

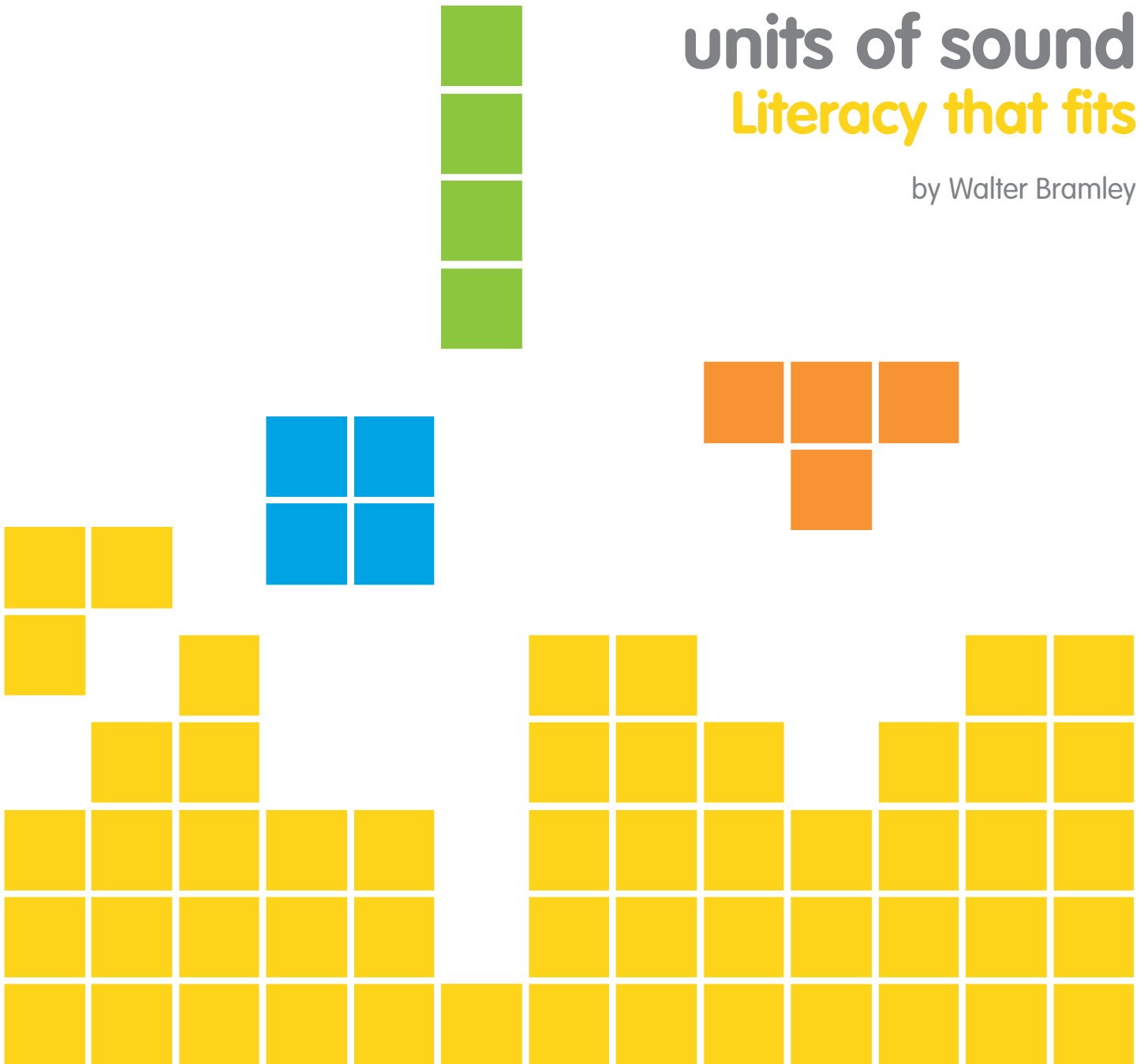
Dyslexia Review

The Journal of The Dyslexia Guild
Autumn 2006

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units of sound Literacy that fits

by Walter Bramley



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Dyslexia Review

The Journal of the Dyslexia Guild

Editorial

Just what is Dyslexia? We find the answer to this question has to be revisited periodically in the light of new research and experiences, whilst remaining fundamentally the same. John Rack has recently updated Dyslexia Action's own definition which we print in this issue, together with the Dyslexia Key Facts, as a useful photocopyable resource. You can also find it on our website www.dyslexiaaction.org.uk

The Dyslexia Guild's authority to issue **Practising Certificates** to teachers who do not have AMBDA but come into the 'or equivalent' category has been confirmed by the SASC committee. This is an important new development for the Guild to offer its members and we will be working very closely with the Training Department to ensure CPD and 'top-up' courses are available, so that Dyslexia Action offers the complete service. John Rack gives a comprehensive overview of this issue in his article.

We have two changes to our Editorial Committee for this issue. Jan Townend and Martin Turner have contributed enormously to Dyslexia Review over the years with their writing and advice. I thank them both and will miss them greatly. Happily I know that Anne Sheddick and Steve Chinn, our two new members, will bring their own strengths to the team. - see p 33 for their profiles.

Margaret Rooms

Editor: Margaret Rooms

Editorial

Committee: Steve Chinn
Estelle Doctor
John Rack
Anne Sheddick
Margaret Snowling

Cover: Units of Sound: Literacy that fits

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Dyslexia Action

Park House, Wick Road, Egham, Surrey, TW20 0HH

T 01784 222 300

www.dyslexiaaction.org.uk

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What is dyslexia?

John Rack

Dyslexia Action s Definition

Dyslexia is a specific learning difficulty that mainly affects reading and spelling. Dyslexia is characterized by difficulties in processing word-sounds and its effects may be seen in spoken language as well as written language. The current evidence suggests that these difficulties arise from inefficiencies in language-processing areas in the left hemisphere of the brain which, in turn, appear to be linked to genetic differences.

It is life-long, although its effects can be minimised by targeted literacy intervention, technological support and adaptations to ways of working and learning. Dyslexia is not related to intelligence, race or social background. Many dyslexic people have strengths in tasks that involve creative thinking, logical reasoning and working with visual materials. Dyslexia varies in severity and often occurs alongside other specific learning difficulties such as Dyspraxia or Attention Deficit Disorder resulting in considerable variation in the degree and nature of individuals' strengths and weaknesses.

Dyslexia Action s Definition in more detail

Dyslexia is a specific learning difficulty, mainly affecting reading and spelling. About 10% of the population are affected by dyslexia to some degree.

Dyslexia tends to run in families; it is known that there are several genes that contribute to a genetic risk of dyslexia. Brain scanning studies suggest that, in dyslexic people, the connections between different language areas of the brain do not work as efficiently as they should. However, these differences are not linked to intelligence, and there is evidence that many dyslexic people have strengths and abilities in tasks that involve creative and visually-based thinking.

Dyslexic people usually find it difficult to analyse and work with the sounds of spoken words, and many have difficulties with short-term memory, sequencing and organisation. This means that it is more difficult for them to learn how spoken sounds map onto letters, which affects the ability to spell and the ability to decode or sound out words. Although many dyslexic people can learn to use phonic decoding skills they typically need a great deal of instruction, and they often never reach a stage where these skills are fully automatic.

Dyslexia is not the same as a problem with reading. Many dyslexic people learn to read, but have continuing

difficulties with spelling, writing, memory and organisation. There are also people whose difficulties with reading are not caused by dyslexia. Dyslexia often causes problems in maths: many dyslexic people have difficulties with arithmetic and with learning and recalling number facts.

The degree to which dyslexia causes problems, in learning and in everyday life, depends on many factors. These include the severity of the dyslexia, the other strengths and abilities that a person has, and the kind of teaching and support they may have been given.

Dyslexia need not be a barrier to achievement and success if it is properly recognized within society, and steps are taken to provide suitable teaching and training along with compensatory strategies and resources.

Dyslexia facts

What is dyslexia?

- Dyslexia is a specific learning difficulty, mainly affecting reading and spelling.
- Dyslexia is life-long; it is just as common in adults as it is in children, although the impact of dyslexia varies at different stages in life.

How common is dyslexia?

- Dyslexia is the most common of the specific learning difficulties, affecting ten percent of the population, to some degree.
- In schools, one child in ten is dyslexic, an estimated 1.2 million children across the UK, and an average of 2 to 3 children in every classroom.

Is dyslexia a disability?

- For the purposes of the Disability Discrimination Act, dyslexia may be regarded as a disability. This means that there is a legal duty on employers and on educational institutions to make reasonable adjustments for dyslexic people, so that they are not denied the opportunities available to others.
- In law, dyslexia can be classed as a disability, when it is so severe that it impacts on day-to-day life.
- Dyslexia need not be a barrier to achievement and success, if it is properly recognized within society, and steps are taken to provide suitable teaching and training along with compensatory strategies and resources.

What causes dyslexia?

- Brain imaging studies have shown differences between dyslexic and non-dyslexic individuals in specific areas of the brain that are involved in language processing.
- Several genes have been identified as contributing to dyslexia. If a parent is dyslexic there is a 50% chance that their children will have similar difficulties.
- There are many factors that affect reading and spelling, for example, motivation, the quality of teaching, hearing, eyesight and motor-skills. These factors may influence dyslexia, but they do not cause it.

What are the possible negative consequences of dyslexia?

- Dyslexia can be very frustrating and demoralising since so much in life and in school depends on having effective reading and writing skills.
- People with dyslexia can feel undervalued or unfulfilled if they can't access the same opportunities and gain the same recognition for their talents as those who are not dyslexic.
- A lack of self-confidence, low self-esteem, or behavioural difficulties more generally can arise as a consequence of dyslexia, if it is not recognised and addressed.
- Poor reading skills can have an effect on children's development of vocabulary and general knowledge since so much new information is encountered through books.

What can be done about it?

There are two keys to overcoming the effects of dyslexia:

- Early identification and structured language teaching. A wealth of evidence shows that structured teaching of literacy skills is most beneficial at an early age. At all ages, it is possible to improve literacy skills by using appropriate methods, but it is much easier to make a difference at an early age.
- Compensatory Strategies. In adulthood, and in the later stages of schooling, the key to success is through an understanding of the individual pattern of strengths and weaknesses and of the consequences of that for learning and working in different ways. This enables the dyslexic person, and those who teach and support them, to develop coping and compensatory strategies.
- The best chances of success are when direct structured teaching and compensatory strategies are used in combination; either one on its own is not likely to work.

What is a specific learning difficulty?

- Someone is said to have a specific learning difficulty if they have a distinctive pattern of strengths and weaknesses in learning and information-processing

skills. This means that they have normal or relatively good skills in most areas of thinking, learning and problem-solving, but specific weaknesses in other areas.

What kinds of specific difficulties are usually seen in dyslexia?

- Most dyslexic people have difficulties working with the small units of sound that make up spoken words, and in understanding how those sounds map onto letters.
- Some dyslexic people find it difficult to recall the names of things quickly; they have a difficulty in 'word-finding' or show slow naming speed. This means reading is often slow, and it may also lead to some difficulties in spoken expression.
- Most dyslexic people have poor short-term memories; they often remember events well, and can often retain details and facts for a long period, but they have difficulty remembering lists or spoken instructions that they have just heard.
- The difficulty with short term memory (which is often called Working Memory) can affect comprehension of spoken and written language, many aspects of mathematics and organizational skills in general.

Do dyslexic people have special abilities and talents?

- Many, but not all, dyslexic people have strengths in tasks that involve creative thinking, logical reasoning and working with visual materials.
- Many, but not all, dyslexic people reason and express themselves very well using spoken words, but have a barrier with the written word.
- The available research evidence suggests that dyslexic people vary just as much as non-dyslexic people in the areas of ability that are unrelated to the processing of word-sounds.
- Dyslexic people are likely to find those careers where there is a heavy emphasis on literacy and working memory skills to be more challenging and less rewarding. Many dyslexic people therefore follow paths into creative, technical and practical fields.

At what age can dyslexia be identified?

- Risk signs for dyslexia can be identified as young as age 4, but it is usual to wait until formal reading instruction has started. By age 7, is usually possible to know whether or not someone is dyslexic.

What about intelligence?

- Dyslexia is not related to intelligence. Dyslexia can occur at any level of intellectual ability. It may occur alongside other learning difficulties or in those who have exceptional talents and abilities in other aspects of learning.
- Dyslexia is sometimes more noticeable in people who have particular talents and abilities, but it occurs across the whole range of abilities.

Is dyslexia the same thing as a reading difficulty?

- No, many dyslexic people learn to read well, but have continuing difficulties with spelling, writing, organisation and working memory.
- Some people have reading difficulties that are not caused by dyslexia.

Is dyslexia more common in males than females?

- No, but more boys than girls tend to be identified as having problems in school because of dyslexia.

Is dyslexia related to problems with vision?

- No, the majority of dyslexic people have normal vision, and many do particularly well on visual tasks. Of course, problems with eye-movement control and problems in the visual system can affect reading generally.

Is dyslexia related to clumsiness?

- No, many dyslexic people are good sportsmen, talented artists and able to do practical tasks with skill and accuracy. Difficulties with co-ordination are more common in dyslexia because of the overlap between dyslexia and dyspraxia. (See the list of other specific learning difficulties for more information.)

Is dyslexia linked to left-handedness?

- Not in any simple way, since there are many left-handed people who are not dyslexic and many right-handed people who are.

Are there different types of dyslexia?

- There are differences in dyslexia, and there are other specific learning difficulties that overlap with dyslexia and may occur with it. This means that, for example:
 - Some people are dyslexic and have additional problems with attention and concentration
 - Some people are dyslexic and have additional problems with sequencing and co-ordination of movements
 - Some people are dyslexic and have additional problems with language comprehension and expression.
- It is very common for people who have dyslexia to also have characteristics of other specific learning difficulties.
- It is important to recognise the different factors that contribute to dyslexia and to provide support that matches the particular profile of each individual.

Can dyslexia be caused by bad teaching?

- No, but the effects of dyslexia can be minimised by good teaching.
- Many people who are mildly dyslexic learn well without the need for individual support, provided they are given good structured phonics-based literacy teaching at the start of their education.
- If reading and spelling have not been well-taught, it

can lead to many of the same problems as dyslexia, and similar approaches to teaching are likely to be effective.

What about other languages?

- Dyslexia has been found in many different languages. It is not confined to any particular language or culture.
- Learning to read and spell seems to be less of a problem in languages with a more regular spelling-to-sound system, such as Spanish or Finnish. However, dyslexic people still have difficulties in these languages, for example with speed of reading, spelling organisation and memory.

Can dyslexia be cured?

- No, dyslexia is life-long, but the effects of dyslexia can be minimised by targeted, structured literacy teaching, the development of compensatory strategies and the use of alternative methods of working using, for example, Information and Communications Technology.

What about complementary therapies?

- There are many claims for complementary therapies which involve re-training of basic sensory and neurological processes to address the underlying cause of dyslexia. There are various programmes that use activities such as listening to special sounds, watching coloured lights or performing special exercises. There is no scientific evidence that any of these programmes make a significant difference to dyslexia or to reading abilities. Some may have some general effects, for example by promoting a more positive attitude or encouraging relaxation. Complementary approaches may have some benefits, for some people, when used alongside direct teaching of skills and/or the use of adaptations and compensatory strategies. Our advice is to be very cautious about any approach that claims to 'cure' dyslexia.

What are the other common specific learning difficulties and how do they affect reading?

- Developmental Co-ordination Disorder, or dyspraxia, is a difficulty with the timing and co-ordination or movements. It can be associated with a degree of clumsiness in everyday life, or may be confined to certain kinds of movements, for example where speed and precision of movement is important. Dyspraxia often affects handwriting and speed of writing and this is sometimes called dysgraphia. Difficulties may also be seen in the organisation of written work and in dealing with procedures or the layout of working in maths.
- Attention Deficit Disorder (ADD) is a specific difficulty with concentration and attention, and, sometimes, with the planning and monitoring of actions more generally. It is thought that there are different subtypes of ADD,

some involving a high degree of impulsiveness and hyperactivity. Some people with ADD have no difficulties with reading and spelling at all, whilst others have problems with reading comprehension and with planning and organising written work.

- Specific Language Impairments (SLIs) are evident when there is a delay in the development of one or more aspects of oral language. This may involve difficulties with the speech sound system which results in words being pronounced incorrectly (phonology); difficulties with structuring sentences and in use of grammar (syntax) or difficulties in understanding and interpreting language (semantics and pragmatics). Many children with SLIs also have difficulties with written language, as a consequence of their spoken language difficulties. Some of these kinds of difficulties overlap considerably with those seen in dyslexia, others have much more influence on reading comprehension or on those writing skills which are not connected with spelling.
- Dyscalculia is a specific difficulty with number concepts which leads to particular problems with arithmetic, but also affects areas of daily life such as telling the time, handling money and making travel arrangements.
- There are other specific learning difficulties such as non-verbal learning difficulty, but these have less of an impact on literacy skills and are, at this stage, less well understood than the other patterns that have just been described here.

- There are many people who show features of two or more of these patterns of specific learning difficulty.

Does Dyslexia Action work with all the specific learning difficulties, or just dyslexia?

- Dyslexia Action works with those who have dyslexia AND with those who have literacy or numeracy difficulties that are related to other kinds of specific learning difficulties.
- A diagnostic assessment at Dyslexia Action does not just test for dyslexia. It examines literacy and numeracy skills and investigates the factors that may be affecting those skills. It will focus on the pattern of strengths and weaknesses usually seen in dyslexia, but will also consider the other major specific learning difficulties.
- The approaches used by Dyslexia Action teachers are also useful for those with literacy difficulties that are more related to social or environmental factors - for example those who were simply not taught - although, usually, those people who have poor literacy skills, without any kind of specific learning difficulty, can learn well with less-intensive methods.

John Rack

John Rack is Head of Research and Evaluation at Dyslexia Action



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The athlete and the triage nurse

Martin Turner

Three zones of explanation

Three zones of theoretical concern remain relevant to dyslexia studies. Though the majority view in dyslexia studies, and the one to which I adhere, is the phonological deficit account of dyslexia, there are two other important contrasting contributions: those associated with the university cities of Sheffield and Oxford.

That the majority consensus for phonology remains preponderant rather than overwhelming is likely to continue while many phenomena, familiar to affected individuals and their practitioners, proliferate unexplained by any phonological hypothesis. This is not to say that they cannot be explained, just that the work of explanation seems not to get done. For instance, it is often complained that dyslexic individuals are poor at personal organisation. Now, this could perhaps be explained in terms of the mental lists that those of us not dyslexic carry around in our heads, ticking off as we go through the day, but which dyslexic individuals, for working memory reasons, are unable to retain for long. But this is a purely common sense explanation and, so far as I know, has never been the subject of controlled experimentation.

The first body of theory which remains highly relevant to this discussion is that associated with Keith Stanovich and colleagues and takes the form of a strong or narrow version of the phonological deficit hypothesis. It may therefore be regarded as having most to answer for in terms of leaving phenomena unexplained. By contrast, the views associated with Sheffield (e.g. Fawcett 2001) and Oxford (e.g. Stein 2001), while accepting the general validity of the phonological account of acoustic processing, seek to offer a more general explanation, widening the base to include perceptual processing (the magnocellular hypothesis) or the motor and balance functions associated with a particular brain structure (the cerebellar hypothesis).

Explaining observations

There is no doubt that these views appear to offer ready-made explanations of observable phenomena. For instance, one young researcher to whom I showed the Visual Matching subtest of the Woodcock-Johnson Psycho-Educational Battery - 3rd edition (WJ-III) (Woodcock et al) - readily identified this as a test of fast visual search and a challenge to the magnocellular system. The work of Stanovich, however, has been remarkably subversive of the whole assessment enterprise. Indeed, the diehard 1970s perspectives of

dyslexia-doesn't-exist and IQ-is-irrelevant have been given a new lease of life by his recent work.

The work of explanation is carried on - but on a surprisingly subjective basis. The Visual Matching subtest has uncannily high diagnosticity, as attested by data of my own on 816 subjects who obtain, on average, standard scores of 88.3 (below average). This test requires pairs of numbers to be identified repeatedly within rows and alternative sequences to be compared (71, 17). Thus, an equally attractive solution arises from the necessity to identify alternative (and, to the dyslexic person, highly confusable) sequences. The omnipresence of sequencing difficulties in dyslexia has thus far elicited more interest from neuroscientists than experimental psychologists, though - of course - a linguistic, indeed phonological, explanation is not far to seek. All numbers and letters (referred to as 'numlets' by Martha Denckla in the US because they are a common source of difficulty) have internal phonological representations which are manipulated, as codes in speech memory, when we read, match, sort or otherwise identify them. Because the coding or storage-and-retrieval aspects of these routine procedures is complicated and laborious for dyslexic persons, such sequencing activities are weakened by the subversions of their phonological base.

Channel 4 Dispatches

Most controversies are spurious and the interest in them morbid. It is my wish as far as possible to avoid the recurrent hot-spots of short-lived controversy that still flare up in the otherwise impressively respectable world of modern dyslexia. In the case of the Channel Four Dispatches programme screened on 8th September 2005, this is not hard to do. At first the excellent, perceptive coverage of research included by the programme makers seemed to be belied by a top-spin of controversy apparently added by a sub-editor who had not viewed the programme.

But a closer examination of the programme content showed that this was not so. The narrow phonological deficit hypothesis advanced by Keith Stanovich, who was interviewed in the programme, led to the claim that, as a similar phonological deficit underlay all reading difficulties, the distinction between dyslexic and non-dyslexic poor readers dissolved and the 'waste of resources' of the privileged IQ-selected group of dyslexic poor readers was therefore a mis-allocation of resource attention away from the 'garden variety' of generic poor readers.

The role of intellectual measurement

IQ or the estimate of general intellectual ability lies at the heart of this discussion. A minor debate duly 'erupted' following the transmission of the programme, with many stifled yawns at this essentially 1970s issue, complete with training programmes in dyslexia-doesn't-exist for long-suffering teachers. That the programme's viewpoint flew in the face of much genetic research was soon pointed out in *The Psychologist* by Professor Rod Nicolson:

The fact that 50 per cent of the variance in dyslexia is genetic means that dyslexia does have a clear and distinct basis, and cannot be a myth. Full stop. (Nicolson 2005 p658)

This is right. Word recognition, dyslexia and intelligence itself have all nowadays been assigned clearly identifiable genetic components. But it is the IQ basis of Stanovich's argument that never seems to be clearly addressed. If Stanovich is right, then the assessment methodology of the vast majority of practitioners across the world is wrong. On the other hand, if Stanovich is wrong, then not only is dyslexia safe from his particular charge of non-existence but IQ is an essential component in detection methodology. So let us see in what this difference consists.

It may be desirable to simplify somewhat the Stanovich argument, to see how it is constructed. Essentially, this consists in two themes:

1. A phonological deficit is the sole relevant explanatory dimension in literacy-learning difficulties
2. IQ is just another variable.

Note that both arguments are needed. The first point, that there is only a single variable of importance, rather implies that phonological development is at variance with other development and so looks like reintroducing the need for IQ. The second is thus essential to bolster the first.

To say that IQ is just another variable is to say that assessment might just as well evaluate literacy in relation to, say, persistence in long-distance running or musical ability. If you define dyslexia in such terms, then your two groups, dyslexics and non-dyslexics will differ only in (say) musical ability. As Stanovich likes to put it, the discrepancy-defined and non-discrepancy-defined groups differ only in IQ. And IQ is just another variable.

Flaws of reasoning

Unfortunately, both these arguments are wrong. We have seen that the narrow version of the phonological deficit theory is, so to speak, tongue-tied. It neither addresses nor seeks to explain the range of diagnostic phenomena seen on a daily basis by those who work in this area;

weaker versions of the phonological deficit theory, too, are forced to regard all these as co-morbidities.

IQ is not just another variable. Like many others, including (sadly) some academic psychologists, Stanovich and his colleagues seem out of touch with the newer intelligence literature. Consider the following:

The relationship between [intelligence] test scores and school performance seems to be ubiquitous. Wherever it has been studied, children with high scores on tests of intelligence tend to learn more of what is taught in school than their lower-scoring peers ... intelligence tests ... are never the only influence on outcomes, though in the case of school performance they may well be the strongest (Neisser et al., 1996 pp82-83).

It is therefore somewhat with surprise that one reads the following:

There is no logically or empirically interpretable sense in which we can say that low intelligence (intelligence being a panoply of cognitive processes) causes poor reading. (Stanovich, 1996, p155)

This argument is in danger of collapsing under the weight of its own absurdity. Of course intelligence causes learning; learning includes language skills; and language includes reading. If intelligence brings about learning generally, how could it not make a large contribution to subordinate aspects of learning, as the contemporary consensus maintains, such as reading, itself a panoply of cognitive processes? It is precisely because it is such a pervasive, explanatory variable, typically swamping any data on skilled cognitive performance that we measure it: we seek to control it.

This is the logic of experiment. To omit the assessment of ability causes much more difficulty than to include it. Like the variable of age, ability should be taken into account in evaluating an individual's performance: Are reading and spelling (for instance) in the right zone for a child of this age and ability? It is superfluous to complain that the concept of intelligence does not provide the specific process model that explains poor reading (Stanovich, *ibid.*, p155).

No doubt, in future, the present indirect assessment of dyslexia - an assembly of contrasts - will give way to a litmus test of some direct, probably biological, kind that will enable us to say that dyslexia is present or absent; no doubt in due course all the processes that intrigue us at present will fall into place in a fully-specified model of intelligence. At present, the phonological processing model performs ill where the IQ model performs well. What we have, and what is well accepted by those actually responsible for people's lives, is a series of statistical tests applied to a diverse set of data obtained

on an individual basis among which unexpected contrasts arise. Moreover, this is a commonsense view. To reverse it in sleight-of-hand fashion (Stanovich refers to the 'verbal sleight-of-hand' of 'traditional definitions' - Stanovich 1996 p160) creates bafflement in commentators, who often fail to see the legerdemain.

Stanovich repeatedly makes three points in support of his two themes, typically festooned with literature references. As the issues seem more a matter of logic than experiment, the accompanying rebuttals are offered without unnecessary references:

1. Children with literacy-learning difficulties do not show different diagnostic features (processing, neuroanatomical differences) according to whether they have higher or lower IQ.

Response: No. Why should they? If dyslexia is uncorrelated with IQ, then one would not expect the phenomena to alter with the level of IQ.

2. Discrepancy-defined dyslexic individuals and age-inappropriate generic poor readers do not, as groups, show significantly different heritabilities.

Response: This remains far from clear. In the decade since Stanovich wrote, they have increasingly done so.

3. Dyslexia is not strongly correlated with intelligence levels in the reading disabled population.

Response. This is exactly why intelligence is measured. IQ is not a diagnostic tool but a device to ensure that diagnosis is fair with regard to all levels of general ability. We measure both impaired and unimpaired abilities.

The collapsing athlete

Stanovich offers the analogy of the athlete who unexpectedly collapses with a heart attack. Though we do not expect someone fit to suffer a heart problem, actually the two are unconnected and, if we knew in advance about the structural defect of the heart, the collapse would be expected.

The logic here is that the athleticism is like IQ; the structural defect is like phonological awareness; the collapse is like the failure in literacy skill. The analogy fails because dyslexia is much more common, and gradual, than heart attacks among athletes. However, in dyslexia research, high IQ (athleticism) is not relevant, but general fitness is. A heart defect might just be one defect in a general physiological collapse occasioned, for instance, by catastrophic radiation damage or auto-immune breakdown.

Actually, to relinquish the isolating mechanism of regression-based methods is rather as if a triage nurse in an accident and emergency department of a hospital were to claim that the only difference between one victim of a motorway pile-up and another is in the intensity of their injuries - just another variable - and to continue to treat them all in strict order of rotation.

The current nostalgic and anachronistic revival of dyslexia-doesn't-exist controversy is simply unworthy of serious professional and scientific attention. The views of Stanovich, Siegel, Fletcher, Lyon and others will, in my belief, find a steadily reducing uptake in future; and the claim that general ability is irrelevant in the analysis of individual learning performance will disintegrate as its contradictions become as apparent as its inutility.

Equality and inclusion

It is the claim to be more inclusive that, no doubt, grounds the illusion of superior analysis. Yet no method at all emerges from this critique of discrepancy-based methods. (To avoid the statistical dilemma between simple-difference and predicted achievement, I refer to the regression method of evaluating achievement. No resulting discrepancy, however, does more than identify underachievement: there is then a second, processing criterion for dyslexia.) There is no guidance as to what is an inadequate level of phonological capacity or if this, too, is supposed to be discrepant from other aspects of development. Since clinical practice often throws up examples of individuals with poor phonological processing and good literacy skills, and vice versa, we should presumably soon find ourselves, if there were some phonological criterion, resourcing interventions for children with perfectly adequate achievement. If all poor readers are to be eligible, alike, for an indifferent phonics-based intervention, then we truly are back in the 1960s, since there seems to have been very little movement in general literacy standards since the pioneering surveys of Joyce Morris (e.g. Morris, 1966). Under one size fits all, the massed ranks of such children face the same institutional inertia now as they did then.

The author of the British Ability Scales and Differential Ability Scales, Colin Elliott, and I attempted a few years ago to compare the standardisation data for the Word Reading test, a test of word recognition, across two editions, since many of same items, fitted to a Rasch item-response model, had been given to samples of UK children in 1975-6 and 1995-6. The analysis remains unpublished but essentially word reading abilities across samples taken twenty years apart were highly similar (Elliott, personal communication). What can be said of the efficacy of the special needs industry that has arisen since then (whilst not ruling out that the current acceptance of synthetic phonics may be improving the initial teaching of literacy), for the most part holding just

the ideology that Stanovich would approve of, if so little impact has been made on the epidemic failure rates in literacy generally in the UK? And what are the prospects for poor readers and spellers today, undifferentiated by IQ or type of reading difficulty, none of whom may be regarded as underachieving, if these one size fits all views are given precedence?

Rod Nicolson feels that the errors of the Stanovich view arise out of the extreme version of the phonological deficit hypothesis and a too-exclusive concentration upon reading (Nicolson, 1996, pp194-5). I agree, but cannot really believe that

Stanovich ... has also come close to destroying the very concept of dyslexia. (Nicolson, 1996 p194)

The paying public

Fortunately, those most concerned with the progress of children remain their parents. Parents have been increasingly energetic in organising, largely through the voluntary sector, services relevant to their children. The success and validity of these methods are recognised by the public, by the courts and, yes, by the maintained sector. The result, in a democracy, is that what works has a very high, if pragmatically derived, value. Accordingly, the views of dissident academics have a minimal impact upon what is now, in effect, an industry, settled and productive.

On the other hand, there is a keen interest in technology, so that standards may be raised and these services constantly improved. Because of their direct contact with reality and responsibility for children, most participants remain unmoved even by plausible theoretical objections. In the words of the 14th century Persian poet, Hafez,

According to their merits people comprehend.

Martin Turner

Martin Turner was formerly Head of Psychology at the Dyslexia Institute and is now an independent chartered psychologist.

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E msaunders@dyslexiaaction.org.uk

Units of Sound: Literacy that fits

Margaret Rooms

This article assumes a basic knowledge of the programme Units of Sound used in schools and colleges. For readers unfamiliar with the programme see Units of Sound v4 Dyslexia Review Summer 2004.

Introduction

Units of Sound has migrated through four versions since 1995 when it first moved to interactive CDROM format from audio cassettes/books. It is used in schools and colleges throughout the UK, and increasingly by English speaking communities across the world. Each version increased the proportion of independent work possible and provided more feedback for students. The ultimate teaching situation we were trying to support was the class in the IT suite with one or two support assistants, where teacher time is rationed, and specialist teacher time is probably non-existent. The next logical step from there is one where there is no teacher or support assistant at all - the home! *Units of Sound: Literacy that fits* has been designed for that very purpose.

Dyslexia Action's first literacy programme for use in the home by parents was *DIY - readers support pack for parents* (Dyslexia Institute 2002). This material covers the ground from no letter-sound correspondence through to cvc words. The DIY pack was based on Walter Bramley's *Active Literacy Kit* (LDA) and so *Units of Sound : Literacy that fits* is the natural progression route for parents and children who have completed the DIY pack.

Working in the home

The home can provide a good working environment for someone wishing to improve their literacy skills. Positive factors include:

- a quiet place to work free from peer pressure
- friendly support - a parent or helper
- no time pressure
- work when you want for however long you want
- privacy
- independent work.

I have to ask the question though - why would anyone want to work on literacy skills on their own at home when there is so much support available at school? This question does not have an obvious answer, but is perhaps the difference between theory and practice.

In theory all children with literacy difficulties are identified and their needs addressed within school. In practice, children fall through the net. In practice, need always outstrips supply even with the new wave of support available via support assistants.

Children fall through the net in primary school, and then again when they reach secondary education. If they get

as far as FE they can fall through the net there as well. Our adult population has far too many people with literacy skills below those of year 7 in school. More teachers are trained, more literacy initiatives funded, but still, people fall through the net.

My hunch (unproven) is also that curriculum support is what eats up the literacy support time once children leave primary school. This voracious creature is ever-present making more and more demands. In 1995 when we evaluated Hackney Morning (Rack and Rooms 1995) literacy provision we identified two reasons why the model was showing such positive results which were available for anyone to provide. One was that the lessons always happened from the first week of term to the last: they were never cancelled due to meetings, staff cover, INSET, illness, end of term production, etc etc. The second reason was that because the literacy support and curriculum support were delivered by different people (Dyslexia Institute and school respectively), they each had ring-fenced time and couldn't encroach on each other's territory. In other words - literacy skills rise providing time is spent teaching those skills.

Teaching models

So with *Units of Sound: literacy that fits*, why are we bypassing the teachers? Well that isn't necessarily how the material will be used. This is a flexible tool which can be used in many different ways. If students using *Units of Sound* in a school or teaching centre had the programme at home as well, progress could be faster and the extra practice work covered independently. The teacher would monitor the progress, carry out the check-reading exercise and generally keep the student on track.

Another model would be for a teacher to start working with a student for three or four lessons with the parent or helper present. The teacher would ensure the student knew the processes involved, such as using the recording feature, and parents or helper would be shown the check-reading exercise. The student would then work from home with perhaps occasional support from the teacher as needed. This would be a more economical model than working with a teacher weekly and could be suitable for students who live a long way from support.

The third model is of course, stand alone. The parent or helper supports the student without input from a teacher. Can this work and is it something we should recommend? I will come back to this question.

The programme

Units of Sound: Literacy that fits is essentially the same programme as the one used in colleges and schools.

With the school/college version the teacher's role is to:

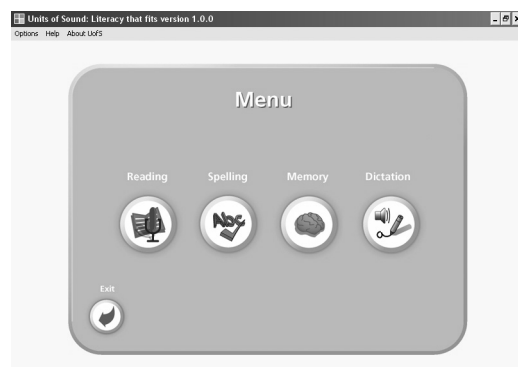
- A. Show the student how to use the programme and ensure good practice follows
- B. Tailor the placement test to the student's literacy level
- C. Conduct the check-reading exercise
- D. Manage the speed at which the student works through the programme.

All of these functions assume an understanding of literacy teaching. So how have we overcome the (possible) absence of these skills in the home? I say 'possible' because of course, many parents/helpers do have skills in teaching and there are always intuitive adults who make natural teachers. It is however with the stand-alone model that we need to address the specifics listed above.

Options



This is the opening screen to the programme. If you click **Help - Audio** from the menu bar you hear spoken information on what to do on this particular screen. This facility is available on every screen in the programme so that at any time, help for the student or parent/helper is only a click away. There is no scrolling to find the bit you want - each message is tailored to what is on that screen. This same information is available as a pdf document from the program group. This addresses A in the list of teacher's roles above. If you click on the teacher's hat it takes you through to the programme options screen as used in school and colleges.



This is how students using the programme at home as well as elsewhere will access the material.

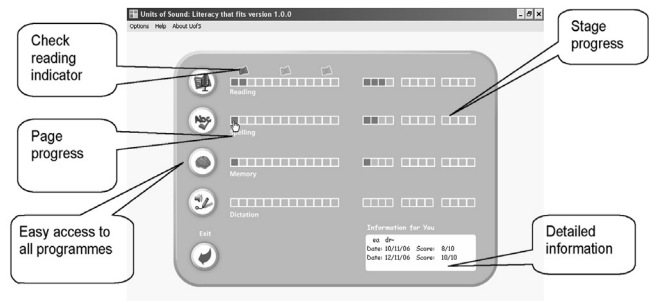
Log-in

If you click on the Home option (fig 1), you go to the log-in screen where up to three names can be entered. This is to allow for more than one person in a family using the programme.



From the log-in screen you move to the main navigation screen - Programme Management.

Programme Management



This is where you access placement, the four teaching programmes and where records are shown.

The squares or 'pips' on the left represent the pages of the programme in the section the student is currently working on. The three sets of four squares on the right represent the three stages of the programme. Coloured squares show work that has already been covered. A pale colour square means that page has been covered only once so far.

Placement

The first time a student clicks on either Reading or Spelling the programme takes you automatically to the placement test. This is where the next big change occurs. Because a parent/helper may not know very much about the expected start for the programme, this

placement test has been designed assuming no prior knowledge of literacy levels.

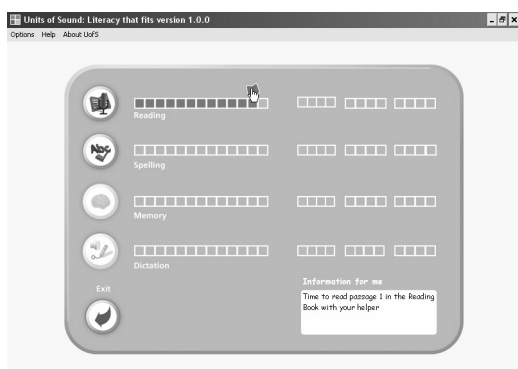
The student is first of all presented with 12 words in turn which 'step' through the full range of the programme.

men	joy	these
frown	another	thirsty
duty	produced	detective
campaign	immediately	anxiety

As soon as an error is made on one of these words, the process stops and drops down to the next layer of words which identifies the student's starting point. There are thus 12 entry points to the programme rather than (theoretically) 148 on the school/college programme. It is inevitably a slightly blunter instrument, as you would expect.

At the end of the placement test you return to the Programme Management screen - or pips screen as we have come to call it during development. Clicking on the Reading icon again will this time take the student to their entry point in the programme. In this way, point B from the teacher's role list has been addressed.

Check-reading



Back on the 'pips' screen there are book icons to show when a check-reading exercise is needed. There is a separate Reading Book containing all the continuous passages used for check-reading. If you hover the mouse over the book icon the number of the passage to be read appears in the information space, bottom right. Advice on check-reading is given at the beginning of the book. With the home version, check-reading consists only of reading these passages. There are notes pages in the book for the parent/ helper to make a note of any difficult words or patterns that need to be covered again. If the student does not read the check-reading passage confidently and accurately, they are advised to redo the reading pages in the programme from the previous book icon. These pages are accessed by clicking on the actual squares rather than the main programme icon. In this way, point C in the teacher's role list is covered.

Rate of work

The Spelling, Memory and Dictation programmes are easier to manage with regards to the rate a student works through them because students input data via the keyboard which can be captured and rated. The programme is set so that every student works through every page twice - staggered so that they are not consecutive. This builds in an element of overlearning from the start. In addition, we have set moving on marks which have to be met for higher pages to be accessed. For check-spelling the mark is 8/10; for memory (Recall-Writing) it is 12/15 and for dictation it is 4/5. Anyone getting a score lower than these will stick on the page until the required score is met. An audio message and pop-up relay feedback to the student at these points. In this way point D in the teacher's role list is covered.

Working without a teacher

One of Units of Sound's main strengths is that it utilises the power of independent work, whilst providing sufficient support for the student to succeed and to be motivated to continue. It is because of this strength that we believe it can be effective in the stand-alone model. As a teacher I do also know of course that not all literacy teaching is plain-sailing and that there are many students who require an extremely supportive and skilled environment to succeed. In schools, teachers encourage and support when needed: in the home parents/helpers will fulfil this role.

One of the key factors needed to work successfully from home is motivation. Younger children tend to want to improve literacy and are often amenable to persuasion from parents. Adults, of course, are self-motivated otherwise they won't have the programme in the first place. I suspect the trickiest group to make this work for will be teenagers - but we shall see. It may be that some students will use this programme for a short-term 'boost' - working for perhaps three months on it. But 'boosts' are useful! As I have said - this is a flexible tool.

Margaret Rooms

Margaret Rooms is Head of Educational Development at Dyslexia Action.

Units of Sound: Literacy that fits by Walter Bramley has been developed by Dyslexia Action and is available from DI Trading Ltd.

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What dyslexia can tell us about dyscalculia

Steve Chinn

Dyscalculia is the new kid on the specific learning difficulties block even though this difficulty has been acknowledged in research papers for over 40 years (for example Kosc, 1986). Consequently there will be issues around dyscalculia that will be similar to those that were generated by dyslexia. One of the questions facing educators and researchers is 'What can we learn from dyslexia to help us understand dyscalculia?'

Definitions

I have said before that I am often uncomfortable with the word 'definition' for dyslexia or dyscalculia. I am a physicist by training and spent the first 14 years of my career teaching physics, where a definition was a very precise concept. However, I subsequently taught in specialist schools for dyslexic students and was able to recognise a dyslexic person without having the benefit of a full diagnosis or a precise definition. People are not going to fit the precision of a physics definition. People have too many uncontrollable variables to make conclusions as certain as in studying, say, the oscillations of a pendulum. So I knew that virtually every student with whom I worked in those schools had learning difficulties that matched my concept of dyslexia... maybe in the same way that I can recognise the nature of a periodic oscillation without having to analyse a sine curve.

It may be useful to examine and compare the definitions for dyslexia and for dyscalculia.

The IDA define dyslexia as:

Dyslexia is a specific learning difficulty that is neurobiological in origin. It is characterised by difficulties with accurate and/or fluent word recognition and by poor spelling and decoding abilities. These difficulties typically result from a deficit in the phonological component of language that is often unexpected in relation to other cognitive abilities and the provision of effective classroom instruction. Secondary consequences may include problems in reading comprehension and reduced reading experience that can impede growth of vocabulary and background knowledge.

The DfES define dyscalculia as:

Dyscalculia is a condition that affects the ability to acquire mathematical skills. Dyscalculic learners may have a difficulty understanding simple number concepts, lack an intuitive grasp of numbers, and have problems learning number facts and procedures. Even if they produce a correct answer or use a correct method, they may do so mechanically and without confidence.

Both difficulties will be neurobiological. There will be something in that complex organ, the brain, that is different to normal (there is a whole philosophical debate!).

A key question then is can we do something about that difference? Let's assume that we are teachers rather than neuro-surgeons. A second key question is Are we as teachers in any way responsible for some of the difficulty? A third key question in this modern world is Are the policy makers, the curriculum constructors, responsible for some of these difficulties?

The characteristic basic deficits of dyslexia, difficulties with accurate and/or fluent word recognition and by poor spelling and decoding abilities are matched for dyscalculia by the ability to acquire mathematical skills. A difference appears here. We know what poor spelling is and what decoding abilities are, but what defines mathematical skills or poor mathematical skills? Mathematics is made up of many skill areas, including computation, algebra, graphs and calculus.

The dyslexia definition pinpoints the root of the problem as a phonological component of language whereas dyscalculia has its roots as difficulty understanding simple number concepts, lacking an intuitive grasp of numbers, and problems learning number facts and procedures. Maths is far more developmental than language. Gaps in knowledge and skills can have a detrimental effect that become cumulative, compounded for pupils who have an additional problem in that they have less daily exposure to numbers than they do to words.

Dyslexia is often unexpected in relation to other cognitive abilities and the provision of effective classroom instruction. As a specific learning difficulty, dyscalculia must also be unexpected in relation to other abilities even though this is not included in the definition. And I suspect the impact of effective (or ineffective) classroom instruction is far more significant for maths since it is classroom instruction that provides the majority of a child's exposure to experience of maths.

Dyslexia can create 'secondary consequences' (which may include problems in reading comprehension and reduced reading experience that can impede growth of vocabulary and background knowledge. Reading, like any skill requires practice.

Again, children are far less likely to practice maths than they are reading. Poor maths skills certainly lead to reduced experience and, indeed avoidance, which, I surmise is a less frequent occurrence for language. The equivalent section of the dyscalculia definition states, 'even if they produce a correct answer or use a correct method, they may do so mechanically and without confidence. A lack of a true comprehension or understanding of maths will be a key characteristic of dyscalculic people. This is the numerical equivalent of barking at print. Finally lack of confidence is a factor in maths that may also occur in language when a child is asked in class to spell a word.

So there are similarities in the two definitions, despite the different characteristics of language and maths. Perhaps the biggest difference lies in the cognitively developmental nature of maths and the dependence on securing pre requisite concepts before there can be any understanding of the next conceptual step. If you are not able to access the answer to 6×7 then you are likely to get the answer for 346×73 wrong. If you cannot spell occasion correctly your essay may still be given an acceptable mark.

I have always had an issue with the (usually anonymous) people who correct spelling mistakes on staff room notice boards. Spelling is judgmental. It is right or it is wrong. Creative spelling is rarely appreesheaited. As a consequence insecure spellers may use a restricted vocabulary when writing, but they are still likely to write something. Similarly, children who are insecure in maths may not attempt a question that they judge to be beyond their capabilities, but then the reduction in output is total. However, to return to a previous point, a spelling may be incorrect, but stiiil recognisable and therefore partly acceptable, but $6 \times 7 = 43$ is just wrong!

Society

Western society is tolerant of poor maths skills in adults. A recent survey by the CBI suggests that half the working population of England cannot do maths beyond the level of 11 year olds. We are less tolerant of poor literacy skills (though a reading age of 11 years would enable you to read most of the 'red top' newspapers). It is hard to convince children that algebra is going to play a significant part in their adult lives which makes it easier for them to dismiss failure.

Our need for language skills is far easier to justify and so our tolerance of low levels of literacy skills is much less and our exposure to language in everyday life is much greater.

So motivation from society to learn maths will be lower than the motivation to learn to read and write. Arithmetic has always been a long way back third in the three R's race (and where did that spelling come from?).

Research

One consequence of our attitude to maths is that there is far less research into learning difficulties in maths than into language. This means, as Geary said in his seminar at the IDA conference in Chicago, our knowledge of maths learning difficulties is in its infancy compared to our knowledge of language difficulties. I think that this general antipathy to maths extends into choosing it as a topic for research and yet, if treated wisely, it is a far easier topic to study than language.

However, one of my concerns has always been that some of the research done could have been pre-empted by asking a good teacher What happens here? Not doing this leads to a practitioner reading the research and saying, So what? We do not have enough research to waste it on predictable projects.

Beliefs

I also think that maths is subject to far more negative beliefs than is the case for language. For example, some people say, 'Children can learn times table facts (by rote) and then compound this by claiming, I did when I was at school. Well, if you couldn't when you were at school, you are not going to be so vocal as an adult when this erroneous statement is made. This particular belief is an example of an unrealistic expectation ... for some children. Unrealistic expectations do not motivate most learners.

Another belief is that 'Fractions are hard/impossible. It is a belief that is passed down from generation to generation. Many children have this belief compounded when they first meet this challenging topic. Negative beliefs can accumulate to become pervasive as in, 'I can't do fractions. (Therefore) I will not be able to do any of the maths topics in this year's lessons. The expectations around language are at a lower level of inevitability.

Teaching methods

I think both dyslexia and dyscalculia have a lot to teach educators. The methods used to teach both these groups will have to be efficacious. If they are not then it will be obvious that they are not.

It is possible to change a teaching programme for a whole population (it must be Tuesday again) and for the new approach to appear to offer better or similar outcomes. The data is going to be inherently flawed. What will happen is that the 65%, or whatever percentage that succeeded with the first method will contain some of the same children who succeed with the second method (because some children survive anything we throw at them as Tim Miles (Miles TR 1992) observed), but the rest that now succeed is likely be a different group. So the new method offers no gains for the 'survive anything' group but creates a new group of

failures and a new group of succeeders. It saddens me to observe that the failures are so often dealt with as an after thought, rather than being considered when a programme is set up. It is the Law of Unintended Consequences and it should not be allowed to apply to a vulnerable population.

Working with children for whom learning is rarely automatic is the best education for any educator. Methods, and there may have to be some flexibility here, have to work because their failure to work is so obvious. The children are like litmus paper. They react and tell you whether or not you have passed the acid test. So the programmes for dyscalculic and for dyslexic children will have to be efficacious and any progress they make will be a verification of that efficacy and for both groups the earlier the intervention the better.

Magic cures

As yet, unlike with dyslexia, no one has come up with a magic cure for maths difficulties. But they will.

Steve Chinn

Steve Chinn is known internationally for his work on Dyslexia and Mathematics.

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Removing the Barriers Effective Speech Recognition for Special Needs Users

Dr Peter S Kelway

Introduction

Speech recognition technology has been commercially available in Britain since 1988. Many people have been able to use it effectively with minimal training. However, in the special needs area, failure rates have been high. The author believes this to have been more than 60% prior to 2000.

Underestimating the need for good user training and using proper equipment has devalued the perceived potential of the technology. As a result, there remains a reluctance amongst some special needs advisers and assessors to examine the potential benefits of voice recognition techniques. Many parents and teachers remain completely unaware of the benefits that can come from the intelligent implementation of the techniques.

This article describes the opportunities for exploring the use of speech recognition by those with special needs far more widely than is currently the case. New tools are now able to assist in assessment, in training and ultimately in the use of the technology in the special needs area.

All but a very small number of people with unusual voice characteristics will be able to use speech recognition. Even people who have significant speech production problems can become successful users of speech recognition. Those who cannot cope with continuous speech software can often use the discrete alternative where individual words are spoken rather than whole phrases or sentences. There should be no premature conclusions made without formal assessment.

Initial assessment

Professional assessment is vital where speech recognition is to be used to address special educational needs.

It is essential that an assessor is fully conversant with the equipment and all the factors likely to influence the success of applying the technology. Assessments by those with only a superficial understanding of the issues may result in inappropriate judgments.

For routine assessments it is important that a dedicated computer is used, so that direct comparisons can be

made for a candidate against previous results for other people. It is essential to remove any chance that the equipment itself is at fault. The assessor should verify that the correct specification of computer is available for the assessment. Processor type and speed, the amount of memory available and the type of audio system must be suitable.

All non-essential programs should be deactivated so that speech recognition performance is not compromised by background demands on processing power, such as is caused by virus checkers, screen savers and networking systems.

Once the equipment has been thoroughly checked, issues related to human factors need to be addressed. The user should be comfortably seated, in a relaxing environment with subdued lighting. Equipment should be made ready and checked before the candidate is asked to participate in the assessment.

The mere fact that a user does not achieve good results at an initial assessment should not preclude the technology from being considered an option. The assessor should therefore explore the possibility of the user requiring more extensive training than normally provided, rather than consider the candidate to be unsuitable.

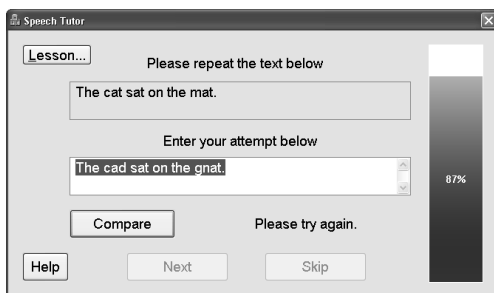
Conventional assessment techniques usually involve the candidate being asked to use the technology in a somewhat unscientific fashion. Initial enrolment entails the candidate reading from an on-screen script into a microphone. Once the computer has produced the necessary statistics, they are asked to dictate a number of sentences so that speech recognition performance can be assessed. Sessions are often of limited duration for practical reasons, especially where a peripatetic assessor is involved, carrying out a number of assessments en bloc.

The result of brief and unstructured testing has two potentially unsatisfactory outcomes. First, borderline candidates are at risk from being considered unsuitable to use the technology and may be rejected out of hand. Second, additional training needs may not be identified, resulting in over-expectation for the future.

There have been two recent developments which assist in assessment. First, the leading voice recognition

system **Dragon NaturallySpeaking** (DNS) now enables a novice to start using speech recognition without carrying out the enrolment process. While it is not recommended that enrolment is dispensed with by special needs users if they do subsequently use the technology, its omission can considerably speed up the assessment process.

In conjunction with this advance in recognition technology, **KeyStone Speech Tutor** has been introduced to enable an assessor to check how well the speech system responds to a candidate's voice. The assessment environment is isolated from any other activity on the computer, so there are no complications which could lead to poor recognition causing unexpected and confusing events.



KeyStone Speech Tutor display

A group of lessons is available within the program, each of which consists of a number of carefully prepared short sentences. The assessor selects an appropriate lesson to match the candidate's circumstances. For instance, if difficulties are expected with words starting with th, a lesson would be selected containing several sentences such as This is thirsty work. Sentences are displayed successively and the integrated text-to-speech system is used to prompt the candidate, who repeats the sentence. The result is scored by a machine comparison of the resulting text with the original prompt. A perfect match produces a 100% result and the next sentence can then be selected.

After an unsatisfactory attempt (showing a score of less than 100%) the assessor can carry out one of three possible actions:

- If the attempt was reasonable, the speech recognition system can be instructed to accept it and to adjust the stored statistics relating to the user's voice. A new attempt can then be made to check whether the adjustment has been successful.
- The candidate can be asked to repeat the sentence to see whether improvement in enunciation is feasible.
- The example can be skipped and the next sentence is then displayed.

In this way, the assessor can quickly draw a conclusion as to whether the candidate has problems in enunciation or the equipment is operating less than effectively for the particular individual. In either case, a definite strategy can be drawn up to address the issues.

Experience to date indicates that this tool will be particularly valuable to those with special needs who do not have English as a first language. Many people with strong regional or foreign accents find difficulty when starting to use speech recognition systems. A few accents are catered for by allowing the selection of special voice files (Australian, SE Asian, United States and Indian English). However people with one of the large number of accents found in the UK will benefit from being able to identify particular problems which they need to overcome. Where appropriate, the recognition system can also be made to adapt to their voice characteristics.

Starting the training

Once a person has been considered suitable to use the technology, comprehensive training is essential for those who have special needs, especially where specific issues were identified at the assessment session. Before a training programme is embarked upon, the following requirements should be met.

- Trainers must be fully conversant with the technology, having used the equipment personally.
- Good technical backup must be available.
- As with assessments, the computer and audio equipment must meet the required minimum specification, environmental factors should be checked and issues related to human factors must be taken into account.
- Any specific problem areas which have been identified during the assessment should be addressed during the initial training period.

Ideally, the trainer should themselves have been trained by a qualified person, preferably brought in from an acknowledged centre of expertise. Failure frequently results where a teacher or classroom assistant with inadequate knowledge is expected to train pupils.

Once training starts, teachers and classroom assistants need to have ongoing technical assistance available to support them. In many cases training sessions are abandoned because minor technical issues prevent the equipment from functioning correctly. Where this continues, the resulting frustration in both teacher and pupil often leads to the subsequent abandonment of the technology.

Background noise levels are often blamed for failure. However, in over twenty years of providing training

services, the author has never identified a case where this has been a significant issue.

Many people have difficulty when starting to use voice recognition in speaking sufficiently naturally to ensure acceptable performance. Some voices are more susceptible to the effects of variations in speaking style than others, particularly those which are high pitched or have high aspiration levels. While many novices move from the introductory phase within a few hours and can then dictate efficiently and control their computers, others struggle in this early phase.

The author estimates that more than half of young users experience sufficient difficulty to produce a risk of unwarranted abandonment of the technology. Unless remedial action is taken at an early stage, frustration and lack of confidence may mean that the user abandons, perhaps for ever, attempts to use voice recognition. Teachers and trainers frequently become discouraged and come to the often mistaken conclusion that the technology is inappropriate .

The usual training procedure adopted entails pursuing a strategy along the following lines. The user is first enrolled, when voice characteristics are collected automatically by the computer and stored. A word processor is then used in conjunction with the speech recognition system to allow the novice user to practise speaking and produce text on the screen.

When using this strategy, the user frequently has a poor understanding of both the word processor environment and the operating system. This deflects attention from the main task, especially when recognition errors cause unpredictable effects, taking the screen cursor to unexpected places and performing unwanted actions. Frustration results with a critical loss of concentration.

A novice user needs to become confident, at an early stage, that the computer is responding to their voice. The user should not be allowed to speak in an unconstrained manner before this stage, nor should they be allowed to become tongue-tied which can produce erratic and unnatural speech.

The emphasis should be on encouraging naturally flowing speech of a few words at a time, with a pause of several seconds between each phrase. This allows the user to get into the habit of delivering their phrases clearly and evenly, without hesitating or gabbling, both of which will have a negative effect on recognition rate.

Words should be used which have a reasonable chance of being successfully recognised. Very short words are particularly prone to misrecognition and should not be over-used. Although multi-syllabic words may seem inadvisable in the early stages, phrases that are easy to

pronounce such as elephants and kangaroos escape from zoos are better than go to work on an egg. The use of proper names should be very definitely avoided at the outset.

The user should not be asked to read out from a text book because, even if the user is capable of this, the additional burden may seriously reduce their performance.

The *KeyStone Speech Tutor* tool, which is primarily intended for assessment, is also ideal for taking a novice through the early stages of using speech recognition. The teacher can concentrate on improving the trainee's speaking style and correcting the speech recognition system as necessary. Different groups of sentences can be used in separate lessons, each concentrating on specific difficulties being experienced by the trainee.

Consolidating the training process

Once the mechanism for producing text is understood and the user has started to build confidence in this way, the process of learning to use voice recognition in earnest can begin. Only then should steps be taken to teach the user how to correct mistakes made by the speech recognition equipment.

For those with special needs a particular problem arises with spelling errors. Speech recognition is frequently put forward as a panacea for those who are not naturally good spellers because it is claimed that it is impossible to generate text with spelling errors in it. This is not strictly correct. Two issues arise which cannot be ignored, these being homophonic errors and problems with the correction process. These problems are often wrongly cited as the reason for speech recognition not being suitable for those with special needs.

It is impossible for a speech recognition system to predict exactly what is intended and incorrect words will need to be replaced: for instance the ship was named Grey Starling might be wrongly recognised as the ship was named Grace Darling. It is therefore common to find that users who consider themselves to have mastered the technology perfectly are disappointed to find that their work is riddled with homophonic errors, often with ludicrous results: e.g. John **rode** for the boat team in **grease**.

Speech recognition resolves many of the possible conflicts correctly without user intervention. However, they are rarely totally absent in a document of more than a few hundred words. Many teachers accept this limitation but the ambiguities should be identified and corrected where appropriate. Inadequate checking will lead to uncorrected mistakes such as: Thomas looked **four** apples in the garden. Writers frequently think that there will be no spelling errors, so minimal checking is

carried out and homophonic errors are missed. The use of suitable additional software is essential to give the user confidence that their work is free from these errors.

Secondly, correcting recognition errors requires words to be spelt accurately. If a misrecognition occurs, the correct word must be entered letter by letter into the correction field. For example, if a user says philosophy and the word fishhooks is produced, the user may be tempted to start spelling the word with f rather than p. If so, the word philosophy will not be produced and they may well produce flosfee as their attempt, spelling the word phonetically.



Example of a user embarking on a false trail in correcting an error.

If the user then accepts the spelling of the word as flosfee this is entered in the voice recognition vocabulary as a wrongly spelt word. The next time that the word is spoken it will be represented as that misspelled word. Phonetic attempts at spelling words will result in frustration or error unless additional software is available. It is vital that this software provides good support for people who tend to spell phonetically.

Special needs users may have an additional difficulty. Many are unable to read sufficiently well to check that the text displayed on the screen as a result of their dictation is what was intended. This can lead to uncorrected errors and cause frustration. Even if the error is detected, the user may then be unable to read the words produced in the selection list of alternatives during the correction process.

Text-to-speech systems such as *Read and Write* can assist users in checking work by allowing sections to be read back after completion. However, this remains a clumsy solution for many users who require immediate confirmation of what they have dictated. There are two products on the market which provide immediate confirmation of dictated text: *ClaroRead* and *KeyStone ScreenSpeaker*. Both echo the dictated text as soon as the user pauses. Some users prefer to have the text echoed on demand, rather than continuously which can be tedious and cause mental overload. KeyStone therefore has an option whereby the user can give a very simple command when an immediate echo is required after a particular sentence has been completed; at other times no echo is produced.

Summary

There continues to be poor awareness amongst parents, teachers and education authorities regarding the power of speech recognition when properly implemented.

A need remains for more assessors to be aware of the potential of the technology and for a greater understanding amongst teachers of the necessity for structured training.

Traditionally speech recognition systems have been under-used in providing support to the large number of people with special needs. The recent emergence of structured assessment tools and training systems for novices should give new hope for the future. Suitable technology is now available at affordable prices.

There is no longer an excuse for any person with special needs to be deprived of the opportunity to explore whether they can take advantage of this powerful technology.

Available software

Speech recognition systems

Dragon NaturallySpeaking (DNS): This is considered to be the only practical continuous speech solution for special needs users.

IBM ViaVoice, which has been available almost as long as DNS, is not recommended. The product has not been developed beyond version 10 which was released more than two years ago. Young users have found it difficult to enrol on the system and accuracy is considerably lower than DNS for users in general.

DragonDictate:. Although this product has not been upgraded for more than five years it remains a highly effective tool for users with speech production problems or learning difficulties. Dictate requires a distinct pause to be left between each word uttered (typically of about 0.2 seconds). It will cope with poor speech production provided that utterances are consistent. DNS can cater for pauses of any length between words and handles truly continuous speech but requires reasonably good delivery.

Text-to-speech systems with integrated homophone and spelling checkers

All the products listed comprise a good spelling checker and homophone checker, along with the capability to read out text which is displayed on the screen.

ClaroRead: In addition to providing conventional text-to-speech facilities, this product provides echoing of voice recognition utterances while a user dictates using a word processor. It also works well with Internet Explorer and provides a general screen reading capability.

Dolphin Tutor: Tutor has essentially the same

functionality as ClaroRead.

KeyStone ScreenSpeaker: KeyStone seamlessly integrates with Microsoft Word, WordPad, Notepad and with DNS and DragonDictate voice recognition systems. It is specifically designed to assist those with special needs to generate written work. For those wishing to extend text reading to general application programs and for browsing the internet, it is recommended that the product is used in conjunction with Read & Write.

Read & Write: This product was not designed to operate with voice recognition and is less effective than the other products. It does however provide an excellent text reading capability across a variety of application programs. It is best used by keyboard users and those browsing the internet.

Software for assessment and initial training

KeyStone Speech Tutor is a tool designed to assist special needs assessors and training of users in the initial stages of using speech recognition.

Complete solutions

Bundling speech recognition and text-to-speech software with suitable word processor equipment produces highly cost-effective solutions. The following comparisons show the range of alternatives, all of which should provide effective solutions for most special needs requirements. Significant discounts will be available for use by resource centres by negotiation with suppliers.

ClaroRead Plus with **DNS 9 Preferred** is £309.

Dolphin Tutor with **DNS 9 Preferred** is £349.

KeyStone SpeechMaster Solo with **DNS 8 Professional** is £249.

KeyStone SpeechMaster Solo with **DNS 9 Preferred** is £299.

It should be noted that DNS version 9 requires significantly greater machine resources than version 8. For this reason Words Worldwide has negotiated a special licence to keep the earlier version available to special needs users.

Dr Peter Kelway

Dr Peter Kelway is the Chairman of Words Worldwide Limited and has worked in the special needs arena for over twenty years. He has acted as a special needs assessor and trainer and designs software incorporating speech recognition and text-to-speech technology.

Useful web sites

following web sites can be browsed to find details of the software products described in this article:

ClaroSoft: www.clarosoftware.com (text-to-speech)

Dolphin: www.dolphinuk.co.uk/education/products (text-to-speech)

Nuance: www.nuance.co.uk (voice recognition)

Texthelp Systems: www.texthelp.com (text-to-speech)

Words Worldwide: www.keyspell.com (text-to-speech, voice recognition, voice assessment tools)

Supporting Dyslexic Learners in Different Contexts

CFBT CTAD and Dyslexia Action

Supporting Dyslexic Learners in Different Contexts

was commissioned by the DfES Skills for Life Strategy Unit in August 2004, with the aim of training teachers and support staff in a range of learning settings. It is managed by CfBT Education Trust, and delivered in partnership with Tribal/CTAD and Dyslexia Action.

The Strategy Unit's stated intention was to build on their commissioned research and findings: *A Framework for Understanding Dyslexia (2004)* and provide training for 1000 non-specialist teaching staff, and 500 support staff involved in teaching and supporting dyslexic adults.

From August 2004, the project team consulted with experts in dyslexia, and with practitioners in a range of settings, to design a training programme. One of the challenges was to meet the needs of non-specialist teaching and support staff in many different roles across the full spectrum of post-16 learning - FE, ACL, the workplace and offender settings. Flexibility and accessibility were critical factors, as many learning providers, like most employers, did not have the capacity to release staff for many days of training.

The team decided to develop a blended learning course, comprising substantial distance learning as well as face-to-face learning sessions, to allow participants to progress at their own rate, in their own time. The learning materials had to be appropriate for non-specialists to support their learners, so a toolbox of practical advice and strategies was developed, relevant to the different learning contexts - presented as 26 distance learning modules.

The distance learning modules comprised a menu of stand-alone learning activities, reflecting different post-16 learning settings, thus allowing participants to select the modules most appropriate to their own learning environment. Expert trainers were engaged to support, advise and encourage participants. Participants were thus not studying in isolation, and had the opportunity to draw on specialist expertise during their e-learning.

Since the start of the project the Strategy Unit commissioned some video teaching snapshots for CD, designed to stand alone but linked to the approaches and strategies used in the distance learning modules.

What's in the training programme?

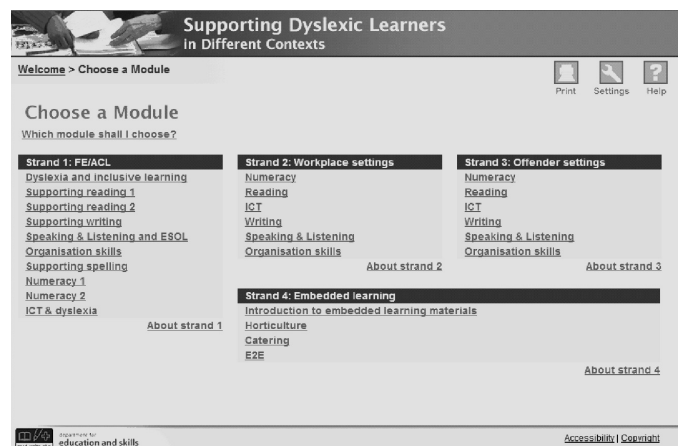
- A **core training day** 'Understanding dyslexia' which raises general awareness of dyslexia by exploring:
 - main characteristics
 - the challenges and strengths associated with

dyslexia

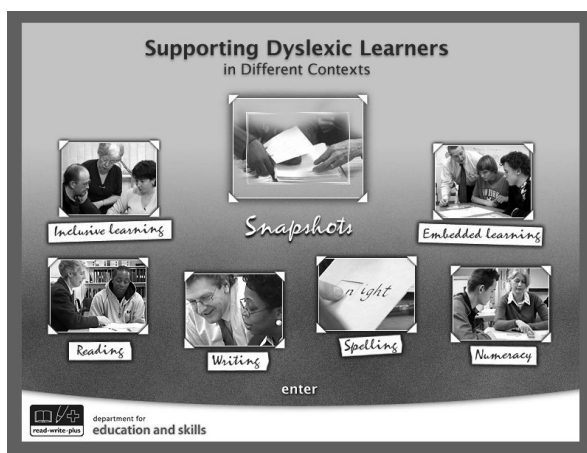
- the effect of dyslexia on learning

or

- A **distance learning module** 'Understanding Dyslexia' which covers the same topics raised in the core training day and available as a separate module on the original distance learning CD
- A **suite of 26 distance learning interactive modules** of which participants were expected to work through 8 modules, with the support of their trainer. These modules are available on CD with web links, which aim to extend the users' knowledge and understanding of dyslexia and introduce approaches and support strategies found to be effective in a range of contexts and settings (called strands). These strands are:
 - Further education and Adult and Community Learning
 - Workplace
 - Offender settings - secure estate and community
 - Embedded learning



- Video snapshots on a separate CD can be used alone but are most effective if used alongside the appropriate distance learning module. There are opportunities throughout for teachers and support staff alike to reflect upon their own practice. The unique 'screen grabber' facility enables the user to capture moments of film; to make notes and to print out or save for later reflection. The snapshots cover the themes of:
 - Inclusive learning
 - Embedded learning
 - Reading
 - Spelling
 - Writing
 - Numeracy



In this example taken from the Reading snapshot, teachers and support staff are asked to watch a 4 minute video 'clip' of a dyslexic learner developing and practising particular reading skills with her teacher; they are then asked to watch again but are asked to reflect and comment. Feedback is given. This '**watch** , '**reflect**' and '**check** with **feedback** features throughout the video snapshots.

The 2005-6 cohort were warm in their praise for the introductory face-to-face group training session, *Understanding Dyslexia*. They were also very positive about the support they received individually from trainers, when they were studying the distance learning modules.

In 2006 the project was transferred to the QIA and training was commissioned for a further 1500 teachers and support staff. This training will take place between September 06 and February 07. **All courses are now full. To be kept informed of future training visit www.cfbt.com/dyslexia and sign up to our mailing list or contact sdl@cfbt.com for further information.**

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www.workingwithdyslexia.com

Dyslexia Institute Maths Programme

Up-date day

Anyone interested in attending a DIMP update day please contact Pauline Clayton pclayon@dyslexiaaction.org.uk

Dr Margaret Newton

A Tribute

Dr Michael Thomson

Dr Margaret Newton, who was one of the main pioneers in getting Dyslexia accepted as a special educational need in this country, died on 13th April 2006. Her clinical and research work from the early 1970s onwards at the University of Aston was absolutely crucial in shaping what became government policy via the Tizard and Warnock Reports to SEN legislation recognising specific learning difficulties.

I first met Margaret when I was applying to do a Masters Degree at the University Of Aston. The first impression of a small, vivacious woman with a warm personality, hid a fierce intellect, as one soon discovered when pierced by those steely blue eyes asking pertinent questions that uncovered one's lack of knowledge and impertinence in applying for a Masters Degree!

I soon discovered that Margaret, although a Senior Lecturer in Developmental Psychology at Aston had been a Head Teacher, but, more importantly, an Infant Teacher, teaching children to read and also subsequently a remedial teacher, then working in a 'Child Guidance Clinic' (consisting of specialist teachers, educational psychologists and child psychiatrists). During her time as a teacher she had observed many children who were failing to read, write and spell, but did not fall into the then categories of learning difficulty. These included being of low intelligence, having an emotional problem or having some sensory deficit. She drew up a list after careful observations of these children, which she later published in a guide to parents and teachers as characteristics of dyslexia. As far as I know this was the first attempt to describe Dyslexia in this country, and subsequent research around the world has clearly found similar features and the current descriptions of Dyslexia by BDA and Dyslexia Action (Institute) echo these early signs as described by Margaret.

Margaret decided to go into the Applied Psychology Department at the University of Aston to research Dyslexia and was one of the first people in this country to look at the brain function in Dyslexia at the world renowned Neuropsychology Unit. Her seminal work looking at the relationship between the left and right hemisphere processing and its relationship to Dyslexia has been echoed over the last four decades. Margaret's finding of differential left hemisphere processing of language in dyslexic people has since been confirmed by the more sophisticated techniques available to us nowadays, such as Magnetic Resonance Imaging,

indicating phonological deficits in some areas of the left hemisphere.

The idea that there could be some intrinsic cognitive difference in learning that was from differential processing of the brain was anathema to the educational system at the time, which believed that most learning difficulties were of an environmental origin. Despite the tremendously hostile reaction she received from educational authorities and educational psychologists in particular, she carried on with her research. During my MSc programme I undertook a dissertation with Margaret, looking at the relationship between elements such as sound blending, sound discrimination, auditory and visual sequential memory skills and reading difficulties in children. Many of these items were later included in the Aston Index. Following my Masters Degree I was privileged to join the University as a Research Fellow, during which time Margaret established what was referred to as the Language Development Research Unit, commonly known as the Dyslexia Unit. She believed the words Language Development were important (again now well established), and that Dyslexia was a language difficulty and not just a difficulty with reading.

I was trained by Margaret to undertake Assessments, and was also involved in Clinical and Research work at the Language Development Unit. I was in awe of her ability to combine careful observation with her warmth and understanding of the children that she met; and her rapier like intelligence in extracting the key features of learning difficulties and relating them to a theoretical psychology background, which she had and I was trying to develop. This was not just someone in an academic ivory tower, but got down, literally and metaphorically, on to the floor with children to play with them, observe them, help them, teach them, and then shout out the children's needs to the rest of the world.

She was an outstanding lecturer and when asked to give talks outside the University would fill lecture theatres because teachers were thirsty and desperate to hear about dyslexic difficulties, which were being denied, and yet were quite clearly observable in the children they taught. She was able to talk the teachers' language, talk about teaching methods, but also bring her research knowledge into the arena. Subsequently she advised the Dyslexia Institute, the British Dyslexia Association and PATOSS. She helped develop the first courses

which led to specialist teaching qualifications. She continually lobbied central and local government to recognise Dyslexia. Sometimes the interactions that she had from other people were hostile. I can clearly remember lecturing with Margaret to a group of Educational Psychologists. When we started the show with examples of children's work to illustrate the nature of Dyslexia the Principal Psychologist said something like We don't want to look at children's work and what they do, but we want to discuss the political implications. This illustrated to me just how marvellously child centred Margaret's approach was. It was all about helping the children and not about the politics.

Bangor University, under the guidance of Tim Miles, was the only other University in the 70's undertaking research on Dyslexia. Margaret's legacy has been the tremendous explosion of interest in Dyslexia, almost every University Department now has researchers working in Dyslexia, and I know of at least two eminent developmental psychologists who have had awards from the British Psychological Society for their work on Dyslexia. It was interesting at the time that the BPS, via the Division of Educational Child Psychology (DECP) would not admit that there was such a thing as Dyslexia, and yet in 1999 the DECP undertook a working party to look at how this could be diagnosed. While many do not agree with this Working Party's definition, at least there was a recognition that children had specific learning difficulties.

In 1976 I was proud to be co-author of the Aston Index, a screening procedure for children in school. This followed a good deal of research work in schools (sitting on tiny stools testing five year olds!). The Aston Index has been in use as a screening procedure for the last 30 years, and is still used by many teachers. The Dyslexia Unit at Aston was an exciting, vibrant place for teachers, students, psychologists, university lecturers and others in the development of Dyslexia across both cognitive and neuropsychological research as well as teaching. Later the Aston portfolio series of teaching procedures was published by the research team there. Margaret herself was a warm, kind and generous person. She had all the time in the world for developing her nest of students, and was incredibly understanding to parents, and of course her work with children was unparalleled. Although she retired from academic work some years ago, she continued to maintain her assessment service, providing advice for teachers, parents, and also various bodies, particularly in the teacher training area of Dyslexia. I know her encouragement to people such as Wendy Fisher and Marion Welchman of the Dyslexia Institute and British Dyslexia Association respectively made them believe that they were not just fighting something that was not real, and that they could call on strong academic support for their descriptions and hunches about dyslexic

individuals, based on their own children.

Margaret was also unstintingly generous in her academic work. She was tremendously encouraging in my first steps into writing on Dyslexia, whether it be papers or, later, various books, and the framework of knowledge she provided, not just to me but to all students, past students, teachers and other psychologists that passed through the Dyslexia Unit was unparalleled. The concept of an individual difference in learning giving rise to difficulties in symbolic processing is still a useful summary of Dyslexia today.

I am proud to have called Margaret a friend and mentor, and would certainly not be doing what I am now without her inspirational example and encouragement.

Dr Michael Thomson

Dr Michael Thomson is co-author of the Aston Index, formerly Research Fellow and Psychologist at the Language Development Unit, University of Aston, and Principal of East Court, a specialist school for dyslexic children for the last 23 years.

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Dyslexia Action Response to the Report and Findings of the Education and Skills Select Committee's Inquiry into Special Educational Needs

Shirley Cramer

As Dyslexia Action was one of several voluntary sector organisations that both submitted written evidence to the committee and gave oral evidence, we welcome the findings of the committee and their recommendations for change. Their strongly worded recommendations are based on concrete evidence that the current system of special educational needs is failing far too many vulnerable children across the country. A system that was deemed appropriate in 1981 is certainly due for an overhaul in 2006 and we would concur with the committee's conclusion that 'the Government needs to give greater priority to SEN and take full account of its need to have a central position in education.

One of the most important aspects of the report was its strong recommendation, repeated throughout, that the Government urgently needs to tackle the lack of appropriate training for SEN in mainstream schools. For children with specific learning difficulties such as dyslexia we know that the lack of training at all levels in the school system is a major reason why so many children fail to reach their potential. What is the point of struggling to get a statement of special education need, which delineates specific hours of specialist provision, if there is no one trained to provide the support? Similarly if teachers and teaching assistants are not aware of the signs of dyslexia and other SEN and have not been given classroom based strategies to support these children, how are we to implement a policy of early intervention?

We would also endorse the committee's call for national standards, fair access and consistency of provision. We know that for many children with specific learning difficulties, appropriate provision is patchy. High quality educational services should be available to all children wherever they live.

This is linked to another vital aspect highlighted by the Committee's report, that local authorities have a clear conflict of interest as they have to assess the needs of the child and to arrange provision to meet the need within their budgets. We believe that this has a significant impact on many children with SpLD, whose

problems are hidden and where the local authority may have an economic reason not to identify their difficulties. Access to assessments for pupils with SpLD is problematic in many places and we believe, along with the committee, that the link between assessment and funding of provision must be broken.

The Committee correctly identifies that SEN is under funded at the present time and that a significant investment will be needed to provide the range of appropriate high quality provision that is required. We believe that this is a clear 'invest to save' model as there is no doubt that the social and economic costs of not dealing with specific learning difficulties in the early years of school is extremely costly, both for the individual and society. The growing evidence related to the overrepresentation of individuals with SpLD who are excluded from school, involved with the prison and probation services or are unemployed is compelling indeed.

The report argues strongly for a coherent SEN system, which puts the child at its centre. Its recommendations are sensible, urgent and clearly laid out. But will the Government respond? The DfES would be unwise to ignore such a well evidenced report with strong parliamentary backing and there are signs that it is making plans to respond positively to aspects of the report. Although it is clear from Lord Adonis's testimony that there will not be the seismic change that the committee feels is necessary, I do believe that we will see increased investment in training over the next year and a strategy to develop national standards. This will be a good start, but will it be enough to stem the current failure amongst pupils with SEN? The jury will definitely be out.

Shirley Cramer

Shirley Cramer is CEO at Dyslexia Action.

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Assessment Practising Certificates: Why and How

John Rack

What role should teachers have in identifying learners with dyslexia and related specific learning difficulties? What is the difference between screening and assessment? What kinds of qualifications are needed for which kinds of tests, and what about specific learning difficulties that are not dyslexia? These are some of the questions that were covered in my presentation at the Guild Symposium in London in November 2006. The need to revisit such issues had arisen for a number of reasons including:

- The growing acceptance of the role of teachers in assessing specific learning difficulties in schools.
- The publication of the DfES Working Party Guidance (2005) on assessments for the purposes of determining eligibility for the Disabled Student's Allowance
- The introduction (2005) of the BPS Certificate of Competence in Educational Testing (level A)
- The introduction of Assessment Practising Certificates from Dyslexia Action and PATOSS, in line with the DfES Working Party Guidance
- A general increase in the availability of screening various formats and pressures to provide cheaper alternatives to a diagnostic assessment by a chartered psychologist.

In this article, I shall give some of the background that led to the current system for issuing Practising Certificates, and outline the routes that are available to teachers who wish to obtain a certificate. There is not space to elaborate on the full training requirements that would lead to such a certificate, but I would emphasise the importance of 4 key elements of training and practice:

1. A deep theoretical understanding of the nature of dyslexia and related specific learning difficulties.
2. An understanding of the principles of test construction and psychometrics
3. Supported practical experience in delivering assessments in different contexts.
4. Ongoing professional training and development, to update skills and maintain consistency with recognised standards.

A competent assessor must bring together the theory and understanding of the subject and the techniques of assessment (1&2), and apply and develop this knowledge in practice (3&4). Arguably, all teachers are involved in assessment, whether this is an assessment of the progress made by learners, or identifying those

who may need additional kinds of support through 'screening'. Do all teachers, therefore, need to have a Practising Certificate? The answer to this is, quite clearly, no; but where are the lines to be drawn?

Screening does not require a great depth of knowledge of the subject area (point 1) or of principles of testing (point 2), as these tools are often designed to be used on large numbers often by non-specialists. That said, in my view, teachers would benefit from knowing more about the limitations of screening tests and about the dangers of over-relying on screening data. A screening procedure is designed simply to give indications of a possible need for further action or investigation. Dyslexia screening tests do not, however, give a clear 'yes/no' answer: the level of risk or the number of indicators chosen is a matter of choice - something that makes them less useful for the non-specialist than is sometimes claimed. It will always be a trade-off between setting the screening threshold so high that it misses too many people and setting it so low that it produces too many false alarms. In summary, screening is useful for giving indications of who does and who does not need to be assessed further, but no screening test can rule dyslexia 'in' or 'out'.

At the next level up is an assessment which we in Dyslexia Action have termed a skills profile. This is an assessment, focusing on development needs in literacy, numeracy and related skills, and on related strengths and weaknesses. This kind of assessment allows a teacher to plan an individualised programme of learning, or identify needs for support, but it does not go beneath the surface to provide an interpretation or explanation for the difficulties that have been identified. Such an explanation may not always be sought - some adult learners, and many children in the early stages of literacy learning, are less concerned to have a label than they are to improve their skills. Minimal testing can be given in order to plan a teaching programme, but it is good practice to reconsider the issue of an assessment if progress is slow to come.

If teachers are to become involved in providing the more in depth 'diagnostic assessment', it is crucial that they have secure knowledge and skills, as outlined in points 1 and 2 above, and that these are monitored and maintained as outlined in points 3 and 4. Until the Working Party report of 2005, there has been no national framework to support standards of practice for teachers conducting assessments of any kind; certainly, many

Dyslexia Guild members will have been trained to be very cautious about making definitive diagnostic statements. It is worth pointing out at this stage that assessment conclusions, whoever writes them, should be expressed with a degree of caution. Of course a client (or parent) wants a clear answer on which they can act, but they should also understand that the interpretation given could be subject to revision if new information comes to light at a later stage. Teachers who are writing reports of diagnostic assessments most definitely do need to have Practising Certificates and many will need additional, supported training, whilst they build up a bed-rock of experience.

The next section of this paper gives some of the background to the regulatory framework that is evolving in this area, and outlines the main options currently available for gaining an assessment Practising Certificate. It may be helpful to clarify that psychologists who hold Practising Certificates issued by the British Psychological Society, do not require a SASC-approved assessment Practising Certificate. (SASC is explained later) Likewise, the British Psychological Society's Certificate of Competence (also explained later) has recognition outside the SASC committee. However, as this is a generic qualification in educational testing, further training in relation to specific learning difficulties, or another area of special needs, would be needed over and above CCET training.

The National Committee for Standards in SpLD Assessment Training and Practice

In 2005, the DfES accepted the report of the Working Group which had been asked to produce guidance on good practice in the assessment of SpLDs in the Higher Education context. Local Government Officers had reported difficulties in making judgements about the need for Disabled Student's Allowances (DSAs) in the face of the widely varying standards of diagnostic reports submitted for DSA applications. In addition, there were concerns that access to DSAs might not, in practice, be accessible to all students because of the barrier of obtaining a diagnostic assessment. The working group was therefore charged with the twin tasks of making diagnostic assessments more accessible and promoting the standards for such assessments. One of the recommendations of the working party was that there should be an ongoing committee to support the implementation of its recommendations in relation to training and certification of assessors.

Thus the committee, known as the Specific Learning Difficulties Assessment Standards Committee, or SASC for short, was created with membership drawn from the national dyslexia organisations and representatives of training providers. The current chair of SASC is Lynn Greenwold of PATOSS; I represent Dyslexia Action on this committee and also served on the DfES working group.

SASC's objectives

SASC's objectives include the following:

- promote and monitor standards of SpLD assessor training relating to all age ranges
- promote continuing professional development in SpLD assessment
- provide guidance on training, implementation of standards
- oversee and approve processes of awarding SpLD Assessment Practising Certificates
- approve courses as meeting standards of SpLD assessor training.

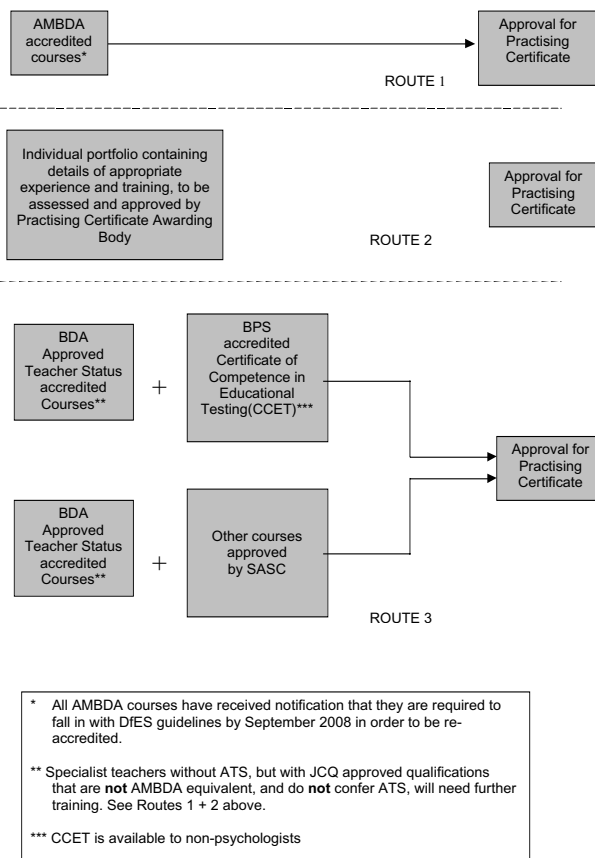
It is the last two that we are mostly concerned with in this paper. It is important to be aware that the requirement for assessors to hold a Practising Certificate comes into force in 2008 in relation to assessments for DSAs, although many LEA officers are asking for this standard already. In addition, there is an expectation that Practising Certificates may be required for other kinds of assessments such as those for examination access arrangements in the future.

Routes to Dyslexia Guild Practising Certificates

SASC has authorised PATOSS and Dyslexia Action's Dyslexia Guild to issue assessment Practising Certificates.

Under 'grandparenting' rights, teachers holding qualifications that would give eligibility for AMBDA status (usually a Postgraduate Diploma qualification) can apply for a Practising Certificate under what is referred to as 'Route 1' in the flow-chart issued by SASC that is shown below. The DfES working party recommended some strengthening in the content of courses leading to AMBDA to include a minimum input on psychometrics and more extensive supervised assessment practice. But, for now, those with AMBDA status (or eligible for it) are entitled to a Practising Certificate. Note however, that in order to have their certificates renewed, it will be necessary for the holders to undergo some additional training, and some whose training was a long time ago may elect to have 'Refresher training'. A key feature of all Practising Certificates is that they are renewable on an annual or three-yearly basis, on evidence of continuing competence and CPD. Further details of the regulations and procedures for applications, and the requirements for renewal can be found on the websites of the two organisations who are issuing certificates: PATOSS and Dyslexia Action.

Routes to Dyslexia Guild Practising Certificates



Following the November 2006 meeting, SASC agreed that teachers could be eligible for a Practising Certificate under 'Route 3' if they had a background in SpLD theory and teaching practice, PLUS a course specifically geared to understanding the principles of assessment. The British Psychological Society (BPS) has recently introduced a means by which non-psychologists can obtain a Certificate of Competence in Educational Testing (CCET) by demonstrating an extensive range of competencies to assessors, approved by the BPS to judge these. CCET training is available from a number of providers, including Dyslexia Action working in partnership with a company called Real Training. Being already validated by the BPS, the CCET course did not need approval from SASC, but other courses of training in assessment principles and practice, are being brought forward. Some of these will be modular courses focusing on assessment and others include both the assessment and the 'dyslexia' content.

The more tricky situation is for those who fall in between Routes 1 and 3 - for example, those who may have Masters level qualifications or those with extensive experience whose training might pre-date the BDA Accreditation Board. People wishing to apply under Route 2 will therefore need to be considered on the basis of whether they meet the competence criteria outlined above on a case-by-case basis. SASC has asked Dyslexia Action and PATOSS to look at a common framework to ensure consistency across the two

organisations. A key element of the submission under this route is the provision of a portfolio of evidence. The core requirements for this (drawn from the Working Party report) are outlined in the paragraph below.

Evidence must demonstrate current practical application of skills in diagnostic assessment and reporting specific to one or more age ranges. It must include records related to 3 separate diagnostic assessments, demonstrating the ability to assess students/pupils from different learning situations who present different patterns of ability and difficulty.

Evidence will comprise:

- logs related to each assessment showing the ability to plan an assessment, liaise with others as appropriate and choose appropriate assessment materials
- evidence of one hour of an observed assessment session (video/dvd evidence acceptable) and tutor reports on supervised assessments
- diagnostic assessment reports, showing:
 - the ability to present a professional report
 - score tests correctly
 - interpret data from tests used
 - give an overview of students strengths and difficulties
 - suggest relevant learning support
 - supporting documentation for each report such as score sheets, records of observations.

In addition to the kind of evidence outlined above, relating to competence in conducting assessments, evidence of training in specific learning difficulties would also be required.

It is anticipated that processing applications under route 2 will be quite time-consuming at least until the guidance framework has been put in place. Completion of the current CCET course, delivered by Dyslexia Action in partnership with Real Training, would provide the necessary portfolio, but some may feel that this would involve too much duplication from prior learning and experience.

Finally, there is the question of the range of specific learning difficulties that someone with a Practising Certificate is competent to assess. The DfES working group report is useful on this point, including dyspraxia and ADD along with dyslexia in its definition of specific learning difficulties, but cautioning against stepping outside one's area of expertise when providing advice. A more fundamental point is also worth making in relation to specific learning difficulties and to other hidden disabilities that may impact on literacy, numeracy and other learning skills. This is that there is considerable danger in approaching a diagnostician who can only assess for one thing (eg dyslexia). When a client comes for an assessment even if their presenting complaint is

of literacy and related difficulties, a competent assessor must be open to the possibility that this is nothing to do with dyslexia. Therefore a knowledge of the range of specific learning difficulties and of the more general cognitive and emotional factors that can impact on learning and educational achievement is required. This brings me back to my point number one in the summary of assessor competencies. Tests, no matter how sophisticated, are of little use unless they are in the hands of someone who has a deep theoretical knowledge of the skills being assessed and of the factors that impact on those skills. A skilled assessor will use that knowledge to select tests to explore hypotheses that are suggested by a review of the background and history and by observations that are made during testing and in other contexts. The overall conclusion will be an interpretation using all sources of information, resolving inconsistencies as far as possible and suggesting further avenues for enquiry when necessary. Yes, this is a lot to ask of many teachers who do not have a strong background in psychology, but there is now a route open

to enable teachers (and other non-psychologists) to acquire and develop these skills within a secure framework. If this means that more people with dyslexia and related specific learning difficulties can get access to high quality diagnostic assessments, which point the way to appropriate intervention and strategies, then this must be positive step forward.

John Rack

John Rack is Head of Assessment Services and Evaluation at Dyslexia Action.

For an application form for the Practising Certificate please contact Lesley Freedman 020 77309202, guild@dyslexiaaction.org.uk or look on the Dyslexia Action website for details from January 2007. Certificates run for three years from the date of issue and professional indemnity insurance will also be available. www.dyslexiaaction.org.uk

How I feel about Maths

by Julie Kay and Steve Chinn

You are invited to contribute to some research being carried out by Steve Chinn and Julie Kay into the levels of anxiety that arise amongst children and adults when faced with issues that involve maths. Please photocopy the sheets and encourage family, colleagues and children participate. The more people that take part, the more reliable the resulting scores. This survey is intended for the general population and not just amongst the dyslexic population.

*Please send completed forms to:
Steve Chinn, Overlands, Kilve, Bridgwater, Somerset,
TA5 1SQ*

Children's Survey: tester's sheet

Read aloud:

'The twenty items on this sheet are about maths and your feelings when you have to do each one of these things. I would like you to listen to each item and then decide how anxious that situation makes you feel. If it **never** makes you feel anxious write 1 in the space, if it makes you feel anxious **sometimes** write 2, if it makes you feel anxious **often** write 3 and if it **always** makes you feel anxious write 4.'

(Check that they understand what to do).

1. Knowing that the next lesson will be a maths lesson.
2. Being asked to do mental arithmetic during a maths lesson.
3. Having to take a written maths test.
4. Doing word problems.
5. Doing long division questions without a calculator.
6. Doing long division questions with a calculator.
7. Doing long multiplication questions without a calculator.
8. Doing fraction questions.
9. Revising for a maths test that is going to be given the next day.
10. Doing maths homework.
11. Looking at the marks you got for homework.
12. Opening a maths book and looking at the set of questions you have to do.
13. Having to work out answers to maths questions quickly.
14. Trying to learn the times tables facts.
15. Waiting to hear your score on a maths test.
16. Showing your maths report to Mum or Dad.
17. Answering questions the teacher asks you in maths classes.
18. Working out money when you go shopping.
19. Following your teacher's explanation of a new maths topic.
20. Taking an end of term maths exam.

How I feel about maths: Pupil sheet

Name M/F Date

Year Date of Birth

Does the situation make you anxious?

1 never 2 sometimes 3 often 4 always

No	Question	Rating
1	The next lesson	
2	Mental arithmetic	
3	A written maths test	
4	Word problems	
5	Long division questions without a calculator	
6	Long division questions with a calculator	
7	Long multiplication questions without a calculator	
8	Fraction questions	
9	Revising for a maths test	
10	Maths homework	
11	Looking at marks for your homework	
12	Opening a maths book	
13	Working out maths answers quickly	
14	Learning the hard times tables	
15	Hearing your score on a maths test	
16	Showing your maths report	
17	Answering questions in maths classes	
18	Working out money when shopping	
19	Following your teacher s explanation	
20	Taking an end of term maths exam	

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How I feel about Maths: Adult survey

The twenty items below are about maths and your feelings when you have to do each one of these things. I would like you to consider to each item and then decide how anxious that situation makes you feel. If it **never** makes you feel anxious write 1 in the space, if it makes you feel anxious **sometimes** write 2, if it makes you feel anxious **often** write 3 and if it **always** makes you feel anxious write 4.

1 = never anxious 2 = sometimes anxious 3 = often anxious 4 = always anxious

No	Question	Rating
1	Working out the tip for the waiter in a restaurant	
2	Working out the prices of things when you are abroad	
3	Checking the cost of your shopping	
4	Working out 20% off in a sale	
5	Checking your change when shopping	
6	Working out the cost of a holiday	
7	Adding the four price £5.99 + £10.99 + £19.99 + £3.95 on a mail order form	
8	Reading a train timetable	
9	Working out your weekly budget	
10	Checking which mobile phone deal is the best value	
11	Converting your weight in stones to kilograms	
12	Having to recall a maths fact quickly (such as 6 x 9)	
13	Understanding the odds for a bet on the Grand National	
14	Writing a cheque	
15	Checking the VAT amount on a Builder s bill	
16	Working out your pay rise when you are told it will be 3.25%	
17	Checking your credit card bill	
18	Working out how much weedkiller you need to use in a 5 litre sprayer	
19	Changing the quantities in a recipe for 4 when cooking for six people	
20	Remembering your maths lessons at school	

Male/female

Age band 20-29 30-39 40-49 50-59 60-69 70+ (please circle)

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Dyslexia Review Editorial Committee

We say goodbye to **Martin Turner** as a member of the editorial committee and thank him for his advice and support over the years. His article in this issue, *The athlete and the triage nurse* remind us very clearly of his skills in analysis and the power of his writing. We hope also that this is not the last article Dyslexia Review publishes with his name on it!

We say goodbye also to **Jan Townend** on her retirement from Dyslexia Action. As many of you will remember Jan was editor of Dyslexia Review from 1994 to 2000 and kindly stepped in again in 2002 when I had extended leave of absence. She maintained her strong ties with Dyslexia Review as a member of the Editorial Committee and has always been supportive and helpful. I am pleased to announce that Jan has been made an honorary member of the Dyslexia Guild as a small token of our thanks for her contribution to the Guild and Dyslexia Review.

We are however pleased to welcome two new members of the committee: Steve Chinn who is a regular contributor to Dyslexia Review including in this issue, and Anne Sheddick who is Dyslexia Action's new Head of Training.

Steve Chinn, BSc, PhD, Dip ED Man, AMBDA



Steve taught for 40 years, in mainstream schools where he taught chemistry and physics, at Leeds University as a post-grad, and in Special Education. He was Head of three special schools for dyslexic students, including one year as visiting Head of Chautauqua Academy in Baltimore, USA. He founded and for nineteen years ran Mark College, Somerset, UK. Mark which received several awards, including the Sportsmark (with distinction), the Dept of Education 'Highly Effective School' certificate, DfES Beacon School status, the Independent Schools' Association's Award for Excellence and a National Training Award.

Steve has written several books based on his classroom research, including 'The Trouble with Maths' which won the NASEN/TES 'Book for Learning and Teaching' award in 2004. The third edition of his first book 'Mathematics

for Dyslexics' was published in October 2006 by Wiley. He has also designed and published a CD-Rom What to do when you can't learn the Times Tables which explores alternative (and mathematical) methods for accessing these key facts.

Steve has run three training courses 'Focus on Inclusion' for European teachers with colleagues from Ireland and Holland and Mark College colleague, Julie Kay. Steve and Julie designed and delivered the first (and still the only) AMBDA (Numeracy) course. They have delivered a shortened version of this course for LAs and in Switzerland, India and Hong Kong. Steve has lectured in some 20 countries worldwide.

Steve was Chair of the 3rd International Conference of the British Dyslexia Association. Steve was a co-founder and then Chair of CReSTeD - the Council for the Registration of Schools Teaching Dyslexic Pupils.

Anne Sheddick BSc, MSc, FICPD, FRSA



Anne's career working for people with dyslexia began in 1970s by giving special support to students at Kingsway/Princeton College in London and then for Open University students as an Associate Lecturer in Social Science and Management until 2005. During the 1980s she taught in a special unit for Dyslexic pupils in a secondary school and also undertook doctoral research over several years investigating whether children at risk of reading failure could be identified pre-school and if so what teaching strategies should then be followed for the teaching of reading in primary schools for the 'at risk' pupils.

Anne joins Dyslexia Action as Head of Training from the University of Oxford where she was Manager of the CPD Centre. While at Oxford she was responsible for managing a unit which delivered part-time Postgraduate degree programmes and short courses which the University of Oxford offer, in partnership with Departments and Research groups across the University, to a range of professionals from around the world working in specialist, mainly medical and scientific fields.

Book Reviews

Dyslexia - How to Survive and Succeed at Work (2006)

by Dr Sylvia Moody

Publisher: Vermillion Press

ISBN: 0091 90708X

Price: £8.99 198 pages

Dyslexia - How to Survive and Succeed at Work is a useful addition to the range of practical guides produced by Dr Moody. Here the focus is the workplace, an area neglected in comparison with the awareness and support now available in the educational sphere.

Dr Moody speaks directly to the dyslexic or dyspraxic individual, advising him/her on how to get an assessment and what this should comprise. Typical areas of strength and weakness are linked to workplace situations. Case studies flesh out the various aspects of being a dyslexic / dyspraxic employee and snapshots present solutions to everyday problems at work.

The bulk of the book is a comprehensive exploration of ways to improve skills in key areas, namely: organisation, reading, speaking & listening (with special reference to job interviews) and writing. The emotional aspects of dyslexia and dyspraxia are not neglected; two important areas - combating stress and gaining confidence - are addressed in some detail. Relationships with partners, colleagues and employers are also covered.

It is much easier for employees with dyslexia or dyspraxia to reach their potential if employers are on board. Dr Moody dedicates one chapter to the employer and another to disability legislation affecting the workplace.

Practical features of this publication include checklists for everyday and workplace difficulties, together with one for visual processing problems and a relaxation exercise. It is written in an accessible informal style with well spaced text printed on off-white paper (to minimise Visual Discomfort / Meares Irlen Syndrome). The book concludes with an informative section on ICT resources, useful organisations and suggestions for further reading.

Melanie Jameson

Melanie Jameson is a dyslexia consultant.

Email: dyslexia.mj@dsl.pipex.com

Primary Spelling Dictionary

by Christine Maxwell & Julia Rowlandson

Publisher: Barrington Stoke 2006

ISBN: 1842994018

Price: £10.99

The dyslexic pupils of secondary as well as primary age have been awaiting a dyslexic-friendly dictionary which can translate their individual spellings into the conventional ('dide' = died, 'polees' = police, 'gratest' = greatest). This is a special edition of the Dictionary of Perfect Spelling with fewer headwords and a simpler accessible layout for the Primary user.

It has the title of Primary, but I feel sure that even dyslexic students at university will bless its existence with words like nimf (nymph), barekaid (barricade) and trudj (trudge). If the student is in doubt regarding homophones, the possible alternatives are all given (eg. threw [ball], through [go through]). Equally helpful are the word endings all provided [come (coming came)]. Bonuses in the preface are Some Useful English Spelling Rules and Ways to Learn Spellings. The Check out speech-bubbles eliminate some other pitfalls (among 'k' words we are also advised to try 'ch' and 'qu'). With the alphabet at the top of each page and the page number highlighted at the bottom the authors have left nothing to chance. Every school, every dyslexic family, every library and every teacher training course should have a copy. Thank you Barrington Stoke for providing an answer to prayer!

Brother Matthew Sasse

Brother Matthew Sasse MA (Oxon), Dipl SpLD (Staines) is a Dyslexia Consultant and BDA Helpline

Dyslexia Action Directory

Bath	01225 420554
Bolton	01204 395500
Bristol	0117 923 9166
Chelmsford	01245 259656
Coventry	02476 257041
Darlington	01325 283580
Derby	01332 365359
Egham	01784 222325
Harrogate	01423 522111
Hull	01482 329416
Leeds	0113 288 8144
	0113 288 8155
Leicester	01162 511525
Lincoln	01522 539267
Liverpool	0151 428 6987
London	0207 730 8890
Newcastle Upon Tyne	0191 281 8381
Nottingham	0115 948 3849
Peterborough	01733 234956
Sheffield	0114 281 5905
Stone	01785 818783
Sutton Coldfield	0121 354 6855
Tonbridge	01732 352762
Wilmslow	01625 530158
Winchester	01962 856195
York	01904 432930
Scotland	
Glasgow	0141 334 4549
Wales	
Cardiff	02920 481122
National Training Office	
Egham	01784 222344

The Dyslexia Guild 2 Grosvenor Gardens, London SW1W 0DH
T 020 7730 9202 E guild@dyslexiaaction.org.uk

Dyslexia Action Park House, Wick Road, Egham, Surrey TW20 0HH
T 01784 222300 F 01784 222333 E info@dyslexiaaction.org.uk www.dyslexiaaction.org.uk
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