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Julie Sutton

Hills Adventist College, j.sutton@hills.adventist.edu.au

Marion Shields

Avondale College, marion.shields@avondale.edu.au

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Dyslexia: 10 strategies

Julie Sutton

Learning Support Coordinator, Hills Adventist College, Kellyville, NSW
and Master of Education—Special Education student, Avondale College of Higher Education, Cooranbong, NSW

Marion Shields

Senior Lecturer, Discipline of Education, Avondale College of Higher Education, Cooranbong, NSW

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Abstract

Dyslexia once thought of as a hidden learning difficulty is now exposed, due to MRI technology, as a specific learning disability. Dyslexia has a neurological basis that transverses all languages and cultures. Early identification of possible at risk students ought to occur so that immediate intervention strategies can be implemented. Schools also need to ensure that reading instruction includes all elements of ‘The Big 6 of Reading’ and these elements are taught using an explicit direct multisensory methodology. As dyslexia has an impact on all areas of the student’s education; early intervention including adjustment to student tasks and assessments needs to occur to ensure that the student develops an understanding of dyslexia; their personal strengths and weaknesses; and strategies for successful achievement, thus enabling the student to build a positive self-esteem.

Defining Dyslexia

Numerous definitions for dyslexia abound with the majority of the definitions centring on the comparison of students’ differences between their reading ability and their overall linguistic and cognitive abilities (Zaretsky & Velleman, 2011). Further definitions broaden the criteria of dyslexia to include the persistent difficulty to attain correct and fluent word recognition skills regardless of average intelligence, functioning receptive senses and access to adequate academic instruction (Lyon, Shaywitz & Shaywitz, 2003). The International Dyslexia Association (IDA, 2002, para. 1) adds further clarity with its widely accepted and often adopted definition of dyslexia that states:

Dyslexia is a specific learning disability that is neurological 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 the growth of vocabulary and background knowledge.

In the modern era, the use of Magnetic Resonance Imaging (MRI) has clearly demonstrated that, dyslexia, once thought of as “a hidden disability” (Swanson, Harris & Graham, 2013, p. 654) is now visible; and when comparing dyslexic and non-dyslexic students, there exists a difference in the neural functioning in the brain; and this neural variance transverses all languages and cultures (Lyon et al., 2003; Mather & Wendling, 2012). Students with dyslexia display specific learning difficulties with the phonological elements of language and this is evidenced in any activity that involves the pairing of the orthography symbol sequences to the corresponding phonemes, such as decoding real and nonsense words, reading fluently and spelling (Lyon et al., 2003). These language difficulties lead to a student’s reduced reading experience and consequential adversities in reading comprehension, vocabulary and the development of deeper background knowledge.

Dyslexia occurs on a continuum with students differing in the severity of difficulties. Often students with dyslexia will present with comorbid deficits in other academic and cognitive areas. Various research findings identify the prevalence of dyslexia ranging from three to as high as twenty per cent of the population (Castles, Wheldall & Nayton, 2014, para. 8). In Australia, it is projected that ten per cent of the population has dyslexia (Australian Dyslexia Association [ADA], 2014, para. 1).

“*Various research findings identify the prevalence of dyslexia ranging from three to as high as twenty per cent of the population.*”

History of Australian Government Legislation involving Dyslexia

In Australia, Dyslexia is recognised under an act (the Disability Discrimination Act [DDA], 1992, item f.) which describes, in part, “a disorder or malfunction that results in the person learning differently from a person without the disorder or malfunction.”

Further, The Disability Standards for Education 2005 (Commonwealth of Australia, 2015a) claim to “seek to ensure that students with disability can access and participate in education on the same basis as other students” (Commonwealth of Australia, 2015b, para. 1). In 2007, in NSW, the Educational Support for Dyslexia Children Bill (Parliament of New South Wales, 2007, para. 2) required that “dyslexia be included within the Government’s disability criteria when providing special or additional assistance” to students. A Review to The Disability Standards for Education in 2012 (Australian Government, 2012) recommended that dyslexia be specifically listed as a learning disability. In 2014, as part of the Students First Education reforms, The Policy Roundtable on Students with Dyslexia (Department of Education and Training [DET], 2014) reiterated the importance that students with dyslexia be supported with in-class and whole school strategies to enable them to fulfil their potential, and that dyslexia be included in the 2015 Nationally Consistent Collection of Data on School Students with Disability (DET, 2015). Currently, NSW is the only state that formally recognises dyslexia as a learning disability under the state’s Education Act.

Learning behaviours related to Dyslexia

Students with dyslexia all exhibit a shared commonality of core indicators that include difficulty with phonological processing in decoding (reading) and encoding (spelling) activities (IDA, 2015) simultaneously exhibiting strengths in areas such as creative thinking, reasoning, problem solving, conceptual abilities, comprehending, 3-D construction, seeing the big picture (Shaywitz, 2005) and can also display giftedness in areas that don’t require strong literacy skills (Karten, 2015).

A vast variation of difficulties can be demonstrated amid students and it must be remembered that not all students who display difficulties with reading or spelling will have dyslexia. Additional core characteristics or behaviours that can indicate the possibility of dyslexia are:

- inconsistent performance on a day-to-day basis
- poor recall of prior learning in reading and spelling
- unexpected inverse correlation between effort and output

- difficulty with word storage, sequencing, handwriting and co-ordination
- taking longer to process information
- poor performance in timed tasks
- having strong mathematical skills, but has difficulty memorising number facts

(Adapted from Ministry of Education New Zealand [MENZ], 2008a,b)

Age-Related Indicators of Dyslexia

Additional characteristics that correlate with the presence of dyslexia can be associated with a student’s academic progression from Prep to Senior School. As a student progresses from one stage to the next, educators are reminded that characteristics need not be confined to any one stage. Furthermore, it is imperative that educators be mindful that students with dyslexia are working considerably harder than non-dyslexic students and are susceptible to frustration and fatigue. Table 1 outlines age-related characteristics that can indicate the prevalence of dyslexia.

Assessment Instruments for Early Primary
Early identification for dyslexia are vital so that immediate intervention can occur. All too often in the school environment, there is a ‘wait to fail’ philosophy for reading and spelling skills. Due to limited resources and the unpreparedness of teachers, students are left to fail before intervention measures are instigated. Regardless that dyslexia is a lifetime difficulty and that specific adjustments may continually be required, the prospect is positive for students “who receive, intensive, systematic interventions” (Mather & Wendling, 2012, p. 14), therefore schools need to be proactive and implement early screening for all students.

From the beginning of a student’s academic career, family history of reading and spelling achievement and the child’s early speech acquisition development details need to be collated. If a parent or sibling has a history of dyslexia or reading difficulties, there is a 25-50% possibility that the student will also manifest these difficulties. Furthermore, Shaywitz (2005) points out that the early acquisition of speech in young children is ‘the most important clue to a potential reading problem’ (p. 94). Other early screening considerations include hearing and vision concerns to eliminate any physical causes (Mather & Wendling (2012).

Rapid Automated Naming (RAN) skills have a strong correlation to positive reading acquisition and have been successfully utilised as early identification instruments for students with dyslexia and other reading difficulties (Brookes, Ng, Hong

“The prospect is positive for students “who receive, intensive, systematic interventions” ... therefore schools need to be proactive and implement early screening for all students.”

Table 1: Age-Related indicators of dyslexia (adapted from Dyslexia Foundation of New Zealand [DFNZ], 2015; MENZ, 2008)

Prep Developing Oral Language	Junior School Learning to Read	Middle School Reading for Learning	Senior School Analysing and Synthesising
<p>Difficulty with:</p> <ul style="list-style-type: none"> • speech • learning rhyming words • naming people and objects • remembering- <ul style="list-style-type: none"> • letters in name • nursery rhymes • following instructions • getting dressed • jumbled phrases • substitution of words • listening and paying attention <p>Dislikes:</p> <ul style="list-style-type: none"> • jigsaws • drawing <p>Enjoys reading but shows no interest in letters</p>	<p>Years 1 & 2</p> <p>Difficulty with:</p> <ul style="list-style-type: none"> • separating words into phonemes • letter-sound correspondences • remembering sight words • sounding syllables • spelling simple words • pencil grip • concentration on reading tasks • reading left to right • short term memory <p>Relies on picture cues</p> <p>Doesn't like reading</p> <p>Avoids reading</p> <p>Complains reading is hard</p> <p>Years 3 & 4</p> <p>Difficulty with:</p> <ul style="list-style-type: none"> • pronouncing long words • grammar • spelling rules • fluent oral language • using proper names, uses "stuff" or "things" • story sequencing • remembering dates, phone number, names • word attack skills • leaves out words • completing written work • compound words • self-esteem • concentration • handwriting 	<p>Difficulty with:</p> <ul style="list-style-type: none"> • reading and spelling multisyllabic words • word structures • sight words • reading comprehension • vocabulary • spelling • reading fluently • oral reading lacks inflection • punctuation in reading • following instructions • written timed tests • finding words in dictionary <p>Avoids reading</p> <p>Does better on oral exams</p> <p>Lacks confidence</p>	<p>Difficulty with:</p> <ul style="list-style-type: none"> • automatic word identification • reading speed • spelling and written tasks • note taking • organising and completing assignments • timed tasks • processing information • written instructions <p>Prefers:</p> <ul style="list-style-type: none"> • conversation to email • practical tasks <p>Poor confidence and self-esteem</p> <p>Has areas of particular strength</p>

(adapted from Dyslexia Foundation of New Zealand [DFNZ], 2015; MENZ, 2008)

“RAN screening is beneficial due to its speed, ease-of-use and its ability to be utilised with Prep and Kindy students, thus allowing for early identification and ... intervention”

Lim, Tan, & Lukitoet, 2011; Wolf & Denckia, 2005). RAN involves the student's ability to quickly identify recognisable visuals, such as numerals, letters, colours and objects. These identification activities involve a combination of phonological, orthographic and processing tasks which represent a similar microcosm of cognitive tasks “that are involved in reading development” (Swanson, Harris & Graham 2013, p. 180). RAN screening is beneficial due to its speed, ease-of-use and its ability to be utilised with Prep and Kindy students, thus allowing for early identification and early intervention (See Appendix 1. RAN sample assessment).

Before the completion of grade one, students

should be screened in skills that are foundations to reading development, including general phonological and specific phonemic awareness assessments that test sound comparisons, segmentations and blending (Shaywitz, 2005). The ‘Ants in the Apple’ program (Meeks & Easson, 2014) has an initial assessment that screens for phonemic awareness, reading and spelling skills. From grade two, assessments of word reading, decoding and spelling should be completed (IDA, 2015). Assessment instruments, including ACER Progressive Achievement Tests (PAT) Reading (Australian Council for Educational Research, 2015) that measures reading comprehension, word knowledge

and spelling; and Making Up for Lost Time in Literacy (MultiLit) (Wheldall, Wheldall & Rothwell, 2015) that screens for sight words and phonological awareness, including the decoding of nonsense words. A student's ability to decode "nonsense words is the best measure of phonological decoding skill in children" (Shaywitz, 2005, p. 133). Teachers also need to attend to the skills of word decoding, intonation and fluency demonstrated during oral reading tasks. For a student who is of average ability, a "laboured oral reading can be a sign of dyslexia" (Shaywitz, 2005, p. 134). Dynamic Indicators of Basic Early Literacy Skills (DIBELS) (<https://dibels.uoregon.edu/>), can be utilised to screen oral reading skills in students.

“Students who have an early identification of dyslexia are able to integrate this concept into their identity and have a reduced likelihood of developing a low self-esteem and the belief that they are lazy or stupid.”

Relevant teaching strategies for students with dyslexia

As dyslexia is not associated with deficiency in cognitive capability, it can be reasoned that students with dyslexia would be highly receptive to suitable intervention such as intensive training to improve reading skills (Waldie, Austin, Hattie & Fairbrass, 2014). The benefits of early identification and intervention are numerous. Students who have an early identification of dyslexia are able to integrate this concept into their identity and have a reduced likelihood of developing a low self-esteem and the belief that they are lazy or stupid. Identification also allows for informed and immediate interventions and accommodations that minimise the impact on the student's learning and decrease the gap between the student's age and their reading ability (Armstrong & Squires, 2012).

Teaching practice accommodations

It is essential that teachers be skilled in the process of identifying students that are experiencing reading difficulties and the strategies that need to be implemented to counteract these difficulties. Teachers need to have an in-depth knowledge in the basic concepts of language and be able to impart this knowledge in a multisensory explicit and structured program that is "positively associated with student reading achievement" (Washburn & Mulcahy, 2014, p. 329). Currently many teachers are unprepared to identify language problems and are not equipped with the necessary strategies and/or resources to adequately address these learning needs (Moats & Lyon, 1996). This is further evidenced by reports from students with dyslexia that teachers often lacked understanding of their learning needs (Long, MacBlain & MacBlain, 2007). It is vital that schools ensure that teachers are adequately prepared and appropriate resources are available to cater for students with dyslexia. As part

of this process a whole school approach needs to be adopted that implements evidence based strategies.

STRATEGY ONE – Explicit direct instruction in phonological and phonemic skills

The (second) major recommendation of the National Inquiry into the Teaching of Literacy (Rowe & National Inquiry into the Teaching of Literacy, 2005, p. 14) was that "teachers provide systematic, direct and explicit phonics instruction so that children master the essential alphabetic code-breaking skills." To increase the effectiveness of the instruction, a multisensory instructional methodology needs to be adopted that includes visual, auditory and kinaesthetic strategies (Wadlington, 2000). The intervention also needs to include the elements of 'The Big 6 of Reading': oral language, phonological awareness, phonics, vocabulary, fluency and comprehension (Konza, 2010; Moore & Hammond, 2010).

These strategies are appropriate in the early years of school when students are learning the skill of reading. Schools need to ensure that their reading programs incorporate explicit phonemic and phonological skills. Schools can utilise programs such as *Letter and Sounds* (Department for Children, Schools and Families, 2008), the *Reading Doctor* (2016), *Cracking the ABC Code* (Fawcett, n.d.), *Spelfabet* (Clarke, n.d.) and *Jolly Phonics* (Jolly Learning, n.d.) that provide the necessary explicit phonics instruction to enable students to develop segmenting, phoneme blending and letter-sound correspondence. For older students, intervention in phonological awareness can be implemented using MultiLit (Wheldall et al., 2015), where students require additional instruction with sight words, vocabulary development, reading comprehension and numerous practice opportunities to develop reading fluency. Students with dyslexia require extensive practice sessions to develop the overlearning of skills required to develop automaticity that leads to reading fluency. Shaywitz (2005) recommends, that to develop fluency, once students can decode a passage of text, that practice should include the student rereading the same passage out loud at least four times.

STRATEGY TWO – Worksheets for students with dyslexia

Recent studies have been investigating the impact that font style has on the ease of reading for students. Use of a three-dimensional font has shown improvement in the reading scores for students with dyslexia of 10 to 25 percent (Zascavage, McKenzie, Buot, Woods & Orton-Gillingham, 2012). The use of a disfluent (hard to read) font leads to better recall

due to the deeper processing needed. Students with dyslexia also benefited greatly “in retention and recall when presented with information in a disfluent font” (French, Blood, Bright, Futak & Grohmann, 2013, p. 301). Alternatively, students can identify their preference amongst the dyslexia friendly fonts of Comic Sans, Century Gothic, Times Roman and Dyslexie (Reid & Green, 2014). Dyslexie, a ‘purposely created’ font for students with dyslexia, has altered shapes of letters (Troeva, 2015) and aids with reading speed and accuracy (van de Vrugt & Ossen, 2012). Other worksheet considerations that facilitate effortless navigation include larger font size; use of visual aids; uncrowded well-spaced-out format (MacCullagh, 2014); using left justification; avoiding using italics, capitals and underlining, and the use of bold type to emphasise (Davies, 2014). These strategies are appropriate for inclusion due to the low cost and ease of implementation (See Appendix 2. Worksheet Checklist for Teachers).

Classroom expectations, materials and other accommodations

The classroom is a microcosm of inter-related forces that impact learning including factors of homework expectations, resources used, student recording, physical environment, time constraints and stressors. Small accommodations in these forces can have a positive impact on learning for students with dyslexia (DFNZ, 2015). The following strategies address these

STRATEGY THREE – Homework

Homework needs to be personalised and differentiated and consist of simple and clear instructions. Homework tasks ought to be time-driven not task-driven, provide alternatives to writing tasks, relate to prior knowledge (DFNZ, 2015), and be provided in the appropriate printed form (Reid & Green, 2014). Structured, clear and easy-to-complete homework tasks encourage the student to engage with the content and lessen homework stress.

STRATEGY FOUR – Classroom resources

Resources used by both the teacher and student should utilize colour coding, clear labels and use familiar and consistent layout. Students with dyslexia report that their greatest difficulty is taking notes by dictation and copying off the board (Long, MacBlain, & MacBlain, 2007). Therefore, student recording should involve minimal copying from the board and printed copies of teacher notes and PowerPoint presentations should be provided (DFNZ, 2015). This ensures that students are free from the mechanical task of copying, allowing more time for

the student to engage with the content and can aid completion of alternative tasks of highlighting key words and identifying main ideas (Reid & Green, 2014). Additionally, the creation of both personal dictionaries to store subject-specific vocabulary and visual summaries for each subject have also proven beneficial (Long et al., 2007; Reid & Green, 2014).

STRATEGY FIVE – Classroom learning environment

Teachers need to be mindful of the classroom environment and its impact on students. Students with dyslexia may experience difficulties with looking, listening, concentrating, sitting still, locating equipment and writing (Reid & Green, 2014). Time spent in ensuring the classroom environment is ‘dyslexia friendly’ will assist students in their learning. Considerations include: lighting, seating proximity to the board and teacher (DFNZ, 2015), control of background noise, visual labels, neat and clearly labelled equipment, and large well-spaced wall displays (Reid & Green, 2014).

STRATEGY SIX – Time constraints

Due to the neurobiological evidence that demonstrates that students with dyslexia require additional time to process reading tasks, students should be provided with personally appropriate additional time in test situations (Mather & Wendling, 2012; Reid & Green, 2014; Karten, 2015). Other time concerns include providing shorter achievable tasks and being flexible with assignment deadlines (DFNZ, 2015). Further, students with dyslexia report that their second greatest difficulty is to concentrate for long periods (Long et al., 2007), therefore, students need to utilise ‘brain breaks’ where opportunities to move about and stretch are provided to assist in maintaining concentration and focus levels (Reid & Green, 2014).

STRATEGY SEVEN – Reducing the stressors

Lowering the stress in the classroom can be accomplished by having a culture of mistake-making-leads-to-learning, providing adequate time for thinking, not asking the student to read aloud (Long et al., 2007), and a marking focus on content not spelling errors (DFNZ, 2015). These simple strategies are easy to implement but have a considerable impact on reducing student stress levels.

STRATEGY EIGHT – Provision of teacher mentors

Students with dyslexia should be aligned with an empathic teacher mentor, preferably a teacher that has a sound knowledge of dyslexia and/or a teacher that has dyslexia themselves. The student and the mentor meet briefly twice a week to discuss topics

“*Lowering the stress in the classroom can be accomplished by having a culture of mistake-making-leads-to-learning.*”

including: immediate concerns, forward planning and self-evaluation. The mentor also acts as an advocate for the student with other teachers and encourages the student to take responsibility for their learning (Long et al., 2007). This strategy is appropriate as the teacher mentors would assist students to keep pace with school tasks and be able to immediately intercept any difficulties.

STRATEGY NINE – Assistive Technology

Assistive Technology (AT) enables students with dyslexia to have fair and equitable access to print. This can help overcome difficulties with the reading of, and the production of, text and allows students to bypass these difficulties and demonstrate their strengths in higher-order concept development and analysis. Technologies, like Dragon Voice Recognition (<http://www.nuance.com>), aid the student to transcribe their thoughts via speech-to-text capabilities, bypassing difficulties in spelling and handwriting, thus enabling the student to produce higher quality text (Swanson, Harris & Graham, 2013). Other technologies, such as Natural Reader (<http://www.naturalreaders.com>), facilitate access to text by converting written text to spoken words, bypassing difficulties in reading, and allowing students to access content that leads to the development of deeper understanding. Additional technologies, such as BookShare (<http://www.bookshare.org>), offer an expanding number of accessible books and periodicals for students with print disabilities, such as dyslexia. Currently in Australia, there are 166 000 books available for an affordable yearly subscription. The E-ssential Guide to Assistive Technology (Schwab Learning, 2008) and the 'Wheel of Apps' (McNeill, 2015; Wilson, 2015) provide support for parents in the identification of suitable AT for their child (See Appendix 3 and Appendix 4).

STRATEGY TEN – Building reliance and self-esteem

Dyslexia impacts on more than just the education of a student; it also has ramifications on the social and emotional well-being of the student. The extent of the impact is affected by the environment, early diagnosis and intervention implementation (Mather & Wendling, 2012). Early diagnosis correlates to an increase in the positive understanding and tolerance for both the student and their peers (Armstrong & Squires, 2012). Often intervention models for dyslexia incorporate mechanical strategies of multisensory phonemic awareness programs but fail to address the needs of the whole child (Long et al., 2007). Students with dyslexia carry emotional scars of frustration and defeat from constant failure

with activities that involve reading and writing tasks. Teachers need to assist students to build positive self-esteem by reflecting on their strengths (Karten, 2015), developing peer support systems, and acting as advocates when the need arises (Armstrong & Squires, 2012).

As dyslexia is a life-long difficulty and “is often resistant to improvement despite dedicated literacy and numeracy teaching interventions” (Firth, Frydenberg, Steeg & Bond, 2013, p.117), teaching needs to also focus on developing students’ adaptive coping skills. Instruction in three main areas: defying self-defeating thoughts, knowledge and consolidation of coping strategies, and identifying needs and seeking appropriate support, should begin as early as possible. Websites such as Beating Dyslexia (<http://www.beatingdyslexia.com/>) have these and additional strategies on developing self-help skills.

Conclusion

Dyslexia is a specific learning disability that has a neurological origin that negatively affects the student’s ability in reading and writing activities (IDA, 2002). This leads to additional difficulties with comprehension, access to content and a reduced reading experience. These difficulties precede student failure and lead to feelings of inadequacy and low self-esteem. Schools need to develop policies and procedures that enable early identification and intervention to occur. Teachers need to have an in-depth knowledge of dyslexia and be skilled in the processes for early identification and have access to strategies and resources for successful evidence based intervention.

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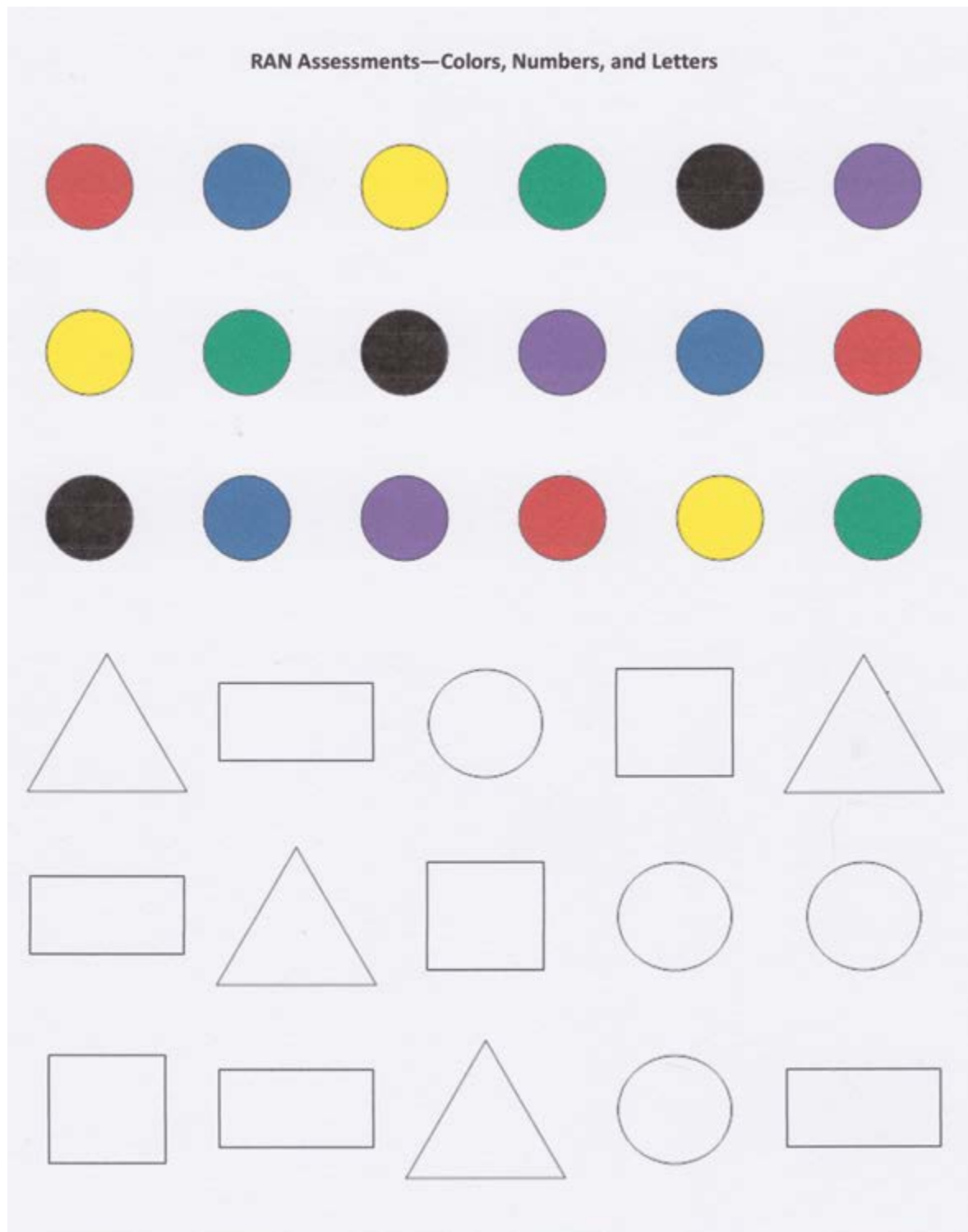
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Appendix 1

Sample Assessments for RAN

Retrieved from: <http://d3tt741pwxqwm0.cloudfront.net/Nashville-TN-PBS/fluency-k-1/files/fluency-sample-assessments-ran-andras.pdf>



Appendix 2

Taken from: Reid & Green, 2014, p. 19.

Worksheet Checklist for Teachers

- Have small steps been used?
- Are the sentences short?
- Is the vocabulary easy to understand?
- Have visuals been used?
- Has large print been used?
- Is the font style appropriate?

Dyslexic friendly fonts: Comic Sans, Century Gothic, Times New Roman, Dyslexie

- Do you prefer to read in this font? (Times New Roman)
- Do you prefer to read in this font? (Comic Sans)
- Do you prefer to read in this font? (Century Gothic)
- Has enough attention been given to presentation?
 - Space out the information, do not crowd the page.
 - Use of indents for headings, subheadings
 - Use of bold font or highlighting and/or keypoints
- Are there opportunities for self-monitoring and self-correction?
 - Task broken down into smaller steps
 - Self-assessment student checklist given? (see below)
- Are the tasks within the pupil's comfort zone?

Student Self-Assessment Checklist

Taken from: Reid & Green, 2014, p. 6.

Start of Task

- What is my goal?
- What do I want to accomplish?
- What do I need to know before starting?
- What resources do I need?
- What is my deadline?

Midway through Task

- How am I going?
- Do I need other resources to complete task?
- What else can I do to finish the task?

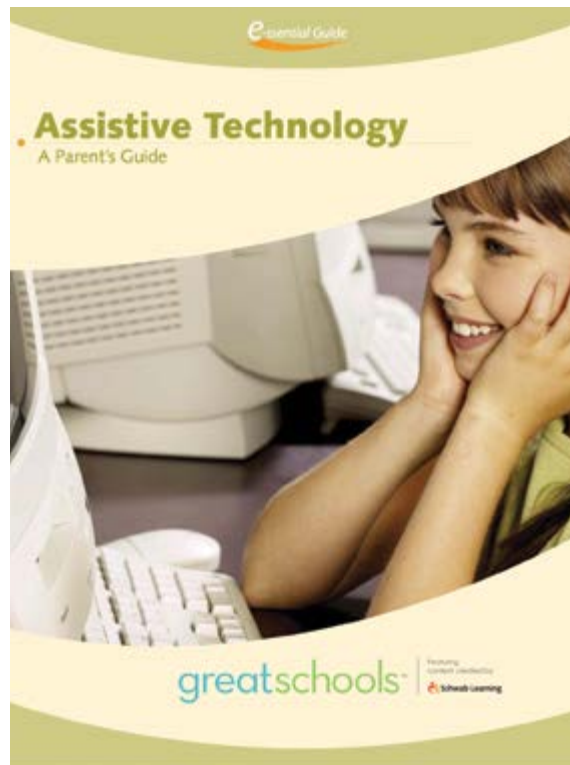
End of Task

- Did I accomplish my goal?
- Was I efficient?
- What worked?
- What did not work?
- Why did it not work?
- What strategies can I use next time?

Appendix 3

The E-ssential Guide to Assistive Technology is an e-book available from

http://www.disabilityrightsca.org/pubs/Assistive_Technology_Parents_Guide.pdf



Appendix 4

The Wheel of Apps.

'The wheel of apps' is a graphical representation of some of the applications suitable for assisting students with dyslexia and available from –

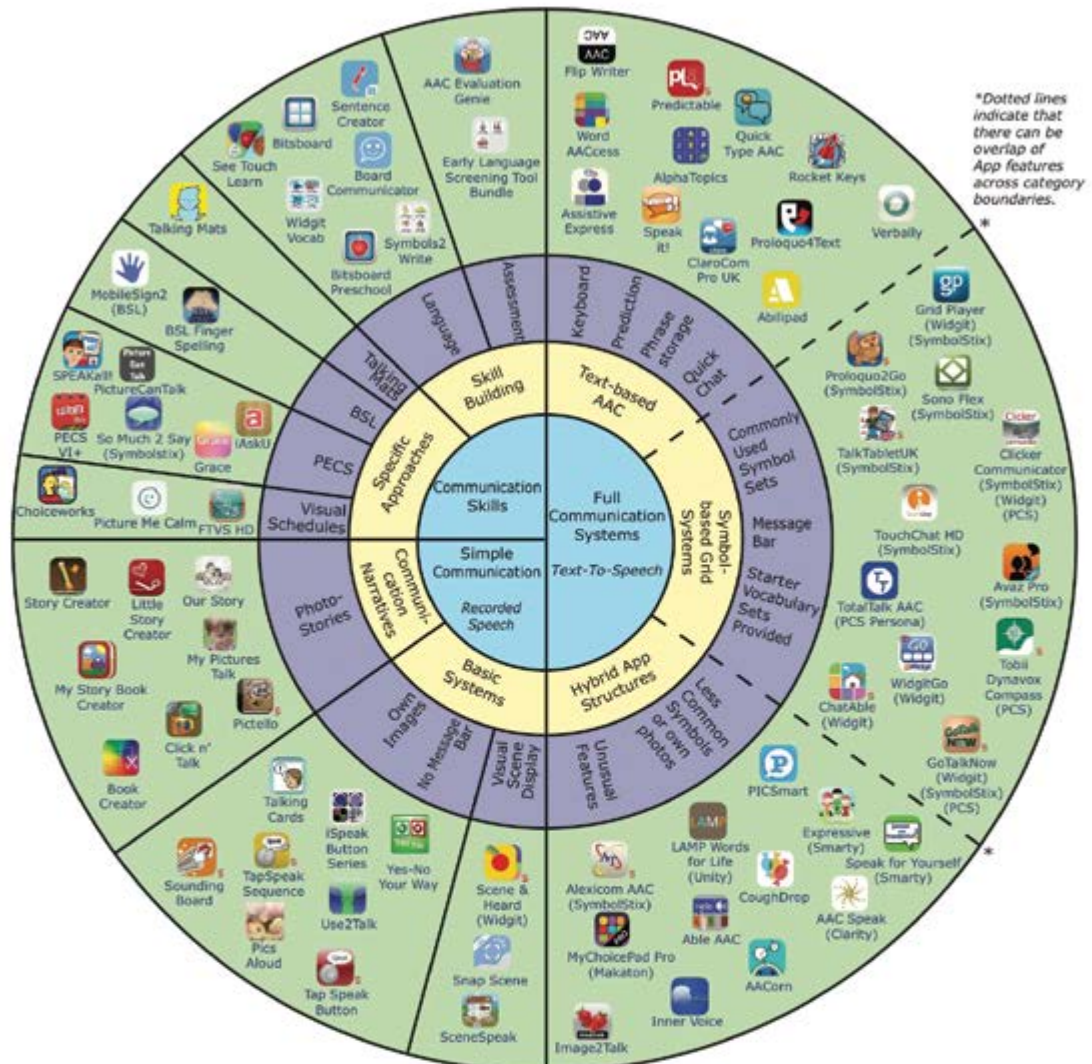
- for iPads <http://www.callscotland.org.uk/downloads/posters-and-leaflets/ipad-apps-for-complex-communication-support-needs/>
- and Androids <http://www.callscotland.org.uk/common-assets/cm-files/posters/android-apps-for-learners-with-dyslexia.pdf>

Appendix 4

Wheel of Apps. (continued)

Source: <http://www.callscotland.org.uk/common-assets/cm-files/posters/ipad-apps-for-complex-communication-support-needs.pdf>

iPad Apps for Complex Communication Support Needs: Augmentative and Alternative Communication (AAC)



Identifying Suitable Apps
 This wheel does not include every App available in each category. There are hundreds of AAC Apps and many hundreds of combinations of features. This wheel includes Apps that CALL Scotland broadly finds reliable and useful and/or that stand out in their category.
 For a useful, comprehensive and regularly updated listing of AAC Apps, see www.janefarrall.com

Printing Visual Supports - Tools 2 Talk+
 Printing of communication pages is possible from any AAC App through the screen capture option (Home + Sleep/Wake button) then print or email to PC. Tools 2 Talk+ however, is a simple to use App for producing picture/symbol communication resources for printing out (they can also be used on the iPad with voice output). Templates are provided and Boardmaker PCS, COMPIC symbols or photos/images can be used.



Switch Access
 Relatively few Apps are designed specifically for switch access. They tend to be the ones that offer the widest range of scan options and may be the 'safest' choice for switch users. These are marked in this wheel with a small red 's' (beside the App icon).
 From iOS7 and above, Accessibility settings built-in to the iPad mean that almost any App (and the iPad itself, desktop, and functions) can be operated by external switches (or by using the screen as a switch). But be careful! A few do not work at all - or not well - with iOS switch control. Always check before buying - perhaps via a specialist centre such as CALL Scotland - whether it actually works or not!

Downloadable Version
 An electronic version of this chart can be downloaded from <http://www.callscotland.org.uk/downloads/posters-and-leaflets>. In the electronic version, App names are 'clickable' links, taking you to information about the individual App on the iTunes site for the UK.