Lucid RAPID

Dyslexia Screening

Administration Manual

Third Edition, February 2010

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Third Edition Feb 2010 v05

1 Getting started

1.1 What is Lucid Rapid Dyslexia Screening?

Lucid Rapid Dyslexia Screening is an objective computer-based system for identification of dyslexia between the ages of 4 to 15 years. It is swift and easy to administer, taking only 15 minutes – less than any comparable system currently available. Results, based on national standardised norms, are available immediately. A simple print-out of results, which incorporates automatic expert interpretation, gives clear indication of the probability of dyslexia in every case and differentiated recommendations for action.

Lucid Rapid Dyslexia Screening gives the child three separate dyslexia sensitive tests, each of which takes about 5 minutes. The tests administered vary with the age of the child, but have been carefully selected and validated so that screening accuracy is maximised. The first two tests measure the child's phonological processing and auditory working memory. For children aged 8 and over, the third test measures phonic decoding skills. Children under 8 years are administered a third test that measures their integration of visual memory skills with use of verbal labels and concepts.

Lucid has a unique track record in developing innovative computer-based tests for screening and diagnosis of dyslexia, which are backed by extensive published scientific research, and have been tried and tested in thousands of schools. **Lucid Rapid Dyslexia Screening** has been developed by the same research team that created the well-known computerised diagnostic systems for schools *Lucid CoPS Cognitive Profiling System, LASS Junior* and *LASS Secondary*, and which recently produced *LADS (Lucid Adult Dyslexia Screening).* These computerised assessment products are used in over 6,000 establishments across the UK, including schools, colleges and universities, and several foreign language versions have been developed.

1.2 Installing and running the Lucid Rapid program

The Lucid Rapid **Software Guide** can be accessed from the program's menu options. In the software, blue buttons marked **html** launch the **Software Guide** in your web browser and red buttons marked **pdf** will launch the Adobe Acrobat ® version of the **Software Guide**. In the latter case you may need to install Adobe ® Acrobat ® Reader onto your computer – how to do this is explained on the Lucid Rapid CD.

To get started straight away simply insert the Lucid Rapid CD into the CD drive on your computer, select Start and Run and then enter **`D:\Setup`** (where D: represents your CD drive letter — note that it may be a different letter). Follow the on-screen instructions presented by the setup program. You will find the Lucid Rapid program by clicking on 'Start' and then choosing 'Programs'. Then select the menu item called 'Lucid Rapid'; simply select the purple icon with that name to launch the program. The first time you use the software you will be asked to enter your name, the name of your school or institution and the unique serial number which came with your software.

An Administrator's Password is required to use Lucid Rapid. This password is needed to get to the *Start-up Menu*; it is usually needed to access the *Reports and Administration module* and options within.
The password is initially set by the program to **lucid.**

The password is case-sensitive - check the status of the *Caps Lock* light on your keyboard if your password doesn't work. You can change your password at any time using an option in the Administration Module.

For further information about installing and running the program see the **Software Guide**.

2 Dyslexia and screening

2.1 What is dyslexia?

Dyslexia is a specific learning difficulty characterised principally by problems in certain aspects of language processing. Dyslexia is generally inherited and is independent of intelligence or social background. It is a constitutional condition in which various neurological systems work differently to the way they work in non-dyslexic individuals. The main neurological systems affected are those that deal with processing of phonological information and auditory working memory; in other words, those involved in storage, processing and recall of information about the sounds of language (phonemes) and how these relate to the symbols of written language (graphemes). This results in difficulties in acquiring the skills of reading, writing and spelling (and sometimes numeracy), as well as problems in activities that require rote learning and recall, e.g. examinations. One of the most common and pervasive difficulties in dyslexia is in acquiring what teachers usually refer to as 'phonics', i.e. in learning the relationships between letters and sounds and using this knowledge to decode unfamiliar words and write words that are spelled regularly. Some dyslexics show considerable talents in other areas, e.g. visual or practical thinking skills, creativity and imagination.

The principal theory of dyslexia, and the one that has the greatest weight of scientific evidence, is known as the 'phonological deficit theory' (Snowling, 2000). According to this theory, certain parts of the brain that are responsible for the storage, processing and recall of information about speech sounds do not function as efficiently as they should. Consequently, any activity that depends heavily on these systems (such as reading and writing) is particularly difficult. The phonological deficit theory is not the only theory about dyslexia. There are other theories which attribute dyslexia to malfunctioning in the visual system, or in the neurological systems concerned with balance, motor control and skilled learning generally. Although the possibility of some dyslexic individuals having neurological abnormalities other than those in the phonological processing system cannot be ruled out, the evidence to support these alternative theories is comparatively weak.

2.2 How were the tests in Lucid Rapid selected?

In order to produce a screening system that is as accurate in identifying dyslexia as possible, the tests chosen for inclusion in **Lucid Rapid Dyslexia Screening** have been based on the phonological deficit model (see Section 2.1). The tests in the program are shown in Table 1.

Table 1. Tests in Lucid Rapid Dyslexia Screening.

Test	Age range	Cognitive area assessed
1	**4:0 – 15:11**	*Phonological processing*
2	**4:0 – 15:11**	*Auditory sequential memory*
3	**4:0 – 7:11**	*Visual-verbal integration memory*
	8:0 – 15:11	*Phonic skills*

In order to allow for natural development in the component skills as children get older and ensure that the tests give accurate results, the content of each of these tests varies according to the age of the child. To assess phonological processing ability, younger children (4:0 – 7:11) are given a test that assesses the skills of rhyming and alliteration, whereas older children (8:0 – 15:11) are given a test that requires them to segment words into syllables and phonemes. All these tasks have been shown to be effective measures of phonological processing ability and so the underlying cognitive processes measured by the tests are essentially the same. All test scores are based on the *accuracy* of the child's responses; however, in order to increase the sensitivity of the rhyming and alliteration test for children in the 5:0 – 7:11 age range, the *speed* of the child's responses has also been taken into account when calculating results. [Teachers who follow up a **Lucid Rapid** screening of a child in the 5:0 – 7:11 age range with a full diagnostic assessment using *Lucid*

CoPS should be aware that the centile score for phonological processing in Rapid may not be the same as that which appears for the equivalent test in CoPS – i.e. 'Rhymes' – in fact, the Rapid phonological processing centile score may be somewhat lower than the CoPS Rhymes centile score, because the former combines accuracy and speed, whereas in the latter, speed and accuracy are scored separately and appear as separate measures on the reports.]

In **Lucid Rapid**, for assessment of auditory sequential memory (sometimes known as working memory), older children are given a test that requires them to recall sequences of digits. Since this task is one that younger children do not relate to particularly well (thus increasing the likelihood of unreliable results), children younger than 8 years are given a test that requires them to remember sequences of animal names. Again, underlying cognitive processes that children have to use when doing these tests are essentially the same, but the method of assessment has been changed to allow for age-related factors. This ensures that children of all ages are properly engaged by the task and that the results obtained are reliable.

Some dyslexia tests use conventional measures of reading and spelling to assess phonic skills. However, such tests do not provide sufficiently sensitive measures of phonics because they are affected by the child's possible familiarity with the words in the tests. Consequently, the test of phonic skills in **Lucid Rapid Dyslexia Screening** relies upon decoding of nonsense words (these are known in psychology as 'nonwords'), which the child will not have encountered before. Because phonics is difficult to learn and not easy to teach, many children struggle with phonics early on. Much depends on their general language experience in the early years as well as on how carefully they have been taught. But by no means all of them are dyslexic. Thus a test of phonics given too early can give misleading indications of dyslexia. For this reason, in **Lucid Rapid Dyslexia Screening** assessment of phonics begins at age 8, when most children should be making good progress in this aspect of literacy, so difficulties tend to have more clinical significance. Under age 8, the program instead measures the child's ability to integrate visual and auditory information in a short-term memory task involving sequences of colours. Psychological and educational research has shown the importance of visual memory skills in the early stages of learning to read. At a young age this particular test provides a more sensitive indicator of dyslexia than phonic decoding skills.

All the tests in **Lucid Rapid Dyslexia Screening** have been independently validated as indicators of dyslexia and standardised on national samples (for further information, see Singleton, Thomas and Leedale, 1996; Singleton, Thomas and Horne, 2000; Horne, Singleton and Thomas, 1999; Thomas, Singleton and Horne, 2001; Horne, 2002).

2.3 The advantages of computer-based screening

The advantages of computer-based screening over conventional screening tests can be simply summarised as follows:

- Testing is completely objective
- Standardised presentation of test items
- Improved accuracy of measurement
- Speedier administration
- Less training of administrators needed
- Labour (and cost) saving
- Results available instantly
- Fun for children

The last bullet point is by no means an 'extra'. In a computer-based test it is the computer that has to maintain the child's motivation, otherwise s/he may quickly lose interest and the results would become unreliable. Lucid's tests utilise a game format with attractive graphics and sound, so that computer tests are enjoyable for children, thus making assessment easier and more effective all round. For further discussion of computer-based assessment and screening in education, see Singleton (1997b, 2001, 2003).

2.4 Validation of Lucid Rapid

Each of the tests in **Lucid Rapid Dyslexia Screening** has been individual validated and standardised on national samples of over 2,000 children, and is already in widespread use in over 6,000 schools using the established computerised assessment suites *Lucid CoPS Cognitive Profiling System*, *LASS Junior* and *LASS Secondary*. Teachers can therefore have confidence in the accuracy of Lucid Rapid. Validation data is provided in the Teacher's Manuals that accompany each of these tests.

The accuracy of a screening test is largely determined by the frequency of false positive and false negative cases it produces. 'False positives' are those children predicted by the test to have problems (e.g. in literacy or to have dyslexia) who subsequently did not have problems. 'False negatives' are those who were *not* predicted to have problems who subsequently did have problems in literacy or who turned out to have dyslexia. To be acceptable, both false positive and false negative rates should be under 25%. For further discussion of issues in accuracy in educational screening see Singleton (1997a). Singleton, Thomas and Horne (2000) report data on the accuracy of *Lucid CoPS Cognitive Profiling System*, in which the tests of phonological processing and auditory sequential memory (both alone and combined) were found to give very low levels of false positives and false negatives as predictors of literacy difficulties and dyslexia. Horne (2002) reports data on the accuracy of LASS Secondary, which was found to have satisfactory concurrent validity. Accuracy of identification was shown in a study in which a group of known dyslexics scored significantly lower on phonological processing, auditory sequential memory and phonic skills, when compared with a control group of non-dyslexics (Horne, 2002). These findings all suggest that screening accuracy of Lucid Rapid is good and well within acceptable psychometric limits. Further validation studies with Lucid Rapid are currently being carried out and will be reported on the Lucid website (www.lucid-research.com). However, users should be aware that unusual types of dyslexia which are not characterised by phonological difficulties may not be picked up by the Lucid Rapid program. We would recommend the use of our diagnostic systems called *Lucid CoPS*, *LASS Junior* and *LASS Secondary* for a more comprehensive approach to screening and assessment and in order to identify these types of individuals (see Section 4.3). (Also note that test results obtained from the Lucid Rapid system can be directly imported into the diagnostic systems so there is no need to retest on those specific modules.) .

3 Administering the screening tests

3.1 Registering children

Administering the tests in **Lucid Rapid Dyslexia Screening** is straightforward. First you must register the child's details, including the date of birth, which is essential for the computer to be able to select the correct tests and norms according to the child's age.

To register a child or student please consult the Software Guide which comes with both the Stand-alone and the Network versions of Lucid Rapid. Students can be registered either individually or in batches using a text- based import file. Once students have been registered they can then assessed by going to *Assessments* (stand-alone version) or launching the Tests module from a desktop shortcut (network version). At this point the child will then be able to complete each of the three tests in turn.

If for any reason all three of the tests are not completed in one sitting, it is possible to complete the remainder later. The tests menu will be shown with any tests completed clearly marked with a tick.

For further information about how to register individuals (either individually or in batches) see the **Software Guide**.

3.2 Carrying out screening

When the child has been registered, next you must select that child for screening. The computer will automatically select the three tests that are appropriate for the age of the child. These three tests can be done in any order, but it is recommended that they are done in the order in which they appear on the menu screen. The three tests do not have to be attempted at a single sitting; however, full results cannot be obtained until the child has completed all three tests.

Screening should be carried out in reasonably quiet surroundings with minimal distractions. Good audio quality is important, so that instructions and items spoken by the computer can be heard correctly. If in doubt, use of headphones is recommended. Each test is preceded by a demonstration and/or practice items. If the child gets practice items wrong, the computer will give more practice. Upon completion of the practice phase, the test will start.

Children typically become very engrossed in the tests and enjoy doing them. Nevertheless, young children should be supervised during the screening to ensure they fully understand what is required of them. Older children, once they have been registered and got started, can usually be left to their own devices with little need for adult intervention. Most of the tests in **Lucid Rapid Dyslexia Screening** are adaptive, that is, the computer will automatically adjust the difficulty of the items to suit the ability of the child. This means that some children may receive different items and different numbers of items to other children. In general, the items get harder the longer the test continues. However, if an individual test is terminated before the computer has finished automatically, the results will not be saved. Therefore, the child should always carry on until the end of each test, even if they feel that the test has become too hard for them. Research has shown that adaptive tests are much speedier and more efficient than conventional tests, so the tests in **Lucid Rapid Dyslexia Screening** are as short as they possibly can be whilst still yielding accurate results.

If you intend to import the results from Lucid Rapid into one of the diagnostic systems (i.e. *Lucid CoPS*, *LASS Junior* or *LASS Secondary*) then it is recommended that you fully familiarise yourself with requirements and guidance provided in the Teacher's Manual that accompany those programs before you administer any Lucid Rapid tests.

4 Results

4.1 Accessing and printing out reports

Reports are only of value if a child has completed all three of the assessment tasks presented to him or her. To access the reports choose Reports and Administration from the Start-up Menu and select the option which says *Reports*. On the Reports page select the individual whose report you wish to view by clicking on the drop-down names list.

To add comments to a report select the *Comment* button. You can add up to 25 lines of text, with a maximum of about 2000 characters and this will appear in the Assessor's Comment space on the printed report. To print out the report click on 'Print page' button after which the *Print Preview page* will be shown.

The *Print Preview page* can be enlarged with the *Zoom* facility. In addition, five tick boxes can be checked to show (or hide) various parts of the report, namely the Guidance Notes, Comments paragraph, a page border, mnemonics to show what the tests are familiarly known as, and dates when assessments were taken. The report can also be copied into the Windows clipboard (*Copy*) and then pasted into any suitable word processor or other application.

For further information about accessing and printing out reports see the **Software Guide**.

4.2 Interpreting results

The results from Lucid Rapid are presented in a way that is very easy to interpret. A graphical profile is provided and a built-in expert system automatically gives the probability of dyslexia and guidance for interpreting each individual set of results.

4.2.1 Graphical profile of results

The results from each of the three tests are shown on the reports screen on a graphical profile, using a scale of decreasing risk for each of the three tests in Lucid Rapid. This is a 7-point scale based on centile scores (see Table 2).

Table 2. Scoring system for Lucid Rapid Dyslexia Screening.

Scale of decreasing risk	**1**	**2**	**3**	**4**	**5**	**6**	**7**
Centile range	<5	5–19	20–34	35–64	65–79	80–94	95+
Description	Very low	Low	Below average	Average	Above average	High	Very high
Colour zone	**Red**	**Pink**	**Amber**	**Green**			
Difficulties	**Severe**	**Moderate**	**Borderline**	**Normal, no significant difficulties**			

Each point on the scale of decreasing risk corresponds to a range of centile scores, which are conventionally described as 'average', 'below average', 'low', etc. Centile scores (sometimes called 'percentile scores') place the child's performance on a ladder from 1 to 99, in comparison with other children of the same age. The colour zones provide an at-a-glance indication of risk of severity of difficulties. Note that the graphical profile does not discriminate within individual points on the scale, e.g. centile scores of 21, 29, and 34 would all fall within point 3 ('Below average'). However, the precise centile score is shown in numerical form to the right of each bar on the graphical profile. For further information on how to use the centile scores, see Section 4.2.3.

4.2.2 Probability of dyslexia

The results of the three tests are combined by the program to arrive at an overall probability of dyslexia, which is also shown on the reports screen. This is achieved by means of an algorithmic expert system derived from research data. The overall probability cannot be worked out until the child has completed all three tests.

The expert system gives an overall estimate of the probability of dyslexia in one of the following categories:

- Very high probability of dyslexia (greater than 95% chance)
- High probability of dyslexia (greater than 90% chance)
- Moderate probability of dyslexia (greater than 75% chance)
- Low probability of dyslexia (less than 10% chance).

The interpretation algorithm is sophisticated and too complicated to explain here. As a rule of thumb, however, when a child's results show a majority of red scores this usually points to a *very high probability* of dyslexia. A majority of pink scores or a combination of red and pink usually indicates a *high probability* of dyslexia. A majority of ambers scores or combinations of ambers and other colours generally denotes a *moderate probability* of dyslexia. The expert system also provides a brief overview of the findings, entitled 'Guidance for interpretation', which pinpoints the main areas of difficulty. Reference to Section 5 will assist in determining further action in relation to each of these areas.

4.2.3 Using the centile scores

The centile score for each of the three tests in Lucid Rapid is shown in numerical form to the right of each bar on the graphical profile. Lucid Rapid has been designed so that users do not have to concern themselves with centile scores if they do not want to. The program automatically provides clear classification and guidance for interpretation without the user needing to refer to centile scores. However, some users may wish to examine the results more closely, and this can help in decision-making in some cases. If a child has a centile score in the lower part of a particular band (e.g. a score of 22) then this will indicate rather greater risk than if a child has a centile score in the upper part of the same band (e.g. a score of 32), even though the graphical profile and the expert classification system will treat these two cases the same. Thus consideration of the centile scores will in some instances enable the user to refine a judgement about a child's difficulties.

4.3 Integrating Lucid Rapid with CoPS or LASS

Lucid Rapid has been designed for use as a quick screening system that will identify most instances of dyslexia with a good degree of accuracy. For some users that will provide all the information they need in order to instigate appropriate action. However, although Lucid Rapid can identify the child with dyslexia it is <u>not</u> a comprehensive diagnostic, nor does it necessarily give information about children's *strengths* in learning. So inevitably it will have limitations in terms of pointers for educational strategies to address children's problems in learning. Undoubtedly the best way to overcome those limitations is by the combined use of Lucid Rapid with a follow-up diagnostic assessment given to those children who are at risk, using either *Lucid CoPS Cognitive Profiling System* (for age 4:0 – 8:11), *LASS Junior* (8:0 – 11:11) or *LASS Secondary* (11:0 – 15:11). Children 'at risk', in this sense, are those who are found to have Lucid Rapid screening results in the 'very high', 'high' or 'moderate' probability of dyslexia categories. Note that the age ranges of these three diagnostic assessment systems deliberately overlap, to give teachers some leeway, but at the overlap ages it is usually better to use the test designed for the older age group if possible.

CoPS and LASS are designed to give a full diagnostic profile for each child, which enables the teacher to identify cognitive strengths as well as weaknesses, and therefore to formulate a more precise programme of educational support to overcome the child's problems. In addition, LASS gives an estimate of the child's intelligence and allows the teacher to determine the amount of discrepancy between expected literacy attainment and actual literacy attainment. The CoPS and LASS Teacher's Manuals provide comprehensive information on interpreting profiles and teaching strategies.

Results from Lucid Rapid can be exported directly to Lucid CoPS or LASS, and will automatically be incorporated into the CoPS or LASS graphical profile. This reduces the assessment time using CoPS or

LASS by about one-third, this saving personnel time and duplication of effort. For information on how to export results from Lucid Rapid into CoPS or LASS, see the *Lucid Rapid Software Guide*.

5 Teaching strategies for dyslexia

5.1 General approaches

Multisensory methods of teaching for children with dyslexia are usually advocated. These integrate visual, aural, tactile and kinaesthetic modalities to consolidate the learning experience. Lessons must be very well structured, sequential and cumulative, and all skills and concepts must be thoroughly practised (overlearned) in order to counteract the memory problems of the dyslexic. Content generally needs to concentrate on phonic skills, as these are usually the weakest aspect in dyslexia. For a comprehensive overview of the range of approaches and materials the following book is strongly recommended: '**Dyslexia: a practitioner's handbook'** by Gavin Reid [Wiley, Second Edition, 1998 *Third Edition due March 2003*].

The range of available products and materials for teaching and supporting children with dyslexia is steadily growing. Well-structured phonics-based multisensory teaching is still the fundamental requirement, especially for primary-aged dyslexics, but the currently available approaches are much more flexible and more fun than the older drill methods. These can usually be backed up with computer activities, which make learning more fun (see Section 5.3). Various multisensory phonics teaching schemes are recommended in Section 5.7.

Writing often presents the hardest challenge to dyslexic students. By its very nature, writing makes heavy demands on cognitive processes, especially memory. Use of word processing enables the dyslexic child to produce a greater amount of better quality written work because it reduces memory load and facilitates self-correction (e.g. by using a spelling checker). A *talking word processor* (which will speak back the text the child has entered) makes the dyslexic child much more independent when writing, because they can problem-solve their own mistakes. Examples of recommended talking word processors include *Inclusive Writer, Pages, Write:Outloud,* and *textHELP! Read and Write* (see Section 7.2 for details).

Many dyslexic children have problems with maths, particularly basic numeracy and calculation procedures. For excellent practical suggestions on addressing such difficulties see **'Maths for the Dyslexic: a practical guide'** by Anne Henderson [David Fulton, 1998].See also: **'Count on your Computer'** by Di Hillage [SEN Marketing, 2001).

Dyslexic students are entitled to special arrangements in GCSE and other public examinations, e.g. additional time or use of a word processor. Results from **Lucid Rapid** or **LASS Secondary** may be used in supporting evidence when applying for special arrangements, but these will need to be supplemented by other essential evidence, such as writing speed. Lucid has also released **Lucid EXACT** (for ages 11-24), a product designed to provide computerised assessment of literacy and is a good solution for Access Arrangements. The *Joint Council for General Qualifications* (JCGQ) publishes regulations and guidance relating to applying for special arrangements, which is available from each of the individual examination boards. Applications must be supported by a certificate from either an educational psychologist or a specialist teacher who has appropriate qualifications in special needs (see JCGQ regulations for details of approved qualifications). PATOSS *(Professional Association of Teachers of Students with Specific Learning Difficulties)* produces an excellent practical guide called **'Providing for Candidates with Special Assessment Needs during GCE (A Level), VCE, GCSE and GNVQ'** by Gill Backhouse (see Section 7.3 for further details).

5.2 Study skills

Children with dyslexia need help to develop good study skills. Their weak memory, general disorganisation, poor literacy skills and difficulties with learning makes studying hard for them and they typically under-perform in tests and exams. Memory weaknesses can be addressed with various activities (see Sections 5.5 and 5.6), but computer programs such as *Mastering Memory* are a good way of developing memory skills. When learning for tests or revising for exams, all students (but especially those with dyslexia) need a structured approach that optimises their recall of information. The programs *Time to Revise* and *Timely Reminders* provide an excellent basis for this, and enable the dyslexic student to adopt a well-organised and

more effective approach to learning and revision. When it comes to researching topics for assignments, multimedia sources of information (such as websites or CD ROMs) are more accessible and much easier to use than conventional printed sources such as encyclopaedias. To help to locate suitable website and CD ROMs, the *British Educational Communications and Technology Agency* (BECTa) is an invaluable source of advice and information (www.becta.org.uk). A useful book to help dyslexic children develop study skills is: **Study Skills: A pupil's survival guide** by Christine Ostler [Ammonite Books, 1996; available from SEN Marketing – see Section 7.3]. See also the BDA web link: http://www.bdadyslexia.org.uk/about-dyslexia/it-information/study-skills.html.

5.3 Computer programs

There are many excellent computer programs for learning and support of dyslexic children of all ages now available. The problem is to spot these amongst the hundreds advertised in the educational software catalogues. To assist busy teachers, the **British Dyslexia Association** produces a series of information packs that contain reviews of recommended software by experts in this field and give details of where these may be obtained and how the software can be used most effectively. The BDA also publishes a range of useful books and other literature on dyslexia, as well as a termly magazine called *Dyslexia Contact*. For information, contact the British Dyslexia Association, contact details can be found at: http://www.bdadyslexia.org.uk

Suppliers of suitable software are listed in Section 7.3.

The following books are highly recommended when developing strategies for using computers to support dyslexic children at school or at home:

'Dyslexia and Information and Communication Technology' by Anita Keates (David Fulton, 2000).

'Catch 'Em Young' by Judith Stansfield. (REM, in association with the BDA, 2000).

'A Parents' Guide to Using Computers with Dyslexic Children' by Carol Kaufman and Barry Whiting (REM, in association with the BDA, 2002).

'Write to Read with ICT' by Victoria Crivelli (SEN Marketing, 2001).

'Count on your Computer' by Di Hillage (SEN Marketing, 2001).

5.4 Developing phonological processing skills

Phonological processing can be developed by a variety of methods. For example:

- **Rhyming** and **alliteration** —suitable techniques range from simple rhyming songs and games to more structured activities involving making books with rhyming or alliterative themes, playing rhyming snap or 'odd-one-out' games with pictures and objects; using plastic letters to discover and create rhyming word families
- **Deletion** of the first sound (e.g. '*near–ear*') or of the last sound (e.g. '*party–part*'), or of whole syllables (e.g. saying '*alligator*' without the '*all*')
- **Elision** of the middle sound (e.g. snail–sail) or syllable ('*alligator*' without the '*ga*').
- **Correspondence** — e.g. tapping out the number of syllables in a word.

Recommended computer-based activities for practising phonological skills include ***Rhymes and Analogy, Tizzy's Toybox Talking Animated Alphabet***, and ***Letterland***.
In general, children respond well to phonological training activities and skills swiftly improve. However, some dyslexic children may have more persistent difficulties that will require particularly careful literacy teaching. In such cases, a well-structured multisensory approach incorporating plenty of practice in phonic skills (over-learning) is recommended (see Section 5.7). Without phonological training, many children with such weaknesses are liable to develop an over-reliance on visual (whole word) and contextual strategies in reading (especially if they are bright). They can easily 'slip through the net', only to re-appear as a child who is failing in reading and spelling later in the primary school.

5.5 Developing auditory memory

Memory limitations are more difficult to improve by direct training, especially with younger children, than are weaknesses in phonological processing. Older children can respond well to *metacognitive* approaches to memory improvement, i.e. techniques designed to promote understanding of their own memory limitations and to develop appropriate compensatory strategies (see Reid, 1998). However, that does not mean that memory training is not worthwhile with young children. Indeed, it may well be the case that with improved training techniques, remediation of memory weaknesses could turn out to be a much more promising approach in the future. The emphasis should be on variety and on stretching the child steadily with each training session. The tasks should not be too easy for the child (which would be boring) nor much too difficult (which would be discouraging), but just give the right amount of *challenge* to motivate the child to maximum effort. Use of prizes, star charts for improvement, etc., should all be used if these will help motivation. Activities can usually be carried out at home as well as in school. Competition between children can be motivating for some children, but it can also be discouraging for the child with severe difficulties, because they will easily perceive and be embarrassed by the discrepancy between their performance and that of other children.

Auditory sequential memory training activities include:

- **I went to the supermarket** — teacher says to the child sentences of increasing length and complexity and the child has to repeat these back verbatim (e.g. *"I went to the supermarket and bought three tins of beans, one loaf of bread, a carton of milk, a packet of sweets, two bars of chocolate...."* etc.)
- **Find the changed (or missing) word** — teacher says sequence of words to the child (e.g. *dog, cat, fish, monkey, spider*) and then repeats it changing one (or missing one out altogether), either slightly or more obviously (e.g. *dog, cat, fox, monkey, spider*) and the child has to identify the change.
- **What's their job?** — Teacher says to the child a list of name-occupation associations (e.g. *"Mr Pearce the painter, Mrs Jolly the grocer, Miss Fish the hairdresser, Mr Brown the electrician"*) and then asks for recall of one (e.g. *"Who was the grocer?"* or *"What is Mr Brown's job?"*). Occupational stereotypes can be avoided if desired.
- **Word repetition** — teacher says sequences of unrelated words to the child (e.g. *hat, mouse, box, cup, ladder, tree, biscuit, car, fork, carpet*) and the child has to repeat them in the correct order. The length of the list can be gradually extended. If the words are semantically related it is more difficult, and if they are phonologically related (e.g. *fish, film, fog, fun, phone, finger*) it is more difficult still.
- **Phoneme repetition** — as word repetition, but with phonemes (*"oo, v, s, er, d"*). Note that phonologically similar lists will be much more difficult (e.g. *"p, b, k, d, t"*)
- **Letter name repetition** — as word repetition, but with letter names.
- **Digit repetition** — as word repetition, but with digits. About one per second is maximum difficult for short sequences. Slightly faster or slower rates are both easier for ordinary individuals to remember, but dyslexics tend to find a slower sequence harder (because their rehearsal processes in working memory are deficient).

Good computer software for developing auditory sequential memory include ***Mastering Memory***.

5.6 Developing visual memory

It is widely acknowledged that the *predominant* problems found in dyslexic children are phonological rather than visual. Indeed, dyslexic individuals often have excellent visual skills. Nevertheless, teachers and educational psychologists are not infrequently confronted by cases of young children who appear to have inordinate difficulties in remembering various types of information presented visually. With children under eight years, this will tend to show up on **Lucid Rapid** in the results of the Visual-verbal integration memory

test. Such cases are less common than those of children with phonological difficulties. However, they do form a very important group because these are the children who are likely to fall at the very first hurdle with which they are confronted in literacy — i.e. whole-word, 'look and say' reading activities, often presented on flash cards. Of course, some teachers would presume that the child who cannot remember flash cards (however bright, orally fluent and well-motivated) is simply not *ready* for reading. On the other hand, if the child cannot begin reading in the most conventional way the most obvious solution is not to ignore the child's problems, but to find the way which is most appropriate for the child to learn.

In cases where the child is experiencing difficulty with visual whole word ('look and say') methods because of visual memory problems this can lead to early discouragement and frustration which can easily affect the whole of the child's educational activities. The child can swiftly become a reluctant learner. Spelling and writing are also likely to be a struggle. Visual memory training would be beneficial, but the main solution would be to make a much earlier start to structured phonics work, with ample practice (over-learning) to compensate for memory weaknesses. A multisensory approach is strongly recommended, building on any auditory and kinaesthetic strengths (see Section 5.7).

The following are suggested training activities for children with poor visual memory or poor visual-verbal integration memory:

- **Find the missing part** — create pictures of everyday things with parts of the pictures missing (e.g. doll with one arm, table with only three legs) and ask the child to identify what is missing. To do this the child has to recall visual images of the relevant objects.
- **What's wrong here** — use pictures of everyday things with parts of the pictures wrong (e.g. house with the door halfway up the wall; person with feet pointing backwards instead of forwards) and ask the child to identify what is wrong. To do this the child has to recall visual images of the relevant objects.
- **Kim's game** — an array of familiar objects on a tray (or picture of an array of objects). The child scans this for two minutes (or whatever period of time is appropriate) and then has to remember as many as possible.
- **Symbols** — show child a sequence of symbols, letters or shapes of increasing length, and then jumble them up and the child has to rearrange them in the correct order.
- **Who lives here?** — Make a set of pictures of people (these may be cut from magazines) and a set of houses of different colours, or different appearance in some way. The people are matched with the houses, and then jumbled up. The child has to rearrange them in the correct relationship. If the people are given names then the task relies more on visual-verbal integration.
- **Pelmanism** — remembering matching pairs of cards from a set, when cards are individually turned over and then turned back. The child has to remember where the other one of the pair is, and if both are located these are removed from the set, and so on.
- **Card games** — e.g. Snap, Happy Families.

Good computer software for developing visual memory skills includes: ***Memory Booster*** (Lucid Research Limited) and ***Mastering Memory*** ***(***http://www.masteringmemory.co.uk ***)***.

5.7 Developing phonic decoding skills

For the reasons explained above, the child who displays major difficulties in *auditory/verbal* memory is likely to have problems in acquiring effective phonic skills. Nevertheless, this type of child may make satisfactory progress in the *early* stages of reading—where the emphasis tends to be on building up simple visual word recognition skills—if visual memory skills are quite good. Because of this, it is very easy to overlook this child's problems and assume that because an apparently satisfactory early start has been made, everything else will follow automatically. In fact, this child would probably learn to rely almost exclusively on visual strategies in reading. It could be as late as nine or ten years of age before the underlying problems become noticeable, by which time so much learning opportunity has been wasted. Many dyslexics have a pattern of development like this. The recommendations here would be for an early introduction of a highly-structured *multisensory phonic approach* to literacy learning. This should not only provide ample practice to compensate for memory weakness, but should in this case also make use of the child's strong visual skills in

order to reinforce learning and help to maintain confidence. Examples of well-structured multisensory phonics schemes suitable for children with dyslexic difficulties include:

'Toe by Toe' by Cowling and Cowling**.** *Available from* **SEN Marketing,** 618 Leeds Road, Outwood, Wakefield, WF1 2LT. **Tel/Fax:** 01924 871697. *[A easy to follow multisensory phonic teaching scheme designed for use at school or home.]*

'The Bangor Dyslexia Teaching System' by Elaine Miles. 3rd edition, Whurr, 1997. *[Excellent strategies for teaching, plus details of accompanying resources]*

'Dealing with dyslexia' by Pat Heaton and Patrick Winterson. 2nd edition. Whurr, 1996. *[A revised edition of a popular classroom text]*

'Teaching reading and spelling to dyslexic children' by Margaret Walton. David Fulton, 1998. *[A new compendium of exercises based on sound practice]*

'Day-to-day dyslexia in the classroom' by Joy Pollock and Elizabeth Waller. Routledge, 1994. *[A very practical guide for teachers]*

'Overcoming dyslexia: skills into action' by Hilary Broomfield and Margaret Combley. Whurr, 1997. *[A highly practical book using multisensory teaching for dyslexics of all ages]*

'The Phonics Handbook' by Sue Lloyd. 2nd edition. Jolly Learning, 1994. *[Especially suitable for use with younger children; lots of photocopiable activity sheets. Makes learning fun and not just for dyslexics]*

'Sound Linkage: an integrated programme for overcoming reading difficulties' by Peter Hatcher. Whurr, 1994. *[Based on the author's own research in Cumbria: a strongly phonological basis to reading development; also includes a system for phonological assessment.]*

Good computer software for practising phonic skills includes: ***Wordshark 4***; ***Talking Animated Alphabet***; ***Rhyme and Analogy*; *All My Words***; and ***Fuzzbuzz***.

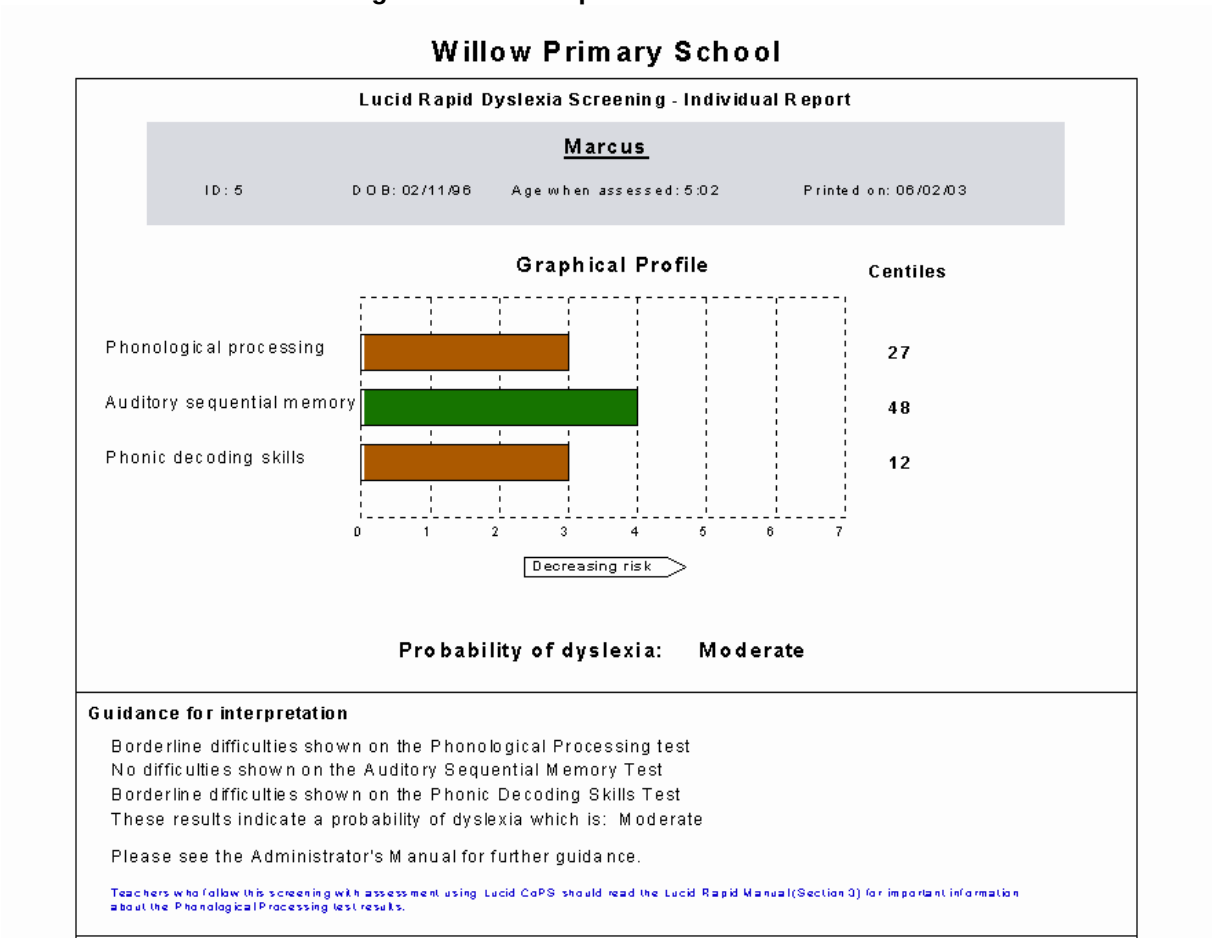
6 Case studies

The following six case studies illustrate how the results of Lucid Rapid can be interpreted, over and above the interpretation automatically provided by the program. It should be emphasised that in all these cases diagnosis can only be tentative because the information derived from a 15 minute screening program is inevitably limited. Nevertheless, it can be seen that in most cases the information from each of the three tests in Lucid Rapid can help the teacher to understand the nature of the fundamental underlying problems and move forward to effective action without unnecessary delay. Details of resources mentioned can be found in Section 5.7, and suppliers' addresses in Section 7.3. In cases where more detailed understanding is sought, the child can be tested on *Lucid CoPS Cognitive Profiling System*, *LASS Junior* or *LASS Secondary* (as appropriate to the child's age). In each case, results from Lucid Rapid can be imported into each of these programs and will automatically be incorporated into the profiles they generate, thus avoiding unnecessary duplication of effort and testing (see Section 4.3 for further information about this).

6.1 Marcus [5 years 2 months]

Marcus has been in school for a little over six months. His parents were worried about him because there is dyslexia in the family and because he showed no interest in books or writing, despite ample opportunities both at home and at kindergarten. At school he was struggling with the fundamentals of reading and could not yet reliably recognise all the letters of the alphabet and was confused about even simple words. Tested on Lucid Rapid, his results are shown in Figure 1.

Figure 1. Lucid Rapid results for Marcus.



Lucid Rapid has rated the probability of dyslexia as 'moderate' for Marcus. Obviously the family history of dyslexia would strengthen that conclusion. Closer inspection of his results indicates that he does not have any extreme deficiencies (no red scores), but both his phonological processing skills and visual-verbal integration memory are weak. In particular, the latter result suggests why he was experiencing problems in basic word and letter recognition. However, his average score for auditory sequential memory is good news,

and implies that if the early literacy difficulties can be overcome the longer-term prospects for Marcus are much better and he is unlikely to struggle with learning to the extent that most dyslexics do throughout their schooling. Overall, Marcus's results point to the following recommendations:

- Significantly increased input of phonological activities to improve his phonological processing skills. All activities involving word games, creating and learning rhymes, alliteration, and segmentation of words would be highly beneficial.
- Plenty of practice in memory activities, especially those requiring use of verbal labels to represent visual information (e.g. Kim's game).
- A carefully structured multisensory approach to teaching phonics, with ample opportunity to practise each phonic rule as it is introduced, e.g. using a scheme such as *Jolly Phonics* or *Letterland*.
- Several computer programs are available that will provide help for Marcus, including *Tizzy's Toybox* (visual and sound discrimination); *Rhyme and Analogy* (phonological skills); *Talking Animated Alphabet* (visual and aural letter recognition); *Letterland* (basic phonics); and *Teacher's Cupboard 2000* (letter and sound discrimination).

If a more detailed understanding of Marcus's difficulties is required, it is recommended that he should be tested on *Lucid CoPS Cognitive Profiling System*, which should uncover any other significant cognitive weaknesses and thus enable a clearer diagnosis to be made.

6.2 Gemma [6 years 9 months]

Gemma made satisfactory early progress in reading but now seems to have hit a barrier and is falling steadily behind the other children in her class. She enjoys stories but prefers being read to rather than to read them herself. When she does read she makes a lot of mistakes and guesses at words she does not recognise rather than sounding them out phonically. As a consequence she often misunderstands what she is reading. Gemma's Lucid Rapid results are shown in Figure 2.

Lucid Rapid has rated Gemma as having a 'high' probability of dyslexia. She has significant weaknesses in both phonological processing and short-term auditory sequential memory. However, her visual-verbal integration memory is a little better. It is most likely that in her literacy development she has been relying largely on her visual memory and this enabled her to survive the first couple of years in school. But this has left her unable to decode new or unfamiliar words by sounding them out; in other words, she is struggling with phonics. It should be pointed out that just because children have difficulties learning phonics does not necessarily mean that they are dyslexic. Many children find phonics hard to learn and a great deal depends of the skill of the teacher in teaching these skills. For some children the teaching may be at too fast a pace, with insufficient opportunities to practise and consolidate new learning. In Gemma's case, however, the poor memory and underlying phonological difficulties point fairly strongly to dyslexia.

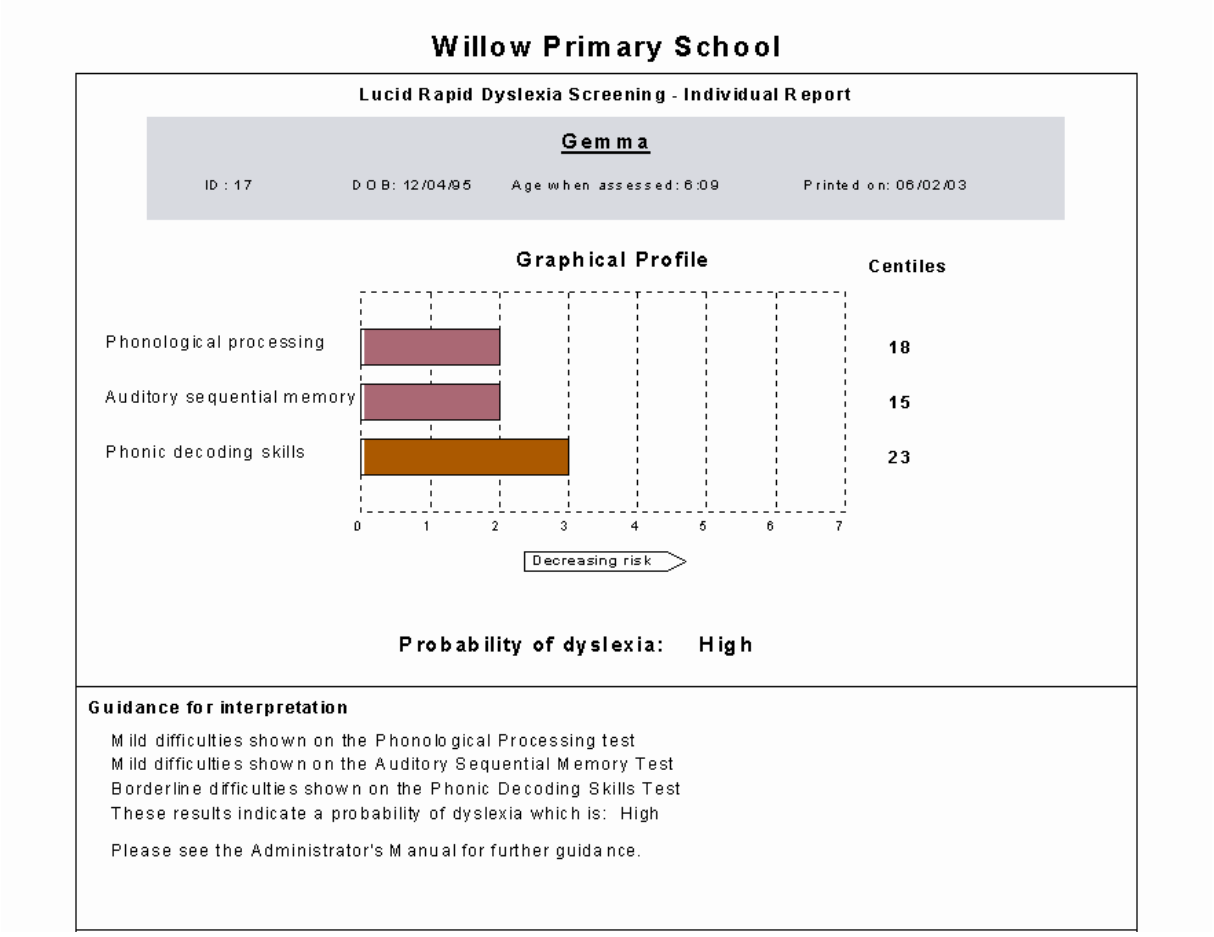
Intervention should begin right away, before Gemma loses interest and motivation. The following recommendations about teaching would be made:

- Getting the teaching of phonics right is going to be essential. A well-structured multisensory approach will be necessary to achieve maximum progress. A list of suitable teaching schemes is given in Section 5.7. Integration of phonological processing practice activities with phonic decoding would be beneficial, using a teaching scheme such as *Sound Linkage*. Checking Gemma's progress in phonics should be carried out regularly, e.g. using a test such as *ChIPPS*.
- Activities to develop Gemma's memory skills should be built into her school work and her home life as much as possible.
- It is likely that Gemma will find writing the hardest aspect of literacy, because writing places particularly heavy demands on short-term memory. Use of a talking word processor, such as *Pages* or *Textease Primary*, takes the pressure off short-term memory and should enable her to produce a better standard of written work.
- Many of the computer programs mentioned in the previous section for Marcus would also be helpful for Gemma. In addition the following computer programs would also be useful for her: *All My Words* (structured literacy activities); *Phonic Word Builder* (phonic skills); *Starspell 2.2* (spelling);

Wellington Square (reading activities); *Catch Up* (reading and spelling); and *Fuzzbuzz* (structured phonics plus comprehension activities).

If a more detailed understanding of Gemma's difficulties is required, it is recommended that she should be tested on *Lucid CoPS Cognitive Profiling System.* Among other things, this would provide assessment of her visual memory and auditory discrimination, and thus enable a clearer diagnosis to be made.

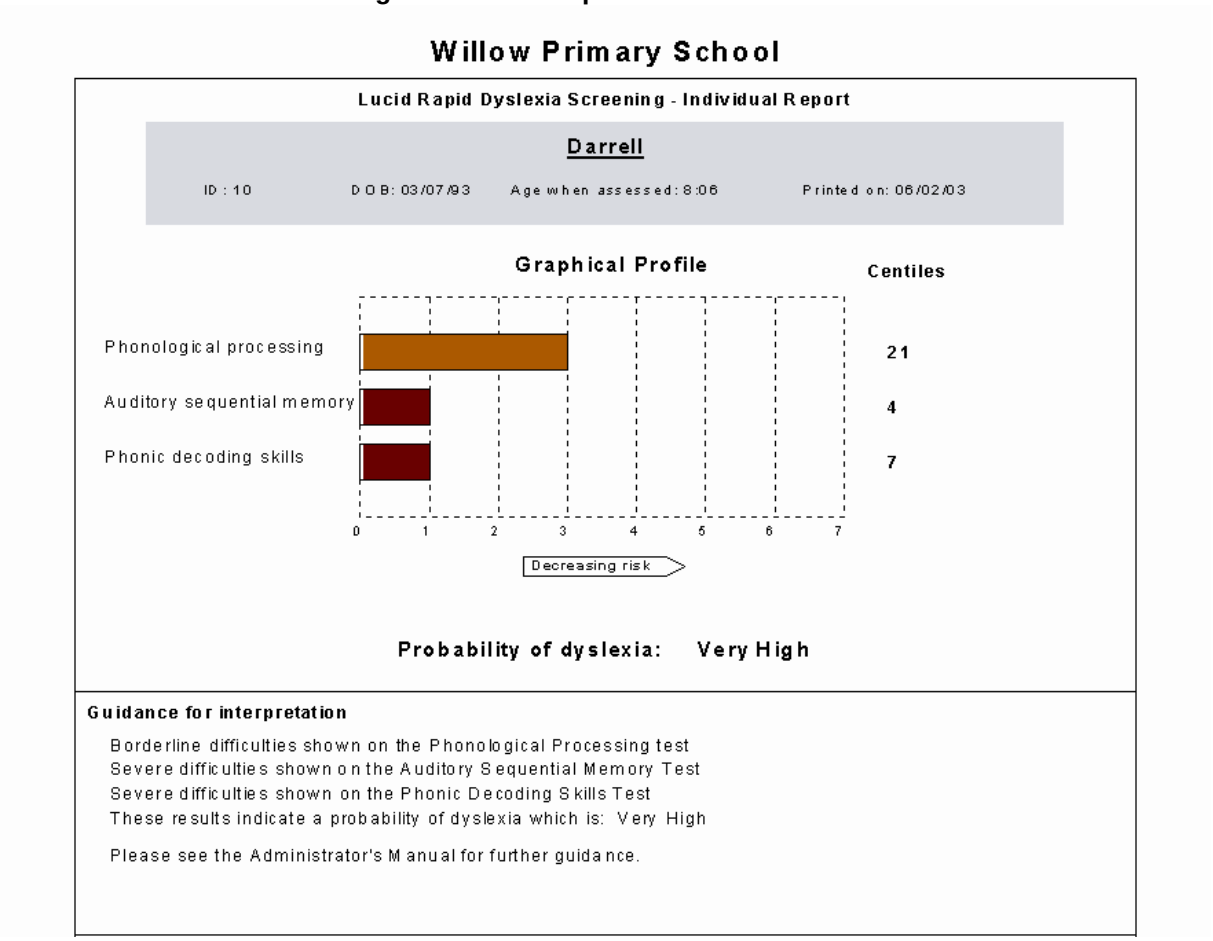
Figure 2. Lucid Rapid results for Gemma.



6.3 Darrell [8 years 6 months]

Darrell is rated by his teachers as 'bright' but he has also been described as 'lazy', 'forgetful', and 'disorganised'. In class discussion he typically shines, but when it comes to getting his work down on paper he is a cause of constant frustration for his teachers. His spelling is particularly poor. Although his reading skills are below average he is usually able to make reasonable sense of what he reads using 'intelligent guesswork'. Darrell's results on Lucid Rapid are shown in Figure 3.

Figure 3. Lucid Rapid results for Darrell.



Lucid Rapid rated Darrell as having a 'very high' probability of dyslexia. Inspection of the individual test results shows that he has very little by way of phonic decoding skills and his short-term auditory sequential memory is very poor. These are classic signs of dyslexia, particularly at this age. His phonological processing ability is a little better, perhaps because of the emphasis on this in the Literacy Hour. The recommendations in Darrell's case would include the following:

- An intensive multisensory phonics teaching scheme needs to be commenced without delay. A list of suitable teaching schemes is given in Section 5.7.
- Darrell will need regular (preferably daily) practice in applying his new phonic skills in both word recognition and spelling. This could be achieved most effectively by use of the computer program *Wordshark 3*.
- Learning the spelling of essential words would be facilitated by use of the program *Superspell*, which provides enjoyable practice.
- Memory training should be carried out, e.g. using the computer program *Mastering Memory*.
- Use of programs for reporting work that incorporate speech feedback (e.g. *Clicker 4* or *Inclusive Writer*) would help Darrell to overcome many of his writing difficulties.

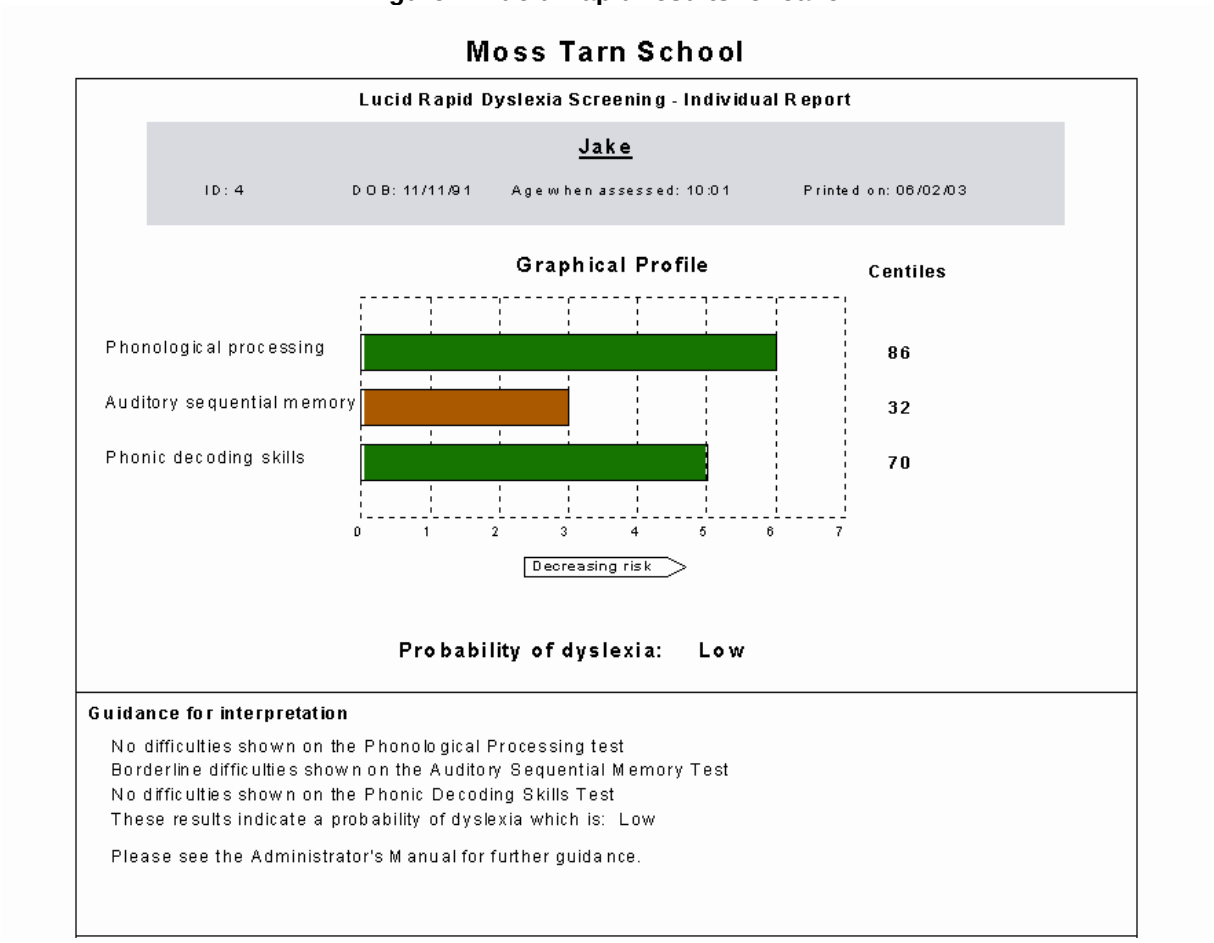
If a more detailed understanding of Darrell's difficulties is required, it is recommended that he should be tested on *LASS Junior*. This would enable a check of his intelligence to be carried out as well as measuring his levels of reading and spelling, which could then be monitored regularly to ascertain progress in response to intervention.

6.4 Jake [10 years 1 month]

Jake is an average boy who prefers most things to reading and writing. He is good at sports and spends most of his time out of doors playing football, cycling and skateboarding. When he is indoors he is inseparable

from his computer games console. In school he is popular but does the minimum to get by in his work. Recent poor school reports have caused his parents to query whether he might have dyslexia and so he was tested on Lucid Rapid and the results are shown in Figure 4.

Figure 4. Lucid Rapid results for Jake.



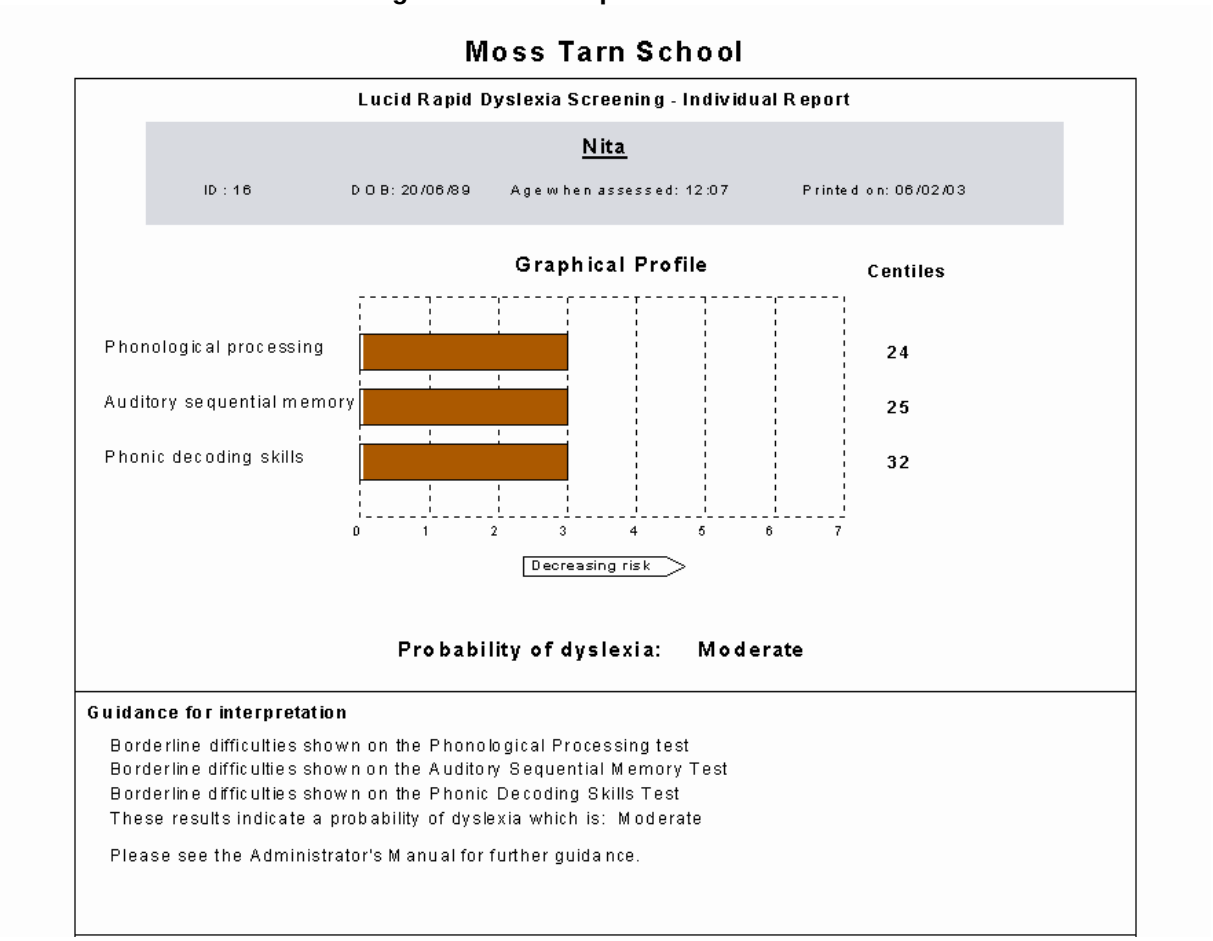
Lucid Rapid rated the probability of Jake having dyslexia as 'low'. It is not difficult to see why. His phonological processing ability and phonic decoding skills are both above average for his age. His short-term auditory sequential memory is a little below average, but by itself this does not give great cause for concern. On the basis of these results there is no cognitive reason why Jake should under perform in literacy and school work generally. In other words, no evidence for dyslexia. Most likely he simply lacks interest in such pursuits and consequently lacks the practice and experience that is essential to develop fluent and efficient reading and writing skills. Jake needs to understand that unless he spends more time reading and writing and puts more effort into his school work generally, he will find the work at secondary school very difficult and slide down to the bottom of the class.

A more detailed understanding of Jake's case could be obtained by testing him on *LASS Junior*, which would also enable regular monitoring of his progress in reading and spelling. If Jake needs assistance in learning material for tests and examinations, the program *Time to Revise* would be very useful.

6.5 Nita [12 years 7 months]

Nita, who has Anglo-Indian parentage, has lived in the UK for about four years. Prior to that she was educated in India and when she first came to the UK her written and spoken English was not strong. Since then she has made good progress and her oral ability in English is now rated above average, but she is still well below average in reading and spelling and her written work fails to come up to expected standards. She is a quiet, well-behaved girl who lacks confidence and does not draw attention to herself. General screening of the whole school year with Lucid Rapid yielded the following results for Nita (see Figure 5).

Figure 5. Lucid Rapid results for Nita.



Lucid Rapid rated the probability of Nita having dyslexia as 'moderate'. Her scores for all three tests were in the 'borderline' category. Her previous inexperience in English, which obviously complicates the interpretation, might account for her rather weak phonic skills, but is a less satisfactory explanation for her weak phonological processing ability and not a tenable reason for the weak auditory sequential memory result. Her results may have also been affected by poor confidence. Nevertheless, there is a bona fide reason for further investigation of Nita's case. She could be tested in more detail using *LASS Secondary*, which should enable a clearer diagnosis to be made, or she could be referred to an educational psychologist for full assessment.

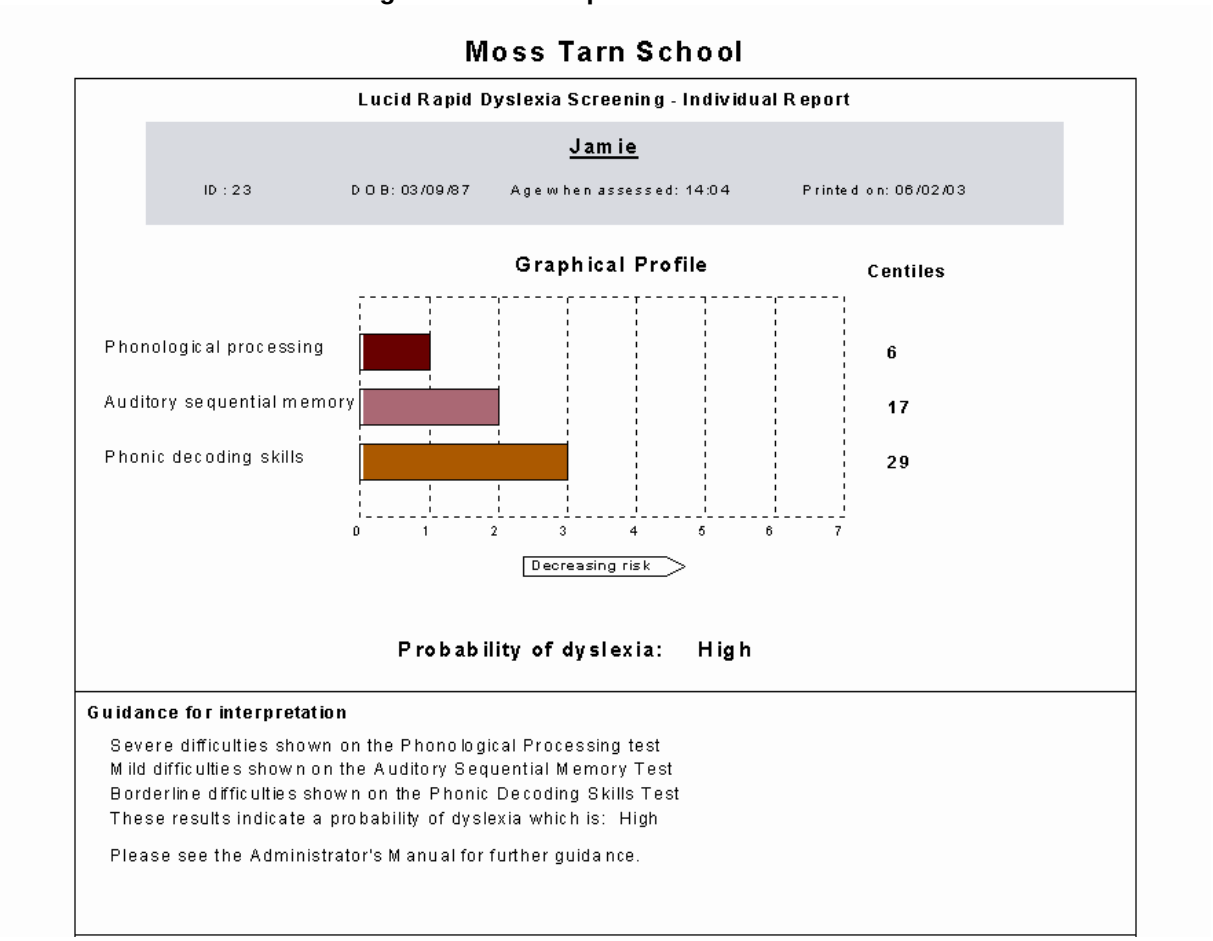
There are several resources that would be beneficial for Nita, including the following:

- Regular practice using the program *Wordshark3* would help to sharpen and consolidate her word recognition and spelling skills.
- Her memory skills could be enhanced by using the program *Mastering Memory*, and the program *Timely Reminders* would help her to revise material for tests and examinations.
- Since her spoken English is good, use of word processing with additional speech feedback facilities, such as *Write:Outloud* or *textHELP! Read and Write*, would be particularly useful.

6.6 Jamie [14 years 4 months]

Jamie has always been a difficult child. At primary school he was not rated as being particularly bright but his learning was also hampered by poor attention together with hyperactive tendencies. At secondary school he had settled down considerably and his concentration was noticeably improved (albeit with occasional dramatic lapses and aggressive confrontations with teachers and other students). Recent results of a cognitive abilities test given to the whole school year suggested that Jamie's intelligence had been seriously underestimated. This caused his teachers to re-evaluate his continuing under performance in literacy work, and query the possibility of dyslexia. Lucid Rapid was administered, and the results are shown in Figure 6.

Figure 6. Lucid Rapid results for Jamie.



Lucid Rapid rated Jamie as having a 'high' probability of dyslexia. The test results show that his phonological processing ability is very poor, and his short-term auditory sequential memory is almost as weak. Jamie's phonic decoding skills are somewhat better, although still lower than would be expected for a boy of above-average intelligence. It is likely that he has been able to compensate for his dyslexic difficulties by using his intelligence, and this is reflected in his phonic skills result. Overall, however, when his above-average intellectual ability is taken into account there is a very marked discrepancy between expected and actual levels of these skills and so the conclusions regarding dyslexia in Jamie's case are pretty clear. In Jamie's present educational situation the most important things for him are (a) access to the curriculum (this will require differentiated worksheets) and (b) development of effective techniques for recording his work. Without these two things he will be unable to achieve his potential in forthcoming examinations such as GCSE. There are several resources that would be beneficial for Jamie including the following:

- Regular practice using *Wordshark 4* or, alternatively, the *Lexia Reading System* computer program would help to develop Jamie's reading skills.
- Like Nita, his memory skills could be enhanced by using the program *Mastering Memory*, and the program *Timely Reminders* would help him to revise material for tests and examinations.
- Use of word processing with additional speech feedback facilities would help Jamie to produce better written work as he could problem-solve his own mistakes; *Write:Outloud* or *textHELP! Read and Write* are especially recommended.

7 Appendices

7.1 References

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7.2 List of computer programs

Name of program	Age range	Publisher
All My Words	5 – 11	Crick
Catch Up	7 – 11	Oxford Brookes University
Clicker 5	4 – 11	Crick
Fuzzbuzz	5 –7	SEMERC
Inclusive Writer	4 – adult	Inclusive Technology
LASS Junior	8 – 11	Lucid Research
LASS Secondary	11 – 15	Lucid Research
Lexia Reading System	9 – adult	Lexia
Letterland	4 – 6	Harper Collins
Lucid CoPS	4 – 8	Lucid Research
Lucid EXACT	11 - 24	Lucid Research
Mastering Memory	8 – adult	CALSC
Phonic Word Builder	5 – 10	Neptune

Name of program	Age range	Publisher
Pages	5 – 11	SEMERC
Rhyme and Analogy	4 – 6	Sherston
Starspell 2.2	5 –14	Fisher-Marriott
Superspell	5 – 16	4MATION
Talking Animated Alphabet	4 – 6	Sherston
Teacher's Cupboard 2000	4 – 9	Sherston
Textease Primary	5 – 11	Softease
textHELP! Read and Write	7 – adult	TextHelp Systems Ltd
Time to Revise	8 – 14	CALSC
Timely Reminders	12 – adult	CALSC
Tizzy's Toybox	4 – 6	Sherston
Wellington Square	6 – 7	SEMERC
Wordshark 4	5 – 14	White Space

7.3 Addresses of suppliers and organisations

For all information on dyslexia contact:

The **British Dyslexia Association**, Unit 8 Bracknell Beeches, Old Bracknell Lane, Bracknell, RG12 7BW. Tel: 0845 251 9002. Fax: 0845 251 9005. Email: helpline@bdadyslexia.org.uk

Computer programs for use in schools and at home are available from **REM**, Great Western House, Langport, Somerset TA10 9YU. Tel: 01458 253636 Fax: 01458 253646.
A free copy of the REM catalogue is available on request. Email: info@r-e-m.co.uk
Many programs can also be tried out by accessing their website: www.r-e-m.co.uk

Advice about, and purchase of, computer hardware and software for dyslexics is available from **iANSYST,** Fen House, Fen Road, Cambridge, CB4 1UN. Tel: 01223 420101. Fax: 01223 426644.
Email: sales@dyslexic.com iANSYST have a very helpful and informative website: www.dyslexic.com

Books on dyslexia, including teaching schemes and study skills, are available from:

SEN Marketing, 618 Leeds Road, Outwood, Wakefield, WF1 2LT. **Tel/Fax:** 01924 871697.
http://www.senbooks.co.uk/ **Email:** (see website)

The Dyslexia Institute provides tuition, psychological and educational assessment for dyslexics of all ages. It has teaching and assessment centres across the UK. Head Office: 133 Gresham Road, Staines, TW18 2AJ. Tel: 01784 463851 Fax: 01784 460747. www.dyslexia-inst.org.uk Email: info@dyslexia-inst.org.uk

PATOSS *(Professional Association of Teachers of Students with Specific Learning Difficulties)*
P.O. Box 10, Evesham, Worcs. WR11 1ZW. Tel: 01386 712650. Fax: 01386 712716.
Website: www.patoss-dyslexia.org

The practical guide called **'***Dyslexia: Assessing the need for Access Arrangements in Examinations'* by Gill Backhouse, Elizabeth Dolman and Caroline Read is available from PATOSS price £7.50, including postage and packing.