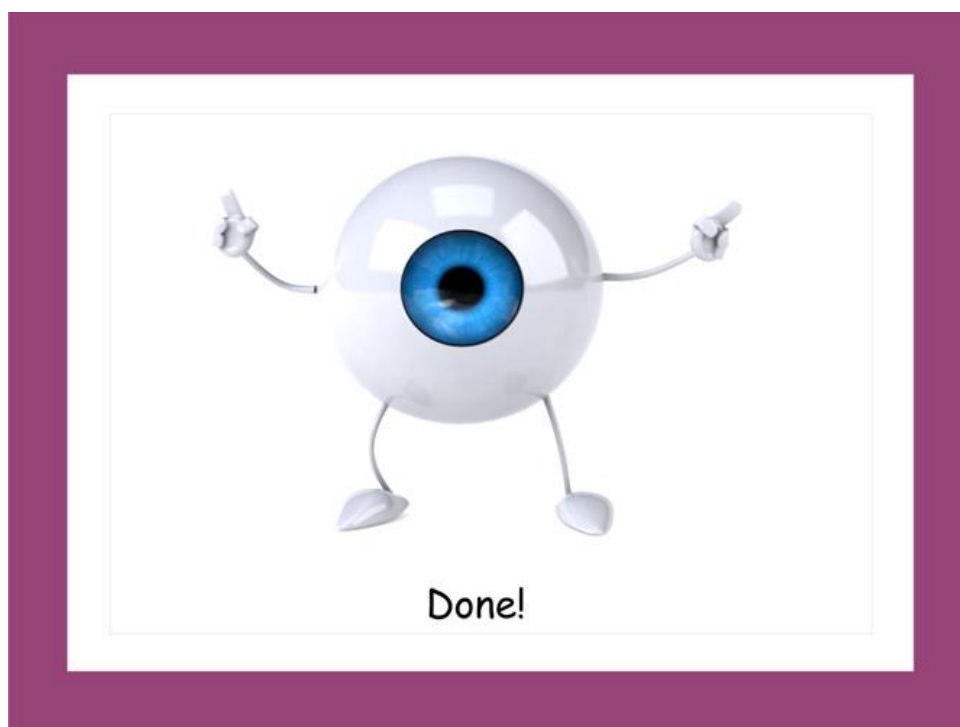
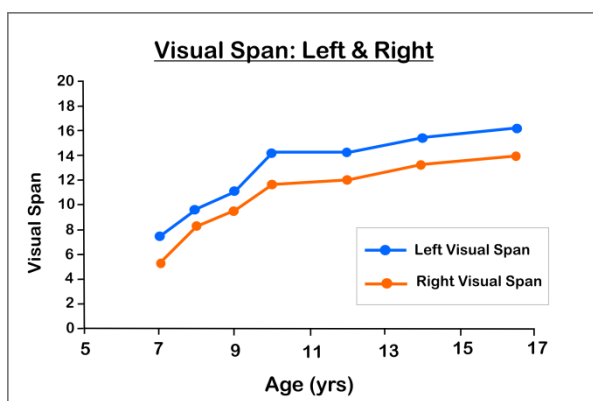
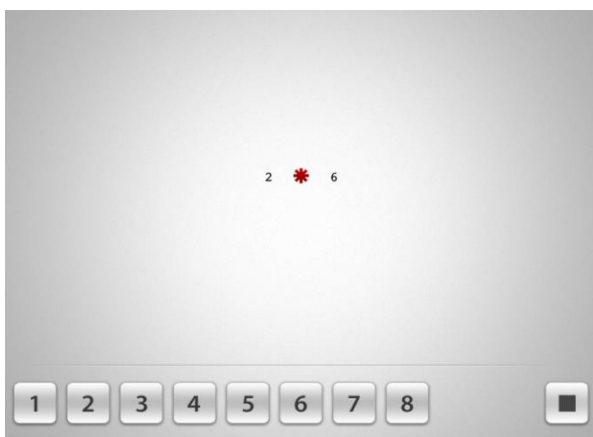
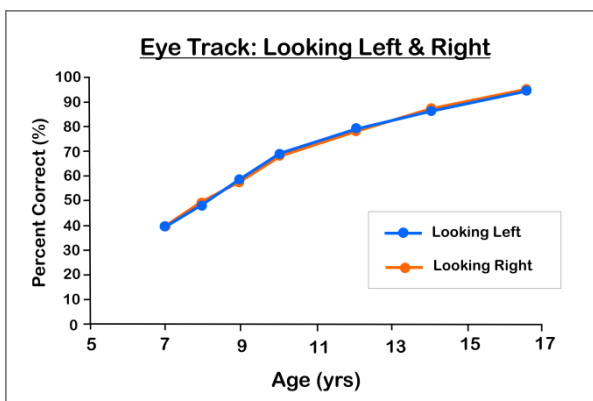
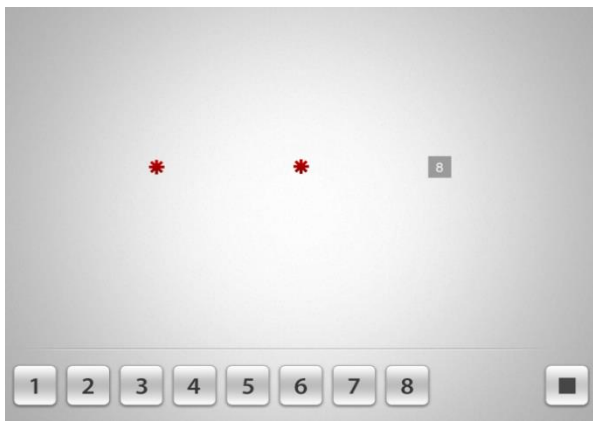


Figure 3.

Guidance for Testing

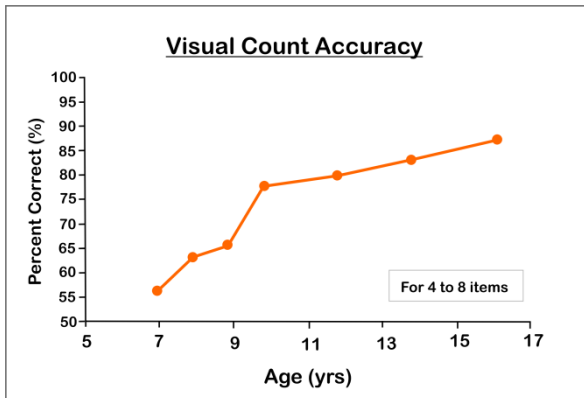
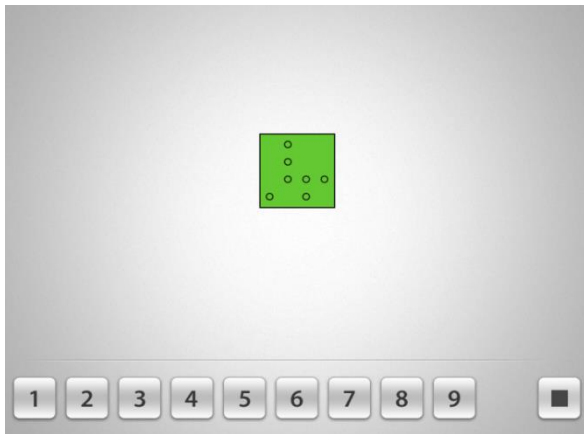


Eye Track

- This is a *voluntary* saccade task that requires the student to look the other way from the test stimulus (called an “anti-saccade”).
- It taps the nervous pathways in the brain which control the eye movements used for reading.
- Poor eye tracking may be associated with dyslexia, developmental delay, premature birth & closed head injury (eg. concussion from sports).
- The test has 100 presentations: 40 to the left, 40 to the right & 20 in the center. It pauses at half way for a break!
- Low results may indicate inaccurate eye saccades looking to the left or right (expressed as a % correct).
- A low central result may indicate poor attention or unstable fixation.
- Eye Track is a screening test only. It is a *conservative test* which means that it is likely to show that eye tracking is *better* than it actually is when measured using an eye tracker device. Consequently, it is possible to pass this test and *still* have a problem with voluntary eye movements.
- If a student frequently loses their place reading and *passes* the Eye Track test, consider training anyway OR testing on an eye tracker (if available).

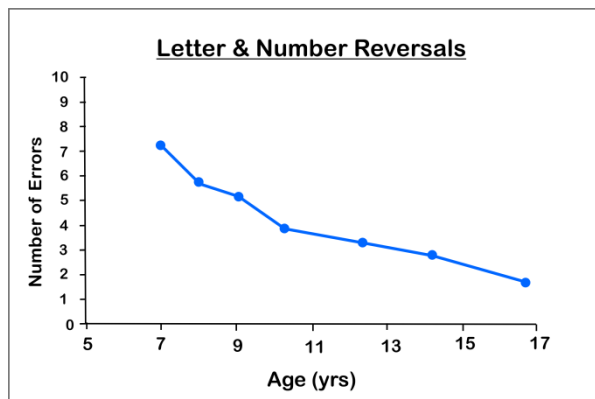
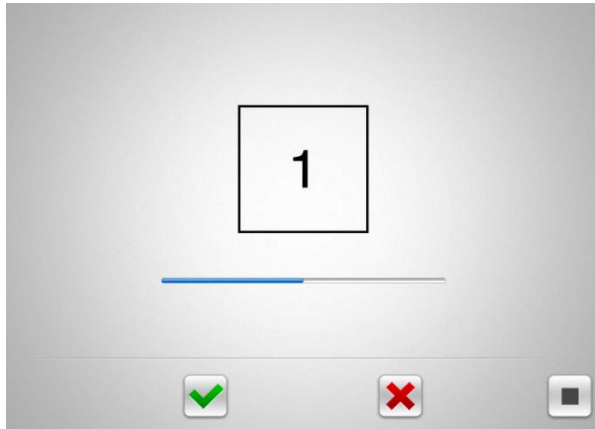
Visual Span

- This is a measure of the *window* of visual attention.
- It is a test of simultaneous processing.
- It is distinct from the *Perceptual Span* which is a dynamic span described by Rayner for reading (typically 15 characters to the right and 4 to the left, but reverse for Hebrew readers).
- The left and right limits are measured independently and are calculated as the last correct value after 2 consecutive errors are made.
- A poor visual span means that a student has to make more eye movements to read the same amount of information which can affect reading speed.
- This can have a developmental basis or it may be acquired due to stress & fatigue causing a functional collapse of vision.
- The visual span is affected by various factors such as font size, contrast, & crowding (ie. how much information is presented at once). Using single numbers results in a much larger visual span.
- The Visual Span is typically larger on the left side as reports suggest that attention to the left visual field is more accurate compared to the right visual field for both American and Israeli students.



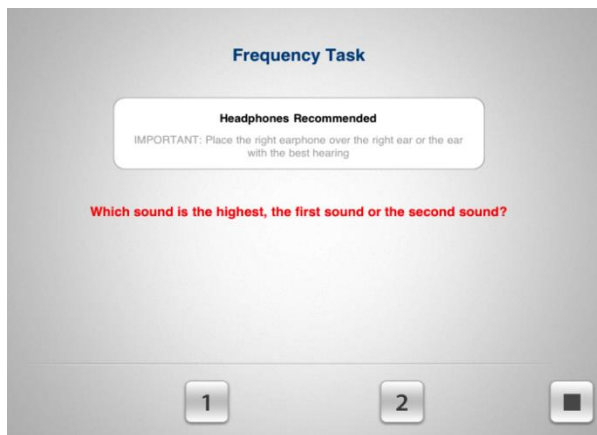
Visual Count

- This is a measure of the number of items that can be recognized without counting them (subitizing) in addition to those visually counted.
- It is fundamental to number concept in basic arithmetic but also enables us to count the number of letters in a word to estimate its size when reading.
- Most adults can subitize up to 4 or 5 items when presented quickly after which they tend to count.
- Response times can be used as an indicator of visual processing speed.
- **Basic Response Time = response time for 1 to 2 items** (the response time is exactly the same for either 1 or 2 items).
- **Response Time/Item = response time per item for 4 to 8 items.** This increases linearly as more items are added. (eg. a response time of 0.39 secs means the response time for 6 items is $6 \times 0.39 = 2.34$ secs).
- **Accuracy = the percentage correct for 4 to 8 items.**
- Training should be commenced if ANY of the parameters are reduced, *especially* if there is a problem with basic arithmetic.



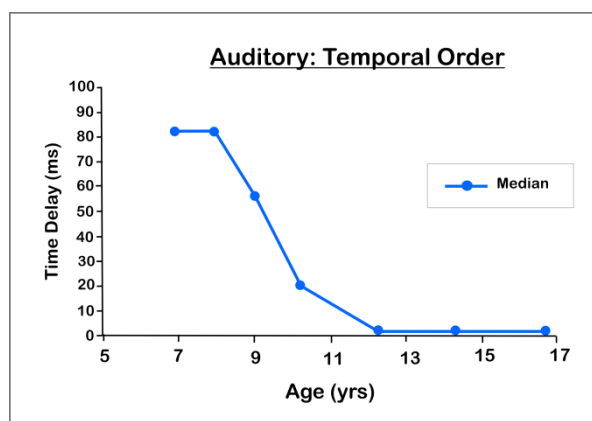
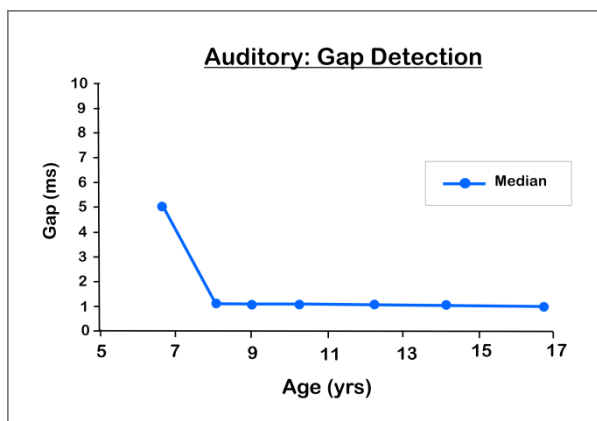
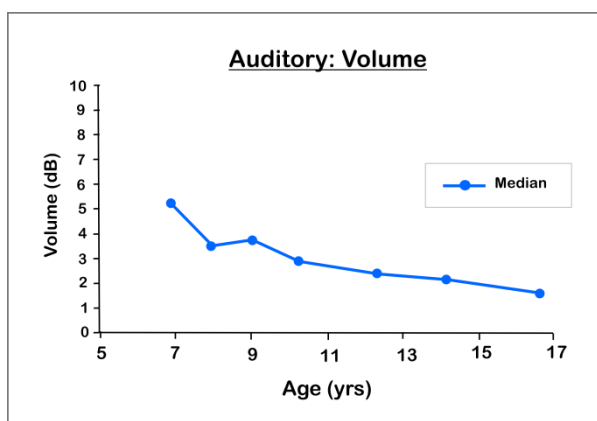
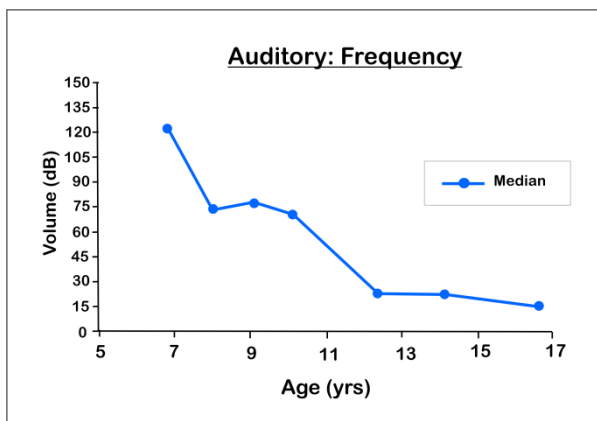
Visual Spatial

- This is a measure of visual direction. A problem with number and letter direction indicates that left & right awareness is not fully automatic.
- A student with poor spatial awareness may often lose their place on the page, exhibit letter reversals, have delayed fine motor skills and may *possibly* be observed to have gross motor delays.
- **NOTE: Testing should be done where the student cannot see letters or numbers in their field of view!**
- Training is generally only recommended for younger students (10 and below) but could also be considered for older students with severe spatial difficulties (eg. over 10 errors on the iCept test).
- Older students may not wish to engage in spatial training as they often prefer to work autonomously.
- As we get older we may learn to compensate for spatial problems by using external cues or linguistic mechanisms.



Auditory Discrimination

- This is a measure of how accurately the difference in basic units of sounds can be distinguished despite normal hearing.
- This is particularly helpful for spelling & following instructions.
- The four subtests include:
 1. **Volume** (loudness)
 2. **Gap Detection** (gap size)
 3. **Frequency** (pitch)
 4. **Temporal Order** (time order)
- Some students cannot discriminate a difference between sounds at even the most basic level, referred to as “Low Performers”.
- Many Low Performers will improve with time (age).
- Dyslexic students are more likely to fail on the *Frequency & Temporal Order* tasks.
- Testing should be done on or near full volume in a quiet room *without* using headphones or with the **volume set to half way (8 clicks) with headphones**.
- If using headphones, the right earphone should cover the right ear OR the ear with the best hearing if there is a known problem. This is because the time dependent tasks, *Gap Detection & Temporal Order*, only use one earphone.
- The threshold value is taken as the last correct response made following 3 errors in the last 6 presentations.
- If all of the auditory tests are failed but the student has a history of normal hearing (from the school screening or private hearing test) this is considered to be an adequate basis for training.
- Training initially involves around 10 days per task but may need to be repeated to reach normal levels.
- Referral to an audiologist specializing in **Auditory Processing Disorder (APD)** may also be considered - especially if training fails to improve the skills after repeated attempts.



Results

- To view a summary of the results tap on “Results” (see Figure 4)).
- The results are **ONLY** stored locally on the iPad used to do the testing & NOT on the VFL server.
- **Deleting the app will permanently remove testing data so a hard copy report is advised.**
- Updating the app however will NOT remove testing data.

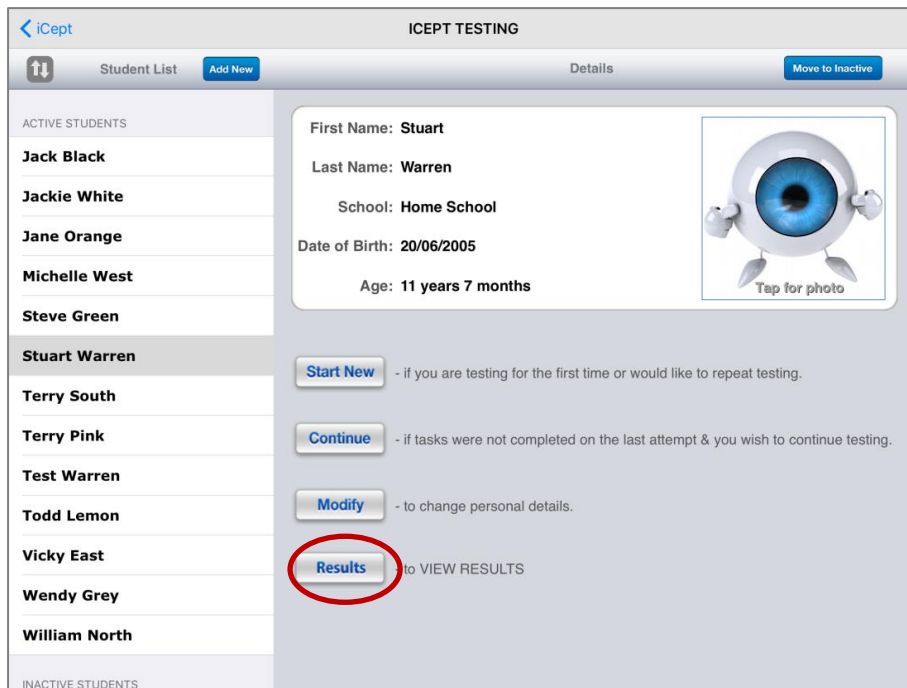


Figure 4.

Reports

- It is advisable to **PRINT** a hardcopy backup of the test results.
- To receive a report summarizing the results and any training recommendations tap on the “Results” button followed by “Email Report” (top right corner), enter an email address and select “Receive Email Report” (see Figure 5 below). Note; the iPad must be connected to the internet by WiFi.

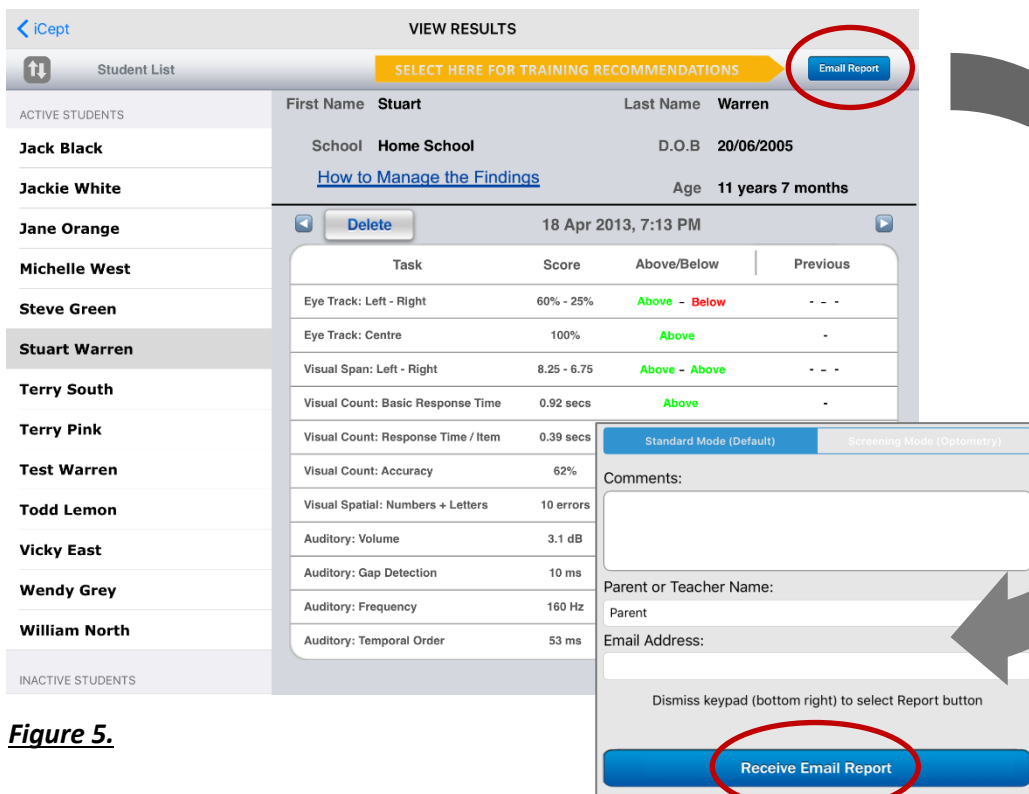


Figure 5.

There are 3 categories of reports:

1. No training is indicated
2. Some problems were observed. Consider training or else recheck in 6 months
3. Training is recommended

The report will also show a summary table of the test results and make any training recommendations based on the last 2 test results.

Before Training

- The school vision screening test does not typically check for *near vision problems*.
- If training is indicated, it is advised that a student be tested by an optometrist first (preferably one with an interest in children's vision) to rule out the possibility of any near visual problems that might be affecting the test results *before* starting training. At minimum they should be able to pass a simple near vision screening test.



- The **3 Point Check Test** VFL is a helpful preliminary screening test of near vision (see Figure 6).
- If it is not possible to visit an optometrist a student can proceed with iCept Training if they PASS the 3 Point Check Test of near vision and they have previously passed school hearing tests.
- **Note that a student can fail ALL of the auditory discrimination tasks and still have normal hearing.**
- Record forms for the 3 Point Check Test can be downloaded from the VFL Library.

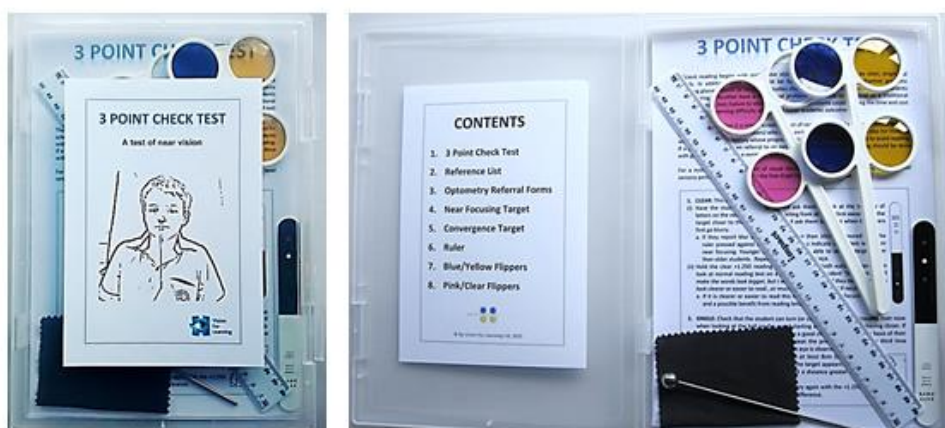


Figure 6.

- Before visiting an optometrist, parents or teachers can fill out an *optional questionnaire* such as the **Vision For Learning Questionnaire**.
- An **Optometry Referral Form** can be used to refer to optometrists.
- These forms are available as a pdf's, from the VFL Library in the multi-license console.