

Bulletin



**Special Issue:
Reading Fluency**

LDA Council 2019-20

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LDA MISSION

Learning Difficulties Australia is an association of teachers and other professionals dedicated to assisting students with learning difficulties through effective teaching practices based on scientific research, both in the classroom and through individualised instruction.

THE BULLETIN

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From the President

Lorraine Hammond

In recent times, I have noticed the word ‘professionals’ uttered more frequently from the mouths of politicians and journalists to describe teachers. If the pandemic we currently find ourselves in the midst of has changed anything, it’s the perceptions of parents and the wider community for what teachers do.

I am a teacher, and like many of you, I took up the challenge of full-time work as an academic and that of a first-time home-schooling parent towards the end of Term 1. The first thing that I realised was that there weren’t enough hours in the day to do both roles well and second, I began wondering how quickly parents would find a vaccine for the virus if we all had to keep home-schooling any longer.

Fortunately, the persuasive essay my son had to write was within my remit and I dusted off my school-girl French to help him write and learn a speech, but maths proved a worthy opponent. My son isn’t keen on maths, so the PowerPoints supplied by the school were optimistic at best. The material was new and without the precursor skills and knowledge, it was all very difficult to understand. Any help that I offered was resolutely rejected on grounds that “we don’t do it that way anymore.”

It was at this point that I read an incredibly useful blog post by Dr Paul A. Kirschner titled ‘Tips for effective teaching if you have to teach at a distance’ that is based on his latest book, *How Learning Happens*, which arrived in my letterbox last week.

Kirschner explains that while online education is offering a temporary solution, the instructional techniques involved are not the same as what we do in the classroom during face-to-face education:

“Beware of offering too much new subject matter and possibly concentrate more on maintaining previously learned

subject matter. This advice is powerful and good to follow, because learning materials that you don’t repeat is forgotten. Think of the infamous dip after the summer holidays!”

I bet, like me, you already knew that. LDA Consultants have had to adapt to online learning quickly and combine the best of online learning with explicit instruction. What teachers do has the greatest impact on student achievement and there’s no substitute for guided practice and formative assessment.

As we are unable to provide face to face professional learning at this time, LDA has engaged a range of excellent speakers to present short professional learning webinars on a weekly basis starting in mid-May. These Wednesday sessions are free, and I encourage you to share information about them with your colleagues. Details about our Weekly Wednesday Webinars will be publicised on LDA’s Facebook and Twitter as well as via our e-news.

References

- Kirschner, P. A. (3 April, 2020). Tips for effective teaching if you have to teach at a distance. <https://randomthoughtsandideas926468149.wordpress.com/2020/04/03/tips-for-effective-teaching-if-you-have-to-teach-at-a-distance/>
- Kirschner, P. & Hendrick, C. (2020). *How learning happens: Seminal works in educational psychology and what they mean in practice*. Routledge.

LDA’s President, Dr Lorraine Hammond AM, is an Associate Professor at the School of Education at Edith Cowan University. Lorraine



divides her time between research projects on high impact instruction, teaching pre and inservice teachers, supervising higher degree students and writing and delivering professional learning for The Kimberley Schools Project. Lorraine is the Chair, Deputy Chair and Board Member of three high performing schools in WA. Lorraine has been a member of LDA Council since 2010 and has previously served as President and Vice-President

Council news

LDA has entered a new phase of growth in response to the 2019 LDA Sustainability Review, with much activity and work toward the implementation of the recommendations of this report. Unfortunately, with the unexpected and unprecedented impact of COVID 19, many of our plans have needed to be put on hold. At the same time, opportunities for reflection and deeper consideration of a shared vision for the future of LDA have resulted.

Staff

Our General Manager, Michael Roberts, has settled into his role of leading LDA forward with an emphasis on planning national tours, increasing membership, expanding the reach of LDA, and implementing improved management and administrative systems. Michael was supported by our newly appointed Administrative Officer, Julie Hermansen, who left the position at the end of March. We thank Julie for her work in keeping the office ticking along and acknowledge the unusual difficulties this presented as a new employee to the organisation working by distance. As the first point of contact and ‘face’ for the organisation, Julie became well known for her very friendly and helpful service to members and others. Council extends its sincere appreciation to Julie.

Council have opted to review staffing needs in consideration of projected changes to staffing which stem from the implementation of online and integrated administrative systems, including the implementation of a Customer Relations Management System (CRM), Xero and Hubdoc systems, the development of a ListServe for membership feedback and discussion, and the review and planned update of our website presence. Many of these systems and services allow for streamlined and automated functions so that the role of the Administration Officer, as we knew it, has also changed. As part of this process Ian Munro has been appointed on a part-time three-month contract to provide expertise in data management and data integration. We welcome Ian into this new role.

Professional Development

In keeping with LDA’s mission to promote high quality professional learning for members and the broader community, two national tours were planned for 2020. The first, the much anticipated Jan Hasbrouck Tour, was promoted for venues across six Australian cities. As COVID19 spread across Australia and the world it became clear that the national tour plans needed to be postponed. As an alternative, and in line with social isolation restrictions at the time, Council embarked on a series of webinars, and the highly successful Weekly Wednesday Webinars (WWW) are now well underway, hosted by Michael. The regular 6 pm AEST time is proving popular. Interest and registrations have exceeded our expectations. There were 435 people booked in for the second webinar, and while the LDA Zoom licence had been updated to cater for this number, technology let us down on this occasion and far fewer were able to participate. All was not lost as Michael has now set up an LDA YouTube account so that recordings of the webinars are available for later viewing. The link can be found through the website or by going to YouTube and searching Learning Difficulties Australia.

We thank Lyn Stone for the inaugural, stimulating presentation on *Metalanguage*, David Morkunas for the hugely popular presentation on *Spaced Practice and Interleaving*, and more recently Dr Kate Jacobs for her very informative, much-appreciated talk on *School-based reasonable adjustments and the VCAA Special Examination Arrangements*. By the time this Bulletin arrives in your mailbox, many will have heard Dr Kate de Bruin’s presentation on *Using universal design principles to support learning, participation and progress for every student*, Steven Capp on *Building teacher efficacy towards evidence informed practice*, and Dr Sally Robinson-Kooi on *EAL/D or LD? Preparing classroom teachers to teach English as an Addition Language or Dialect (EAL/D) students*. The WWW

series will continue throughout the school year and we are honoured to have a long list of high calibre people in the LD field prepared to volunteer their time so generously. While most presenters are Australians, there will be a smattering of high-profile international speakers contributing to this series.

Publications

Delivery of our flagship academic journal, the *Australian Journal of Learning Difficulties*, has been delayed due to COVID 19 disruption to transport. However, our publishers Taylor and Francis have advised that it should reach letterboxes in about mid-June. Our other means of communicating with members and the broader educational and research communities continues as usual through the Bulletin, the eNews, the website, and the LDA Facebook, LinkedIn and Twitter accounts. As mentioned, plans to engage members in interactive discussions, most especially to provide members with a voice in major decision making affecting the long-term future of LDA, will soon see the establishment of a member ListServe. Members who are users of the DDOLL and SpellTalk listserves will be familiar with the potential of this platform to engage in lively and open discussion. A topic which will be of interest to all is the proposal to rebrand LDA, which may involve a change to the name of the organisation. Council are keen to hear the voices of all and the listserve will provide the opportunity for an open debate on this.

Council and Committees

Kate Gurgian stepped down from Council earlier in the year. We thank Kate for her visionary thinking and contribution to Council. Dr Ros Neilson has since been appointed to fill this casual vacancy on Council. We are very appreciative to have Ros take over the editorship of the Bulletin and thus allow Dr Molly de Lemos a reprieve of part of her very heavy workload as Convenor of the Publications Committee. Ros has

also joined the Awards Committee to fill the position vacated by Kate.

An existing Council vacancy has recently been filled by Dr Lynne Ivcevic. As Lynne says: *'My interest in LDA is as a former Award Winner and a desire to contribute to the growth of LDA membership in schools and presence as the authority on high impact instruction to prevent and support individuals with LD.'* Lynne is a previous recipient of the LDA Bruce Wicking Award. Welcome Lynne to Council.

NAPLAN and AITSL Stakeholder engagement

LDA President, Dr Lorraine Hammond and Vice President, Dr Molly de Lemos recently attended a NAPLAN Review Stakeholder Meeting and contributed to the discussion on issues related to NAPLAN.

They were also joined by Dr Pamela Snow to meet with an AITSL Advisory

Group to support the implementation of changes education ministers endorsed late last year to the *Accreditation of initial teacher education programs in Australia: Standards and Procedures*.

Invitations to meet with these bodies indicate the standing of LDA in the community.

This report on Council News was prepared by Ann Ryan, LDA Secretary and Convenor of the Administration Committee.

Congratulations to Dr Pamela Snow

LDA is delighted to congratulate Dr Pamela Snow on being awarded Life Membership of Speech Pathology Australia on 25 May 2020 – the highest honour bestowed by the profession.

Pam served on the LDA Council for four years, from 2015 to 2019, and was awarded the LDA Mona Tobias Award in 2017 in recognition of her outstanding contributions to the field of learning difficulties.

Pam, who is a Professor of Cognitive Psychology at the Bendigo Campus of La Trobe University, states on her blog page that her “research passion is language and literacy competence, primarily as this pertains to vulnerability in early life.” The word ‘passion’ doesn’t come near to doing her justice, however - Pam’s contributions as a researcher, educator, author and advocate in the area of language and literacy are quite simply outstanding.

Pam has provided professional leadership to us all in an impressively wide range of areas. She has, for example, spear-headed research into the identification and management of communication and literacy difficulties in young people caught up in the juvenile justice system, worked on the implementation of oral language support in early Primary School years, and she continues to offer strong and

well-reasoned support for teachers as they learn how to apply evidence-based practice in their teaching.

LDA members will possibly know Pam best as a powerful and engaging communicator – eloquent, thought-provoking, and very witty. Her 2017 book, *Making Sense of Interventions for Children with Developmental Disorders*, co-authored with Dr Caroline Bowen, is an essential resource in the field. Pam’s blogs, presented on her blog page as ‘The Snow Report’, are a regular source of inspiration to us all. For readers who haven’t seen it yet, Pam’s May 2020 blog, on how reading instruction in Australia can be informed by a pandemic, is particularly powerful. You’ll find it here: <https://pamelasnow.blogspot.com/2020/05/reading-instruction-in-australia-can-be.html>

Well done, Pam, and a heart-felt thank you from LDA for your much-valued contributions to our community.



Towards a new vision for LDA

Michael Roberts, General Manager of LDA

The year 2020 will go down as a year that changed the world immeasurably. Starting in the new General Manager role at LDA, where I am required to work from home, has given me a head-start on the rest of the workforce in this regard. The challenges of our new environment, however, have been immense for all of us personally and for LDA as an organisation.

I am excited and daunted by the challenges in front of us. I applied for this position because of my fundamental belief in the aims of the association. I feel very strongly that LDA needs to focus on its status as a professionally-based Australian organisation which is committed to advocating for high quality, evidence-based and scientific teaching methods to be employed in schools across Australia. We know that there are many students who fall behind and end up having learning difficulties as a result of unproven, or worse, disproven techniques, programs or approaches. LDA can and does change this!

My primary objective in this position is to grow LDA and in the process increase its reach and influence, because what we do and what we represent is worth spreading! LDA currently has its mission and aims available on the LDA website and spelled out in its constitution. What we don't have is a vision. The vision I would like us to adopt is *to become the pre-eminent Australian Education organisation promoting evidence-based teaching.*

In order to achieve the realisation of this vision, there are many things that need to happen. The first is for us as an organisation to understand our current

situation. The second is to collectively want to realise the vision. The final component is to work together to deliver the vision.

The current situation is that LDA has a membership base that has varied between 400 to 600 members over the last 15 years (from 2005 to 2020), although the 'churn rate' of departing and new members has increased in recent years, with roughly one hundred leaving each year and one hundred joining. This membership number is not commensurate with the quality or importance of the organisation. Given that the number of full-time equivalent teachers in Australia last year was 288,294, and that there are more than 9,000 speech pathologists and thousands of other potential members in academia and other education related fields, we are only attracting a minute percentage of what is possible. The obvious question is why?

I believe there are several answers. Firstly, if we slowed the 'churn rate' by making our membership processes more streamlined and user-friendly and increased our 'value proposition' we should get more members renewing. We are currently working on a new membership joining and renewal process which should be completed by July. This will resolve many of the irritating membership system problems that unfortunately are prevalent at the moment. The introduction of Weekly Wednesday Webinars has been embraced and Council are planning to organise an LDA conference in January next year, with a view to making this an annual event. I will be proposing a set member discount percentage at all events in the future. These initiatives, in addition to the excellent publications and visiting speakers (when travel can re-open) should provide ample incentive to renew membership.

To increase our membership by a quantum amount, however, we need more people to know about us and know that they could and should be a member. Our outdated website is an obvious barrier. It is being replaced with a new website which we hope will be completed by July. Check out the site <https://aeiou.org.au/>, which is an example of the type of quality

we will have. Another barrier, it can be argued, is the name of our association. While the history of the organisation has its roots in supporting education

professionals who worked with students who have learning difficulties, the current broader aims of LDA (e.g., to promote scientific evidence-based research) are not at all apparent in the title. Classroom teachers, in particular, do not see LDA as an obvious association to join. If they are fortunate enough to find out about us, they look beyond the name and join anyway. LDA president Associate Professor Lorraine Hammond has sent several updates to members regarding possible alternative names, and we will be continuing the membership consultation between now and the AGM. Any proposal to change the name of LDA will be put to members of the association at a Special General Meeting (SGM) or at the AGM.

The final step is for us to join forces to deliver the vision. It is fantastic to see the support given to the cause of LDA by so many members, particularly the executive. Our Wednesday Weekly Webinars have had many willing volunteers contribute their time to ensure that we are providing quality professional learning. The volunteers who compile our publications produce material which is as professional as anything commercially produced. We therefore have a great base to grow from. I would encourage all members, too, to continue to contribute where possible. A way that you can all contribute is by letting your colleagues know what we stand for, and what we are trying to achieve. Spread the word: LDA is for all educators!

Please contact me with thoughts, suggestions, ideas about what we are doing well and also how we can improve. We need and welcome your feedback! My email address is general.manager@ldaustralia.org

I trust you will enjoy this Bulletin.



The LDA Review – what's next?

Molly de Lemos, Vice- President, LDA

As members of LDA will be aware, LDA undertook a review of its operations last year. The review was undertaken by consulting firm Explicate, and involved an analysis of current and historical LDA records, a comprehensive survey of current members of LDA, and face to face or telephone interviews with Council members and past presidents of LDA.

The six major recommendations of the Explicate Report were as follows:

- 1 LDA actively grows the association to allow for more resources to support the membership and place less reliance on the diminishing availability of voluntary resources.
- 2 Separate governance and administration functions.
- 3 Engage a suitably qualified person to review the LDA constitution in line with the accepted way forward.
- 4 Ensure Council membership is representative and provides the critical skills to govern LDA.
- 5 Review the sub-committee structure and authorities provided.
- 6 Adopt a financial plan that meets the agreed LDA sustainability strategy.

Recommendations 1 and 2 of the report were accepted by LDA Council, and a decision was made to adopt a growth model for LDA that would involve an expansion of LDA membership together with an increased focus on professional learning and other revenue raising activities. A General Manager was appointed, charged with the task of implementing improved management and administrative systems and the provision of support for expanding

our activities and developing our professional development program.

The first priority was to address issues relating to inefficiencies in our administrative processes, particularly those relating to the handling of online new member applications and renewals of membership, as well as the updating of our membership database and the redesign of our website to make it more modern and user friendly. These processes are still ongoing, but it is hoped that the new database will be set up and operational by the end of June, and that the redesign of the website will be completed by the end of July. The second priority was the expansion of our professional development program. Given the Coronavirus situation it was decided to develop a program of weekly webinars to be delivered online. This was commenced in May and has proved to be very successful. Planning is also underway for an LDA Conference to be held in Melbourne in mid-January.

The further recommendations of the review will be considered in more detail over the coming months. A first priority will be a review of our Constitution, with the aim of considering changes that might be required to the Constitution to reflect the changed structure of the organisation and the broader aims and priorities that LDA will be adopting as a result of the review. One suggestion that has been made is a change in the name of the organisation to reflect a new focus on the importance of initial effective evidence-based instruction for all students, so that the organisation might be seen as more relevant to classroom teachers. A change in the name of the organisation would require a change to the Constitution, which would have to be approved by all members of the Association at the AGM in October. Other changes that might need to be considered relate to the recommendation to ensure that Council membership is more representative of the different groups that are a part of our membership base, including consultant members, student members, teacher members, and institutional members,

and also provides critical skills to govern LDA. Recommended changes to the LDA Committee structure will also need to be considered, as such changes will also require changes to the Constitution to reflect the changed Committee structure.

LDA is planning to establish a member email discussion group both to keep our members informed of progress and discussions relating to the implementation of the recommendations of the Explicate report, and to provide a forum for discussion and exchange of views on issues of interest to our members, relating particularly to effective teaching practice and appropriate interventions for students with learning difficulties.

Dr Molly de Lemos is a current Vice-President of LDA and a long-standing member of LDA and LDA Council. She was Secretary of LDA from 2005 to 2012, and President of LDA from 2013 to 2014.

In this issue of the Bulletin...

Ros Neilson, Editor, LDA Bulletin

This issue of the LDA Bulletin has reading fluency as its primary focus, with a keynote submission from Dr Jan Hasbrouck, who kindly provided LDA with an article that will give readers a taste of what she would have presented in her full-day LDA National Speaking Tour workshop, which had to be postponed because of the coronavirus lockdown. We look forward to the time when we can meet Jan in person.

In the *Special Issue on Fluency* section, Dr Jan Hasbrouck explains the concept of reading fluency and dispels some common misconceptions about the topic. Dr Tom Nicholson discusses evidence related to the efficacy of fluency intervention, and Emeritus Professor Kevin and Dr Robyn Wheldall give important insights into the development of their own reading fluency test, the *WARP*. Accurate word recognition is, of course the prerequisite for developing reading fluency, and Dr Toni Seiler and Dr Suze Leitão provide evidence about an intervention strategy they have documented that supports the development of word recognition skills. Dr Elizabeth Norton provides an intriguing focus on research into Rapid Automated Naming, the assessment of which can act as a warning light for processing problems that are associated with difficulties with reading fluency. Dr Ros Neilson follows up with a speech-language pathologist's experience of RAN.

A *Discussions and Debates* section follows, with two articles related to the development of fluent word recognition skills. Dr Jen Buckingham offers a very strong counter argument to a recent suggestion that systematic phonics

instruction may not be the way to begin, and Dr Ros Neilson collates ideas from experts about how to achieve fluent sounding out and blending.

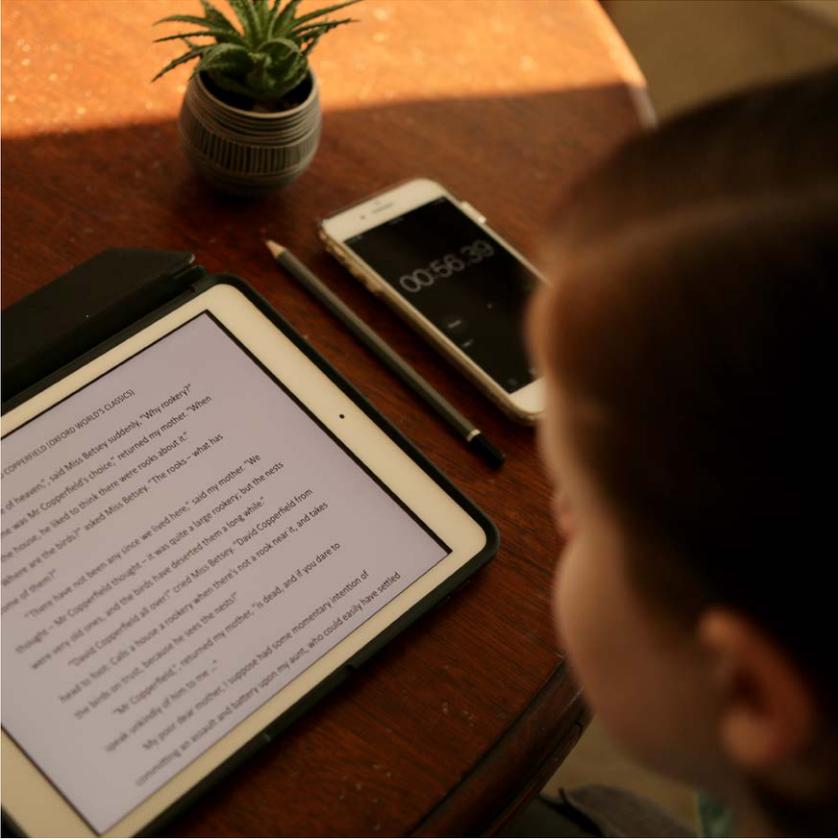
From the Chalkface includes a report from Dr Lorraine Hammond documenting a major project she has been involved that aims to use direct instruction to raise the bar for literacy in remote communities.

A not-to-be-missed final section of this Bulletin is the *Consultant Notes*, in which Ann Ryan, in her role as Convenor of the Consultants Committee, documents how the team of LDA Consultants have supported each other using online tutoring as they have risen to the occasion of providing services to students and their families during the coronavirus lockdown. Well done team! We hope that LDA will keep providing consultants with resources and support as you continue your invaluable teaching work, and that more LDA members take up the opportunity of becoming a LDA Consultant.

This edition of the LDA Bulletin is my first as Editor. It is quite a learning curve, and I really appreciate the supportive, creative, and very diligent help that has been provided by co-editors Molly de Lemos and Tom Nicholson.

Happy reading, everyone!

PS: Please contact me at bulletin.editor@ldaustralia.org with Letters to the Editor, suggestions, and constructive comments.



Special issue: Reading fluency



In this keynote article **Dr Jan Hasbrouck** teases out the components of reading fluency, explains the Oral Reading Fluency measure, and clarifies some of the common confusions surrounding the topic.

Understanding reading fluency

We have long known that for readers to fully comprehend what they have read they must have a certain level of fluency. Most definitions of reading fluency include three observable, measurable components: accuracy, rate, and expression (sometimes referred to as prosody). Hasbrouck and Glaser (2019) define fluency as: Reasonably *accurate* reading, at an *appropriate* rate, with *suitable* expression, that leads to accurate and deep comprehension and motivation to read. Within this definition, three specific technical terms can be precisely defined (accuracy, rate, expression), while other words used to describe the performance standards for each component are intentionally left ambiguous (*reasonably* accurate, *appropriate* rate, *suitable* expression).

We need to teach our students to read words carefully and accurately so when they are reading independently, they can maintain a level of accuracy that supports comprehension.

When we read, the 'levels' of accuracy and rate and expression should vary depending on the purpose of the task. We need to read more accurately if we are studying for an important test or reading the directions for taking a new prescription medicine, but we can relax our accuracy if we are simply reading a fun novel to pass the time. It is sometimes quite appropriate to read fast and other times we should read more slowly. Parents reading a story aloud to their children will be more appreciated if their expression is much more exaggerated than their normal, daily speech. However, there are standards that have been established by research to determine the optimal levels of accuracy, rate, and expression to optimize comprehension.

Accuracy

Researchers have determined that if a reader reads fewer than 95% of the words correctly, comprehension will be impaired or limited (Rasinski et al., 2011). We need to teach our students to read words carefully and accurately so when they are reading independently, they can maintain a level of accuracy that supports comprehension - 95% accuracy or higher. The recommendations are somewhat different for beginning, emergent readers (PreK-early Grade 2). For these younger students, researchers suggest that we should only have them read text in which it will be relatively easy for them to maintain accuracy levels of 97-98%. At this early stage, readers are just learning to read words and simple text accurately, and we want them all to experience success and a sense of accomplishment. Anxiety can be an impediment to children's success in early reading (Ramirez et al., 2019). Keeping the text at an 'easy' level helps encourage them to keep working at this new and sometimes challenging task. We also want their practice to be 'perfect'. We often hear people say that 'practice makes perfect' but that is actually not true. Practice makes *permanent*, so practice must be perfect to make learning perfect! (Archer & Hughes, 2011).

Rate

Rate is often mistakenly used as a synonym for fluency. However, rate technically refers only to the speed with which students read text. Fluency is far more complex than rate alone. Another common fallacy about rate is that 'faster is better,' although most teachers likely know from experience that this is not true. Most teachers have had experiences with students who read quickly but still may not have good comprehension. Speed alone does not enable comprehension, and a fast reader is not necessarily a fluent reader. In fact, faster readers may be reading inaccurately or reading too quickly

to think about what they are reading. The rate at which text is decoded and recognized represents an important aspect of fluency. However, reading fast is not the same as reading fluently!

To assess a student's rate, Hasbrouck and Glaser (2019) recommend using the curriculum-based measure of oral reading fluency (ORF). (For an explanation of curriculum-based measurement or CBM, see: <https://www.readingrockets.org/article/what-curriculum-based-measurement-and-what-does-it-mean-my-child>). Oral reading fluency (ORF) assesses words read correctly per minute, and this therefore measures accuracy + rate (or automaticity). ORF has a strong research base from over 30 years of studies that support its use for both benchmark/screening decisions and monitoring students' progress. ORF has been shown to have a moderate-to-strong correlations with reading comprehension. (Fuchs, L. et al., 2001; Hosp et al., 2016; Wayman et al., 2007). ORF will be discussed further below.

Expression

Reading with appropriate expression – the volume, pitch, tone, emphasis, and phrasing – is a clear mark of a fluent reader. Although expression is difficult to define objectively, several rating scales have been developed. Daane et al. (2005) proposed a four-point scale based on the use of meaningful phrase groups, and Hudson, Lane and Pullen (2005) provided a checklist based on the appropriateness of vocal tone, inflection and pauses. Developmental norms for evaluating prosody have not been developed, so for the purpose of making instructional decisions it is useful for teachers simply to make routine qualitative observations of students' prosody, and to ensure that students are reading with appropriate phrasing, expression and intonation when speed and accuracy are at appropriate levels.

What is Oral Reading Fluency (ORF)?

ORF is an individually administered measure of students' oral reading. Students read aloud for 60 seconds from an unpractised passage. The completed ORF is then scored for 'words correct per minute' (WCPM) by subtracting the number of errors from the total numbers of words read by the student. The standardised ORF assessment protocol requires students to perform a 'cold read' of a passage or set of passages. This means that the passage(s) should be unfamiliar to the students and they should not have had a chance to practise reading the passage(s) before the assessment begins.

As the student reads, the examiner follows along and tallies errors on a separate copy of the passage. Each word omitted, mispronounced, or transposed is recorded as an error. Insertions are ignored and self-corrections are counted as correct if provided by the students within 3 seconds. If the student pauses longer than 3 seconds when trying to identify a word, the examiner supplies the word for the student and counts it as an error. Repeated errors are counted each time the error is made. At the end of 1 minute, the examiner tells the student to stop reading. The score is calculated as a total number of words read correctly in 1 minute (WCPM) by taking the total number of words read minus the total number of errors. For example, a student who read 87 words in 1 minute and made 13 errors would have a score of 74 WCPM ($87 - 13 = 74$ WCPM).

The WCPM score is then compared to established benchmarks for the student's grade placement and the time of year (beginning, middle, and end of the school year). Researchers generally agree that performance at the 50th-75th percentile range of ORF norms such as those compiled by Hasbrouck and Tindal (2017) can serve as a reasonable benchmark for determining an appropriate reading rate.

Common Confusions Regarding ORF

ORF is used by reading specialists, special educators, and classroom teachers around the world, primarily in English-speaking countries. Despite its widespread use, there are four common misconceptions or confusions about the ORF measure:

Common Confusion #1: The belief that oral reading fluency (ORF) measures fluency. How could people possibly get this idea, that a measure called 'oral reading fluency' measures the skill of reading fluency? The problem is that ORF was misnamed back in the mid-to-late 1980s when ORF and other CBM measures were first developed. Certainly, at a very basic level, 'fluency' can be understood as the combination of accuracy + rate. However, we now understand that reading fluency is far more complex than simply the accuracy and rate with which someone reads. The expression or prosody that a reader uses when reading orally is another important component of reading fluency. In addition, there are underlying mechanics that must be in place for a reader to be considered fluent including metacognition, knowledge, vocabulary, along with the context of the passage and the purpose for reading (Hasbrouck & Glaser, 2019). The CBM measure that involves having a student read aloud for 60 seconds from an unpractised passage which is then scored as 'words correct per minute', is a valuable measure of reading performance but it is not a measure of the complex skill of reading fluency. It is better conceptualized as a measure of automaticity (Hosp & Suchey, 2014). ORF, unfortunately, was misnamed.

Common Confusion #2: A higher ORF score is better. As we have discussed, ORF does not measure fluency. ORF is a measure that combines accuracy (words correct) and rate (per minute). In order for fluency to support comprehension, fluent reading needs to occur at approximately the same speed as spoken language because that is the optimal rate for our brains to comprehend information that is coming in from either visual sources such as reading, or auditory sources such as speech. Researchers have found that ORF scores around the 50th-75th percentiles of norms, such as those compiled by Hasbrouck and Tindal (2017), are in fact optimal. Faster reading is not fluent reading; reading fast is not the same as reading fluently. Both reading too slowly (below the 50th percentile) or too quickly can be detrimental to reading comprehension.

Common Confusion #3: We really should be assessing comprehension. This confusion is very understandable. Certainly, the most important feature of reading, along with motivation, is how well a reader can comprehend text. However, one thing we know for

certain about comprehension is that it is an extremely complex construct and therefore challenging to assess accurately. We do have validated measures of reading comprehension but all of them are very time-consuming to administer. Over 30 years of research has shown that ORF is a reasonable indicator of how well a reader is likely to comprehend text and, because it is a measure that can be completed in one minute, it is very efficient.

Common Confusion #4: Students with low ORF scores need a fluency intervention. The correct answer here is not 'yes' or 'no' but rather 'maybe'. We should understand that ORF functions in the same way that a thermometer does. Both have proven reliability and validity, and both can be used very quickly. Both ORF and thermometers provide a numeric 'score' that is compared to an established benchmark. A 'score' from a thermometer can indicate whether or not a person has a fever. It cannot determine the cause of that fever, nor can it determine that a person has no physical problems if there is no fever present. A broken leg, while serious, rarely causes a fever. Neither thermometers nor ORF assessments are diagnostic. Both are very valuable tools but only provide one piece of information. The presence of a fever alone cannot tell a physician if a patient needs surgery or a prescription for an antibiotic; more assessments would need to be done.

...while ORF scores quickly provide us with trustworthy (reliable) and valuable, useful (valid) information just as a thermometer does, it can never be used as the only tool to identify struggling readers or correctly target a suitable intervention plan.

If a teacher finds that a student has a low ORF score, it may be that this student does need an intervention that targets reading fluency. But as we have discussed here, fluency is a complex skill. Is this student reading text accurately but too slowly? That would require one kind of intervention. Is the student reading accurately but only with text below grade level? That would indicate the need for a different kind of intervention. Is the student struggling to read words accurately? Is this caused

by weakness in phonemic awareness or basic phonics skills or orthographic mapping? Once again, we should plan a completely different intervention for that student. Again, while ORF scores quickly provide us with trustworthy (reliable) and valuable, useful (valid) information just as a thermometer does, it can never be used as the only tool to identify struggling readers or correctly target a suitable intervention plan.

Reading fluency is a necessary component of skillful reading. It is multifaceted and complex, and as professional educators we should take the responsibility for deeply understanding what reading fluency is, the role it plays in our students' comprehension and motivation to read, and how to accurately assess reading fluency.

References

- Archer, A. & Hughes, C.A. (2011). *Explicit Instruction: Effective and Efficient Teaching*. The Guilford Press.
- Daane, M.C., Campbell, J.R., Grigg, W.S., Goodman, M.J., & Oranje, A. (2005). Fourth-Grade Students Reading Aloud: NAEP 2002 Special Study of Oral Reading (NCES 2006-469). U.S. Department of Education. Institute of Education Sciences, National Center for Education Statistics. Government Printing Office.
- Fuchs, L. S., Fuchs, D., & Hosp, M. K. (2001). Oral reading fluency as an indicator of reading competence: A theoretical, empirical, and historical analysis. *Scientific Studies of Reading*, 5(3), 239-256.
- Hasbrouck, J. & Glaser, G. (2019). *Reading fluency: Understand. Assess. Teach*. Benchmark Education Company.
- Hasbrouck, J. & Tindal, G. (2017). An update to compiled ORF norms (Technical Report No. 1702). University of Oregon. Available online at <https://www.brtprojects.org/publications/technical-reports/>
- Hudson, R.F., Lane, H.B., & Pullen, P.C. (2005, May). Reading fluency assessment and instruction: What, why, and how? *The Reading Teacher*, 58(8), 702-714.
- Hosp, M. K., Hosp, J. L., & Howell, K. W. (2016). *The ABCs of CBM: A practical guide to curriculum-based measurement, 2nd ed.* Guilford Press.
- Hosp, J. L., & Suchey, N. (2014). Reading assessment: Reading fluency, reading fluently, and comprehension. *School Psychology Review*, 43(1), 59-68.

Ramirez, G., Fries, L., Gunderson, E., Schaeffer, M. W., Maloney, E. A., Beilock, S. L., & Levine, S. C. (2019). Reading anxiety: An early affective impediment to children's success in reading, *Journal of Cognition and Development*, 20(1), 15-34.

Rasinski, T.V., Reutzel, D. R., Chard, D., & Linan-Thompson, S. (2011). Reading fluency. In M. L. Kamil, P.D. Pearson, E.B Moje, and P. P. Afflerback (Eds.), *Handbook of reading research (Volume IV)*, (pp.286-319). Routledge.

Wayman, M. M., Wallace, T., Wiley, H. I., Ticha, R., & Espin, C. A. (2007). Literature synthesis on curriculum-based measurement. *Reading Journal of Special Education*. 41(2). 85-120.

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Slow Reader

I – am – in – the – slow
 read – ers – group – my – broth
 er – is – in – the – foot
 ball – team – my – sis – ter
 is – a – ser – ver – my
 lit – tle – broth – er – was
 a – wise – man – in – the
 in – fant – christ – mas – play
 I – am – in – the – slow
 read – ers – group – that – is
 all – I – am – in – I
 hate – it.



From Please Mrs Butler: Verses by Allan Ahlberg, illustrated by Fritz Wegner. Puffin Modern Classics.

No magic bullet: A review of some popular interventions to improve reading fluency

In this article **Tom Nicholson** outlines the building blocks of fluency, exploring what is meant by prosody. He reviews the efficacy of the practice of repeated reading as an intervention to improve fluency, and he challenges us to see how fluently we can read Dickens aloud.

What is a fluent reader?

A fluent reader is able to read effortlessly, that is, can understand the text material, can read it quickly, and with very few errors. If reading aloud, they can read with expression. The key features of the fluent reader are comprehension, effortless reading, and speed. Students with reading difficulties, however, tend to lack these skills.

The building blocks of fluency

Two building blocks of fluency are speed and accuracy. These require automaticity of word recognition (LaBerge & Samuels, 1974; Samuels, 1979). Automaticity predicts fluency

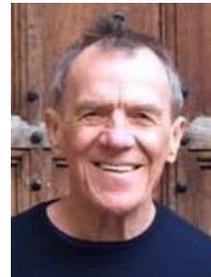
(Roembke, Hazeltine, Reed, & Murray, 2020). When word recognition is automatic, the reader puts minimal cognitive effort into reading words. It means that the reader has acquired expert orthographic mapping skills enabling them to store words with high specification in their mental lexicon so that word recognition occurs as soon as the words appear (Roembke et al., 2020). This automaticity enables fast and accurate word recognition and frees up the mind to concentrate on the meaning of the text (Martin-Chang, Ouellette, & Madden, 2014; Perfetti, 2007).

The key features of the fluent reader are comprehension, effortless reading, and speed.

However, fluency in oral reading is not just speed and accuracy. It includes prosody. Prosody refers to expression when reading. It is the music of everyday speech (Wennerston, 2001). To achieve prosody teachers will draw attention to punctuation clues, encouraging the reader to pause at the end of a sentence, change intonation for questions or exclamation marks, pause at commas, and so on. Reading with expression involves thinking about what you are reading, thinking about the listener, making the listener feel that the story is worth telling, that it involves many emotions, e.g., exciting, terrifying, wild, amusing, strange. The music of prosody brings the story or even an article to life.

You might be thinking, does it matter to read with expression when most reading is silent? I think it is important for some classroom activities. For

example, I visited a Year 12 English class once where the teacher asked one student to read a film review to the class. It was quite slow and soon someone in the class asked if she could speed up. She said, "You read it then!" It was painfully slow, but she was not to be messed with. The other student did not ask again, and in fact nobody did.



Why do some students struggle with prosody?

To me, prosody is not a cause but a result of speed and accuracy. If you do not have those first two building blocks of fluency, then you will not achieve the third building block. A study that showed this clearly was Clay and Imlach (1971). They compared fluent and dysfluent seven-year-olds. The fluent readers read at 100 words per minute with less than one percent error rate while the lower ability readers achieved a rate of only 14 words per minute and 34 percent error rate. The fluent readers read with much more expression. There was very little pausing from one word to the next, their tone varied, and they only used stress at the end of wider units such as clauses. In contrast, the lower achieving readers paused longer between words, read in a monotone, and stressed almost every word. The good readers in this study were just so much faster and more accurate.

I think this is why they had so much expression. In contrast, the unfortunate poor readers were reading material that was too hard for them – no wonder they lacked fluency.

The music of prosody brings the story or even an article to life.

Are you a fluent reader?

One way to check your own fluency is to read a passage aloud and time yourself with the stopwatch function on your smart phone. Try the following 200-word passage in Table 1 from the beginning pages of David Copperfield (Dickens, 1850).

“In the name of heaven,” said Miss Betsey, suddenly, “Why rookery?”

“The name was Mr Copperfield’s choice,” returned my mother. “When he bought the house, he liked to think there were rooks about it.”

“Where are the birds?” asked Miss Betsey. “The rooks – what has become of them?”

“There have not been any since we lived here,” said my mother. “We thought – Mr Copperfield thought – it was quite a large rookery; but the nests were very old ones, and the birds have deserted them a long while.”

“David Copperfield all over!” cried Miss Betsey. “David Copperfield from head to foot! Calls a house a rookery when there’s not a rook near it, and takes the birds on trust, because he sees the nests!”

“Mr Copperfield,” returned my mother, “is dead, and if you dare to speak unkindly of him to me ...”

My poor dear mother, I suppose, had some momentary intention of committing an assault and battery upon my aunt, who could easily have settled her with one hand, even if my mother had been in far better training for such an encounter than she was that evening. But it passed with the action of rising from her chair.

Table 1. Extract from David Copperfield

How did you go? An adult reading the passage will take about 60 seconds. Using the stopwatch on my smart phone, I timed the reading of an 11-year-old. The student read it the first time in

2m 35s, which is 77.4 wpm [steps to calculate wpm: $2\text{m } 35\text{ s} = 155\text{ seconds} - \text{divide } 200\text{ words in the passage by } 155 = 1.29. \text{ Multiply by } 60 = 77.4$]. On the second reading, the student read the passage in 2m 1s, which is 99.2 wpm. On the third reading, the student read it in 1m 59s, which is 100.8 wpm. It was not as fast as the average 11-year-old (see the Appendix) but it was quite a big improvement in speed. In terms of accuracy, there were some miscues: “rookery” read as “rocky”, “dare” as “dar”, “momentary” as “memory”, and no attempt for “deserted” or “intention”. On each reading, if there was a miscue I gave the correct word. There were fewer miscues on the second and third readings. The repeated reading exercise led to definite improvement in speed. Practice helped.

Repeated reading. Where did this approach start?

Unassisted repeated reading.

Samuels (1979) was one of the first to write about an “unassisted” approach to repeated reading for students with reading difficulties. “Unassisted” means reading aloud with no assistance. The method involved reading short passages multiple times. As students repeated the same short text, the teacher monitored their progress to see if their rate of reading improved and their errors decreased. The student kept a chart of progress. The number of errors decreased on each reading and speed increased on each reading. Students liked monitoring their progress over time. The repeated reading procedure was:

Steps in repeated reading

- 1 Select a short passage of 50 to 200 words at instructional level (i.e., 90-95% accuracy) which is a reading level that is challenging, where the student needs some help.
- 2 The student reads the passage with an emphasis on speed rather than accuracy.
- 3 Teacher or tutor makes a chart of the number of errors and the words read per minute.
- 4 The student keeps re-reading the passage until reaching a specific speed target, e.g., 85 words per minute is a target for grade 1 level (see Appendix for other grade level targets).

Assisted repeated reading.

Carol Chomsky (1976) reported a similar but “assisted” repeated reading technique that she carried out after a teacher friend said that she had five students in her class who were very slow readers and had come to a standstill. The students were 8-year-olds and had received a lot of phonics instruction but still reading one to two years below grade level. They seemed to be making no progress according to their teacher. Chomsky (1976) wrote, “In spite of their hard-won decoding skills they couldn’t so much as read a page of simple material to me. The attempt to do so was almost painful, a word-by-word struggle, long silences, eyes eventually drifting around the room in an attempt to escape the humiliation and frustration of the all too familiar, hated situation.” (p. 288)

They had no spoken language comprehension problems and had average verbal ability. Chomsky thought that the best way to build on their hard-won decoding skills was to engage their attention and to give them access to large amounts of text but not make it a struggle to read the words. To make the text easier to read she selected only audio-recorded books for students in her study.

Steps in repeated reading assisted by listening

- 1 Carol Chomsky found 24 storybooks that had been audio-recorded, each 20-30 pages long.
- 2 Each student selected a book to read.
- 3 It took 15 minutes on average to listen to the 20-30 pages on audiotape.
- 4 To show improvements in fluency, the students practiced reading a short section of the book and read this aloud to the researcher when they reached fluency.

She wrote that it took up to 20 repeated readings for one of the students to reach a point where they were able to read a short section of the book aloud with some fluency. To avoid students memorizing the text, the teacher taught decoding skills using phonics instruction and flashcards. There were significant improvements not just in fluency for practiced text but also in attitudes to reading. She said that some of the students had never read a single page on their own but now could read many pages, which was terrific in terms of self-confidence.

The research on repeated reading – a mixed picture

First the positive research. A meta-analysis carried out by the National Reading Panel (NRP, 2000) showed positive results for repeated reading with medium effect sizes of .55 for accuracy, .44 for fluency, and .35 for reading comprehension. A meta-analysis by Therrien (2004) found medium to large effect sizes for fluency (.83) and comprehension (.67). Hudson et al. (2020) reviewed 16, mostly repeated reading studies. Effect sizes varied from none through to large but on average were positive.

Stevens et al. (2017) reported a meta-analysis of 19 repeated reading

To me, for students with reading difficulties, the tough but necessary path to becoming a fluent reader is a path that has lots of easy reading practice on top of quality phonics instruction. The conclusion about repeated reading is that it may not be the magic bullet to overcome reading difficulties - but for some students it might be a positive and perhaps fun way to rebuild self-confidence.

studies. These were experimental studies, and some had a control comparison. They reported positive results but noted that very few of the studies used standardized tests to assess improvement. Lee and Yoon (2017) reported a meta-analysis based on 34 repeated reading studies, selected from 400. They concluded that repeated reading had positive effects. Effect sizes were large: for practiced passages 1.94 and for non-practiced but similar passages .97. However, they noted that very few studies used transfer passages or standardized tests.

Next, the not-so-positive research. What Works Clearinghouse (WWC, 2014) concluded that repeated reading had little to no effect for students with reading difficulties. They only accepted studies with randomized control groups.

Out of nearly 200 studies, only two met their standards. The two studies showed no clear effect on fluency and a small effect on comprehension as measured by a standardized test. Chard et al. (2009) reviewed nine studies and concluded they had too many design problems to be credible.

Is there an alternative that works just as well? Hammerschmidt-Siderach, Maki, and Adams (2019) compared repeated reading and continuous reading. The overall conclusion was that both had similar effects. This finding was similar to Wexler et al. (2010) who compared repeated reading and continuous reading of text with high school students. After 10 weeks there was no difference between the two in terms of improvement on standardized tests. This was a similar conclusion to Therrien et al. (2013). In their short review of research on repeated reading, they concluded that it improved speed but probably not comprehension. The speed increase was probably due to multiple practices. They suggested that reading continuous text might also give similar practice and at the same time build general knowledge and vocabulary, both essential for comprehension.

Conclusion

Unassisted repeated reading seems a good idea for a classroom task like making a speech or rehearsing a part in a play. Reading the text aloud several times will help improve speed, accuracy, and expression. Assisted reading where the teacher reads the text to the class seems a good way to help the class understand a complex text, e.g., a film review (as in the scenario we described earlier) or a complex science topic like the water cycle, or a classic novel like David Copperfield. It would be faster if the teacher read the text aloud and easier to understand.

It is not crystal-clear whether repeated reading improves general reading achievement. There is also debate as to whether it would be just as good to read continuous text rather than read the same text several times.

With some students, it might be useful to read the same text several times to build motivation - but I think that if the poor reader is struggling to read a page of text then give them something easier! Providing reading material that is easy makes for happier readers and a happier classroom. Is it good teaching to have to read a hard text multiple times? Does that make

better readers? The research is not clear about this. These are the key questions for a teacher to ask. To me, for students with reading difficulties the tough but necessary path to becoming a fluent reader is a path that has lots of easy reading practice on top of quality phonics instruction. The conclusion about repeated reading is that it is not a magic bullet to overcome reading difficulties - but for some students, with texts that are not too hard for them to read, it might be a positive and perhaps fun way to rebuild self-confidence.

References

- Carver, R. P. (1973). Effect of increasing the rate of speech presentation upon comprehension. *Journal of Educational Psychology, 65*(1), 118-126.
- Chard, D. J., Ketterlin-Geller, L. R., Baker, S. K., Doabler, C. & Apichatabutra, C. (2009). Repeated reading interventions for students with learning disabilities: Status of the evidence. *Exceptional Students, 75*(3), 263-281.
- Chomsky, C. (1976). After decoding, what? *Language Arts, 53*(3), 288-296.
- Clay, M. M., & Imlach, R. H. (1971). Juncture, pitch, and stress as reading behavior variables. *Journal of Verbal Learning and Verbal Behavior, 10*, 133-139.
- Hammerschmidt-Snidarich, S. M., Naki, K. E., & Adams, S. R. (2018). Evaluating the effects of repeated reading and continuous reading using a standardized dosage of words read. *Psychology in Schools, 56*, 635-651.
- Hasbrouck, J. & Tindal, G. (2017). *An update to compiled ORF norms (Technical Report No. 1702)*. Behavioral Research and Teaching, University of Oregon.
- Hudson, A., Koh, P. W., Moore, K. A., & Binks-Cantrell, E. (2020). Fluency interventions for elementary students with reading difficulties: A synthesis of research from 2000-2019. *Education Sciences, 10*(52), 1-28.
- LaBerge, D., & Samuels, J. (1974). Toward a theory of automatic information processing in reading. *Cognitive Psychology, 6*, 293-323.
- Lee, J., & Yoon, S. Y. (2017). The effects of repeated reading on reading fluency for students with reading disabilities: A meta-analysis. *Journal of Learning Disabilities, 50*(2) 213-224.
- Martin-Chang, S., Ouellette, G., & Madden, M. (2014). Does poor spelling equate to slow reading? The relationship between reading, spelling,

and orthographic quality. *Reading and Writing*, 27, 1485-1505.

National Institute of Child Health and Human Development. (2000). *Report of the National Reading Panel: Teaching students to read: An evidence-based assessment of the scientific research literature on reading and its implications for reading instruction* (NIH Publication No. 00-4769). U.S. Government Printing Office.

Perfetti, C. (2007). Reading ability: Lexical quality to comprehension. *Scientific Studies of Reading*, 11(4), 357-383.

Roembke, T. C., Hazeltine, E., Reed, D. K., & McMurray, B. (2019). Automaticity of word recognition is a unique predictor of reading fluency in middle school students. *Journal of Educational Psychology*, 111(2), 314-330.

Samuels, S. J. (1979). The method of repeated readings. *The Reading Teacher*, 32, 403-408.

Stevens, A. A., Walker, M. A., & Vaughn, S. (2017). The effects of reading fluency interventions on the reading fluency and reading comprehension performance of elementary students with learning disabilities: A synthesis of the research from 2001 to 2014. *Journal of Learning Disabilities*, 50(5), 576-590.

Therrien, W. J. (2004). Fluency and comprehension gains as a result of repeated reading: A meta-analysis. *Remedial and Special Education*, 25(4), 252-261.

Therrien, W. J., and Watt, S. J. (2013). Repeated reading. In Hattie, J., and Anderman, E. M. (Eds.), *International guide to student achievement* (pp. 320-321). Routledge.

Wexler, J., Vaughn, S., Roberts, G., & Denton, C. A. (2010). The efficacy of repeated reading and wide reading practice for high school students with severe reading disabilities. *Learning Disabilities Research and Practice*, 25(1), 2-10.

Wennerstrom, A. K. (2001). *The music of everyday speech*. Oxford University Press.

What Works Clearinghouse (2014, May). *Students with reading disabilities: Repeated reading*. Institute of Education Sciences.

Appendix

What is an average reading speed for a student?

The reading speeds shown in Table 2 are from Hasbrouck and Tindal's (2017) detailed norms for oral reading fluency (ORF). They show words read correctly per minute (wcpm) for the average student at the end of the school year. An average 10-year-old reads at about an adult conversational rate (150 words per minute), which is similar to having the text read aloud to them (Carver, 1973).

Grade 1 (age 6 to 7)	60
Grade 2 (age 7-8)	100
Grade 3 (age 8-9)	112
Grade 4 (age 9-10)	133
Grade 5 (age 10-11)	146
Grade 6 (age 11-12)	146

Table 2. ORF results for students at the 50th percentile in grades 1-6.

Note: Words read correctly per minute (wcpm) takes into account the number of words read incorrectly (miscues). It is more conservative than calculating words per minute (wpm)

Steps to calculate are:

- 1 Total number of words (W) = 200
- 2 Total miscues (M) = 5 miscues
- 3 $W - M = 200 - 5 = 195$ words
- 4 Total reading time in seconds (T) = 155 seconds
- 5 Words read correctly divided by number of seconds = $195 / 155 = 1.25$
- 6 Multiply the number of words read correctly per second by 60 seconds = $1.25 \times 60 = 75$ wcpm

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Mentioning the WARs: Let's do the timed WARP again

In this article **Kevin and Robyn Wheldall** present an alternative curriculum-based measurement that assesses reading fluency. They present interesting behind-the-scenes information about the development of the Wheldall Assessment of Reading Passages, or WARP, and discuss the use of the test for the ongoing monitoring of reading progress. Further developments in the Wheldall WARfare suite of assessment tools will appear in a subsequent LDA Bulletin!

The assessment of reading ability has a long history in educational psychology and special education. Burt, Schonell, Vernon, Neale, to name but a few, all offered what were known as 'reading tests', to assess the progress of children's reading ability, typically expressed as a reading age (akin to the more general concept of mental age). Children whose performance was substantially behind that of their peers could thereby be identified and offered 'remedial' assistance. One of the things

that these tests had in common was that they were quite time-consuming. Even using a very simple test like the Burt took a long time to assess a whole class of children. If only a quicker and simpler measure were available . . . Another problem was that these standardised reading tests could (or should) only be used infrequently; say, every six or twelve months because of practice effects. Some of these tests offered parallel forms but this barely scratched the surface of the problem. Most reading tests are also insensitive to small changes in reading progress. Educators need to monitor the reading progress of low-progress readers on a very regular basis, in order to make instructional decisions well before the conclusion of a program or the end of a school year.

Educators need to monitor the reading progress of low-progress readers on a very regular basis, in order to make instructional decisions ...

Curriculum-based measurement (CBM) is a method of assessing growth in basic skill areas. One skill area where this has been widely employed is that of reading. Several curriculum-based measures of reading exist but perhaps the most widely used is oral reading fluency (ORF). ORF is measured by a passage reading test, which requires students to read aloud from a passage of text for one minute, to determine the number of words read correctly per minute. Research on CBM of reading dates back to the early 1980s and continues to the present day. As such, CBM of reading has a large and very sound research base. Many studies have provided evidence of the reliability and validity of CBM of reading. ORF has been found to be a valid indicator



of general reading ability including reading comprehension.

An essential feature of this assessment method is that test materials are drawn from the students' curriculum, originally taken directly from a basal reading series. By reading a passage of text, the whole skill of reading is measured, rather than component sub-skills. Research has also demonstrated that CBM of reading is an effective means of monitoring reading progress, particularly that of low-progress readers on, say, a weekly or fortnightly basis, using a set of curriculum-based passage reading tests. This information is then used to make instructional decisions such as increasing the intensity or frequency of instruction and is ideally suited for use within a Response to Intervention (RTI) model.

Too good to be true?

We first became acquainted with curriculum-based measurement (CBM) of reading in the early 90s, when we began to read the pioneering research of Stan Deno and his colleagues (Deno, 1992; Deno et al, 1982). Quite frankly, it all sounded too good to be true initially. Could it really be the case that one could assess reading progress accurately and reliably by asking a child to read from a passage of text for just one minute and then counting the number of words read correctly? We were dubious. To be convinced we had

to collect data of our own; we did and we were.

Could it really be the case that one could assess reading progress accurately and reliably by asking a child to read from a passage of text for just one minute and then counting the number of words read correctly?

Our first attempts involved using passages of grade level text from 'real books' from the curriculum, which were judged to be of about the same level of difficulty, as recommended originally by Deno. This proved to be quite challenging even when using readability formulae to estimate similar levels of text difficulty. Moreover, for our purposes, working with low-progress readers differing in age, we needed passages that were not necessarily grade related; passages that could be used across grades. It was subsequently determined that such passages need not be literally based in the curriculum, defined narrowly i.e. the actual books children were reading in class. Fuchs and Deno (1994) asked 'Must instructionally useful performance assessment be based in the curriculum?' and concluded that it did not. They interpreted the relevant curriculum as the broader concept of reading *per se* and that specially composed, novel passages could be used equally well.

Doing the timed WARP again

To this end, the first author (KW) wrote a series of 21 200-word passages of narrative text, each comprising a simple, short story. We checked and adjusted the draft passages based on the readability measures provided in Microsoft Word, to make them as similar as possible in terms of reading difficulty. But it soon became clear from our pilot studies that this was not sufficient. The only reliable way of developing parallel passages was to try them out on relevant samples of children (Wheldall & Madelaine, 1997). Dr Alison Madelaine was the major contributor to this enterprise, as part of her doctoral studies, and also compiled extensive reviews of the relevant literature (Madelaine & Wheldall, 1999; 2004). Literally hundreds, if not thousands, of students were assessed

on successive versions of what became known as the Wheldall Assessment of Reading Passages or WARP, over a period of several years, to establish its psychometric credibility and to provide performance benchmarks for successive school years. The published edition of the WARP comprises three Initial Assessment Passages and ten Progress Monitoring Passages.

What follows is a brief summary of the process by which the current WARP passages were selected and is fully described in Wheldall and Madelaine (2006). This version of the WARP derives from an analysis of a sample of 261 school students from Years 1 to 5 from the same school. As such, and while clearly not constituting a random sample of students in any sense, it comprised almost the total intake of students from Years 1 to 5 (the likely range of the test) from a school that had been shown to be closely representative of the population of school students in New South Wales over three successive years. This sample of students were all assessed by trained research assistants on all 21 of the 200-word passages.

The results, in terms of basic descriptive statistics and correlations for all 21 passages are provided in Wheldall and Madelaine (2006). In essence the results of preliminary analyses replicated all previous WARP studies in that all of the WARP passages were shown to intercorrelate very highly ($r=0.95+$), with very similar standard deviations. Mean numbers of words read correctly per minute for the 21 passages (i.e., the difficulty levels of the passages) varied, however. This was in spite of attempts to write all of the passages so as to be at the same level of difficulty and using readability measures. Consequently, the two easiest passages were discarded, as were the six most difficult passages, which were appreciably more difficult than the others. This left 13 passages of a very similar level of difficulty, as determined *empirically* by these results.

A decision was taken to select three passages, which were the three passages most similar to each other, and to deem that the mean score for this basic set of three Initial Assessment Passages be used as a set for 'one off' testing for screening and/or placement purposes, for termly assessments and reporting, for evaluation studies, etc. The three passages were very similar in terms of both mean and standard deviation for words read correctly and also intercorrelated very highly both with

each other ($r=0.97$) and mean passage score over the three passages (0.99).

The remaining ten passages from the 13 passages selected on the basis of their similarity to each other were chosen to yield a set of ten Progress Monitoring Passages. Following an initial assessment, these passages could be used weekly over the course of a typical ten-week term to monitor the progress of individual students. (A more reliable index of progress, reducing the error variance, may be obtained by calculating the running mean of these passages over the weeks or by taking the mean of two successive passages given every fortnight.) The ten passages were similar in terms of both mean and standard deviation for words read correctly, every passage mean being within four points of the mean for the three Initial Assessment Passages and the standard deviation varying by no more than three points from that for the average for the three Initial Assessment Passages. The ten passages also intercorrelated very highly with each other ($r = 0.95-0.98$) and with the mean passage score of the three Initial Assessment Passages ($r = 0.97-0.98$).

... the basic set of three Initial Assessment Passages be used as a set for 'one off' testing ... The remaining ten passages ... could be used weekly over the course of a typical ten-week term to monitor the progress of individual students.

Moreover, the passages showed good validity, confirming the results of our earlier studies. In a study comprising 146 low-progress readers, validity coefficients of 0.8 (range 0.78-0.80) were found between the WARP mean and the reading accuracy measure on the Neale and 0.52 on the Neale comprehension measure (Madelaine & Wheldall, 1998). A subsequent study sampled the full range of reading ability ($n=50$) and found higher correlations. The validity coefficients for the WARP and Neale Accuracy were again high at 0.87 (range for individual passages: 0.84-0.87); 0.71 (0.67 to 0.72 for individual passages) for Neale Comprehension; and 0.85 (range 0.83-0.85) for the Burt.

Given their similarity to each other and to the Initial Assessment Measure,

their use as parallel Progress Monitoring Passages would therefore appear to be warranted for successive use in monitoring reading progress, following a specific intervention, for example. The passages were deliberately ordered for use, so as to distribute the small differences between passages in such a way that they almost cancel each other out (when running means over two successive passages are calculated, for example). It is recommended that these data obtained be graphed to monitor continuing progress of individual students.

CBM is a quick, reliable, valid and cost-effective method of tracking progress in reading, providing valuable information which enables educators to monitor progress regularly and to make appropriate instructional decisions ...

We have developed other CBM measurements (collectively known as the WARs), as we develop and evaluate our own suite of reading programs. We will describe the other WARs in an upcoming LDA publication. For now, however, our experience is showing that CBM is a quick, reliable, valid and cost-effective method of tracking progress in reading, providing valuable information which enables educators to monitor progress regularly and to make appropriate instructional decisions in order to maximize the reading progress of their students. Watch this space for the next time we mention the WARs!

References

Deno, S. L. (1992). The nature and development of curriculum-based measurement. *Preventing School Failure*, 36, 5-10.

Deno, S. L., Mirkin, P. K., & Chiang, B. (1982). Identifying valid measures of reading. *Exceptional Children*, 49, 36-45.

Fuchs, L. S., & Deno, S. L. (1994). Must instructionally useful performance assessment be based in the curriculum? *Exceptional Children*, 61, 15-24.

Madelaine, A., & Wheldall, K. (1998). Towards a curriculum-based passage reading test for monitoring the performance of low-progress readers using standardised passages: A validity study. *Educational Psychology*, 18, 471-478.

Madelaine, A., & Wheldall, K. (1999). Curriculum-based measurement of reading: A critical review. *International Journal of Disability, Development and Education*, 46, 71-85.

Madelaine, A., & Wheldall, K. (2004). Curriculum-based measurement of reading: Recent advances. *International Journal of Disability, Development and Education*, 51, 57-82.

Wheldall, K., & Madelaine, A. (1997). Should we measure reading progress and if so how? Extrapolating the curriculum-based measurement model for monitoring low-progress readers. *Special Education Perspectives*, 6, 29-35.

Wheldall, K., & Madelaine, A. (2006). The development of a passage reading test for the frequent monitoring of performance of low-progress readers. *Australasian Journal of Special Education*, 30, 72-85.

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Disclosure

Kevin and Robyn Wheldall are directors of MultiLit Pty Ltd, in which they have a financial interest. They receive a benefit from the activities of the company and the sale of its programs and products, including the measure that is the subject of this article.

Developing accuracy and fluency in word reading skills

Toni Seiler and Suze Leitão tackle the development of efficient word recognition – an essential skill underlying reading fluency. They outline the theoretical basis for a research program that has involved developing and evaluating a practical strategy for providing students with extended practice in decoding words, helping students to progress from ‘L Plates’ and ‘P Plates’ in word recognition, through to achieving ‘D Plates,’ with driver status. The driving lessons described in the research come with a free web-based app.

In this paper, we talk about a key requirement for reading comprehension: accurate, fluent word reading. We draw on theory and research evidence that underpins the science of reading, highlight critical components of early reading instruction that promote accurate decoding and fluent word reading, and discuss our programme of research that has investigated this area. We conclude with some important take-home messages and links to the free web-

based app developed for our research, that has been shown in our preliminary investigations to strengthen decoding and word reading skills.

Models of reading

A widely regarded view of reading comprehension (the aim of skilled reading) is that it depends on two sets of linguistic skills: accurate word reading and listening comprehension (the oral language skill of understanding the meaning of words and sentences we hear). This model, the Simple View of Reading (Gough & Tunmer, 1986) is well-supported (e.g., Lervåg, Hulme, & Melby-Lervåg, 2018). It suggests that compromised reading comprehension is likely to occur if a person can accurately read words but has reduced listening comprehension, or, has adequate listening comprehension but is unable to read the words. The ability to accurately read words is usually indicated by reading fluency, i.e., reading at an appropriate rate and with expression (Hasbrouck & Glaser, 2018). Accurate and fluent word reading is essential for skilled reading throughout the lifespan (García & Cain, 2014; Sparks, Patton, & Murdoch, 2014) but is impaired in most people with reading difficulty (Catts, Hogan, & Fey, 2003; Torppa et al., 2007). To effectively teach children in the early stages of reading, we need to understand what is involved in fluent word reading.

The development of automatic fluent word reading is a gradual process.

Skilled readers flip effortlessly between two ways of reading words: they either automatically recognise the word or they use grapheme-phoneme (letter-sound) knowledge to sound out and blend to decipher a new or



unknown word - in other words, they decode the word. This view of the reading process is referred to as the dual route model, reflecting the two pathways (Coltheart, 2006). Skilled readers eventually acquire a large bank of words that are instantly recognised, and can be spontaneously read (existing orthographic representations), pronounced (phonological representations), and understood (semantic representations).

The development of automatic fluent word reading is a gradual process. Ehri's Phase Theory (Ehri, 2005) describes how children progress from an initial reliance on sounding words out and using decoding, to automatically recognising a greater number of words. This occurs as a connection-forming process – using knowledge of the sounds in words (phoneme awareness), the decoding process (sounding out and blending), and existing oral language to form connections which link written words to their pronunciations and meanings. Four phases are described. Initially a few words are recognised within context, (e.g., ‘EXIT’ on an exit sign). This is followed by emerging grapheme-phoneme knowledge often with inaccurate decoding, to full mastery of most grapheme-phoneme correspondences allowing decoding of unfamiliar words. Finally, knowledge of grapheme-phoneme connections expands to include larger units (e.g., rimes, syllables, morphemes, and whole words), allowing accurate decoding

of multi-syllabic words, development of an increased bank of orthographic representations of known words, and wider knowledge of English orthography. For example, some words have different pronunciations and meanings (e.g., wind – “wind up the fishing line”, and “the wind blows”); others need to be specifically learned (e.g., yacht). While Ehri’s theory describes developmental phases in word reading and allows identification of the level of breakdown for a struggling reader, it does not inform teachers about effective strategies for instruction and intervention - that is, how to answer questions such as, “How do I foster fluent word reading?” and “What is the best prompt to use if a child is unable to read/remember a previously taught word?”

A possible explanation to support the development of fluent word reading is phonological recoding theory (Share, 1995). Phonological recoding takes

... the most efficient method of developing fluent word reading is to reinforce accurate decoding.

place when a child sounds out and blends the sounds (decodes) to read the word. This acts as a self-teaching mechanism which allows the child to pay attention to the internal structure of the word to generate its pronunciation, and in this way, make links between the written orthographic and the sound-based phonological representations. The role of phonological recoding in the development of fluent word reading has been examined by many independent research groups in different populations. In these studies, the child is usually asked to read a story containing an unfamiliar word – a nonword or a very rare word is often used, as this ensures that the decoding pathway is used. The child is then presented with tasks to assess whether they can automatically read or spell the word (to check whether orthographic learning has occurred). The results have shown that, in the early stages of reading development, typically developing children:

- Easily learn novel words after six presentations (Cunningham, Perry, Stanovich, & Share, 2002).
- Are affected by dose rate: eight presentations were better than four (Bowey & Muller, 2005).
- Have reduced word learning if they are prevented from using decoding

by being asked to say repetitive syllables (“la la la”) as they read the words (Kyte & Johnson, 2006).

- Learn words more efficiently when the words are presented in isolation, and corrective feedback is provided (Martin-Chang, Ouellette, & Bond, 2017). (Though a child may have correctly read a word within a story context, retention of the word is stronger when the word is read in isolation.)

The findings of these studies highlight the importance of ‘dosage’ (multiple presentations may be necessary), the importance of accurate decoding to optimise the learning of the orthographic representations, and that words should be presented both in text and in isolation, since “when children read words in isolation, they seemed to lay down more detailed and precise representations” (Martin-Chang et al., 2017, p. 26).

Phonological recoding has also been shown to boost vocabulary development. In addition to showing written words with a matching picture, a recent study has shown that children

As educators, we are faced with the challenge of assisting children who take longer to master grapheme-phoneme knowledge, and longer still to develop fluent word reading.

who also verbally decoded the word learned the meanings better than those who didn’t decode (Chambrè, Ehri, & Ness, 2020). These findings underscore “the importance of teaching beginning readers ... to decode words ... Not only is this knowledge important for developing students’ ability to read words automatically by sight but also for building their vocabularies” (Chambrè et al., 2020, p. 1158). This is consistent with models of word learning which highlight the importance of building links in the lexicon (Leitão, 2003).

This body of research highlights firstly, the importance of teaching accurate and fluent word reading in the early phases of reading instruction, and secondly, that while other cues (e.g., story context and pictures cues) may sometimes result in accurate word reading, the most efficient method of developing fluent word reading is to reinforce accurate decoding.

How do theoretical models inform approaches to early reading instruction?

A number of large scale international investigations (National Centre for Family Literacy, 2008; National Reading Panel, 2000) have shown that the most effective teaching approach in early reading instruction includes a focus on phonemic awareness and grapheme-phoneme knowledge combined with decoding. Hudson, Torgesen, Lane, and Turner (2012) investigated the sub-skills involved in fluent reading and, consistent with Ehri’s phase model, they identified the important role of phonemic blending. They concluded that “teachers need to ensure their young students become automatic in oral blending of sounds, individual letter sounds, and larger letter patterns” (Hudson et al., 2012, p. 501).

The systematic synthetic phonic (SSP) approach to early word reading instruction incorporates these well-supported principles, combining instruction in both phonemic awareness and decoding. SSP explicitly teaches grapheme-phoneme relationships, and encourages use of this knowledge to break words into sounds for spelling, and sound out and blend (synthesise the sounds) to read words. It starts with frequently occurring grapheme-phoneme relationships and progresses to less frequent ones (e.g., s-a-t, sh-ar-p, b-r-igh-t), and uses decodable texts to develop accurate text reading fluency. SSP was recommended following large scale international reviews of early literacy teaching (e.g., Rose, 2006), and the effect of its progressive roll-out across England was recently evaluated comparing reading outcomes of schools that had started using synthetic phonics with those that had not (Machin, McNally, & Viarengo, 2018). The results showed strong effects of synthetic phonics on early literacy acquisition, with persisting positive effects for struggling readers at age 11. Closer to home, an Australian study (Louden, 2015) which explored the characteristics of high performing Western Australian schools, found that, as well as strong leadership and well-developed school improvement plans, SSP in the early school years was a key feature.

What about those who struggle to master accurate and fluent word reading?

While most children master accurate and fluent word reading without specific additional teaching, a sizable proportion (nearly 40% of Australian students), do not achieve adequate literacy proficiency (Thomson, De Bortoli, & Underwood, 2016). Reading difficulties are often evident from an early age. As educators, we are faced with the challenge of assisting children who take longer to master grapheme-phoneme knowledge, and longer still to develop fluent word reading. While some authors have suggested that a focus on decoding actually slows progress and results in children “barking at print” (Rushton, Ewing, & Diamond, 2018), other carefully controlled research does not support this suggestion, and has identified underlying factors that cause this slow progress in word reading development.

Of significance, children with word reading difficulties have been shown to have weaknesses in underlying skills such as phonological processing (Snowling & Hulme, 2012). They have problems segmenting words into sounds and blending sounds to form words - the essential skills for mastery of fluent word reading. Other research has shown that these children eventually master accurate decoding, but they take longer and require more repetition to develop orthographic representations (Apel, Thomas-Tate, Wilson-Fowler, & Brimo, 2012).

A specific focus on accurate decoding to support orthographic

learning has been shown to be an important element within interventions for children with word reading difficulties. Pullen and Lane (2014) found the word decoding task to be the essential component of their multi-component intervention. Biname, Danzic, and Poncelet (2015) examined orthographic learning for children with dyslexia – a decoding difficulty in which children

The intervention developed and designed for our work, ‘WordDriver’, is a web app which ... randomly presents items (words and nonwords) in isolation and encourages extensive decoding practice at different levels of difficulty.

have difficulty mastering relationships between the spelling patterns of words and their pronunciations (Snowling & Hulme, 2012). In their study, novel words were taught with a focus on accurate decoding and spelling (to optimise formation of orthographic representations). Compared to two other groups (one matched for chronological age and one for reading age), the children with dyslexia required more repetitions to develop orthographic representations; they had reduced retention one week later; and initial decoding inaccuracy was shown to reduce orthographic learning. This body of research again highlights the importance of initial decoding accuracy, and suggests that increased intensity and repetition over a longer period (‘overtraining’) may improve long-term retention.

Our programme of research

We drew on theory and research to develop and carry out a series of small-scale efficacy studies to evaluate an intervention which specifically targeted accurate decoding to support orthographic learning for children with persistent word reading difficulties. The intervention developed and designed for our work, ‘WordDriver’, is a web app which uses many of the evidence-based features previously discussed: it randomly presents items (words and nonwords) in isolation and encourages extensive decoding practice at different levels of difficulty. It is also delivered in an individual situation allowing the instructor to provide corrective feedback and reinforce the meaning of words, thus supporting the development of connections between orthographic, phonological, and semantic representations of words, building the links in the lexicon.

WordDriver has two stages: WordDriver-1 provides training in the decoding process by presenting items with 1:1 letter-sound correspondence (starting at 2- and progressing to 6-letter items), while WordDriver-2 expands orthographic knowledge by delivering items with consonant and vowel digraphs. The app displays graphics on the screen that use an analogy of learning to drive a car (see Figure 1). In each module, the learner progresses from an L-Plate (learning), to a P-Plate (practising), and then a D-Plate (driver), each presenting a wide range of target items. For instance, in the 4-letter word D-Plate in WordDriver-1, decoding targets are drawn from a pool of 468 items (234 words, each with a nonword matched for orthographic similarity, e.g., flat – clat).

We used single case experimental research designs to study the efficacy of this intervention approach with children who had previously received some form of extra literacy support but made limited or no progress. Each participant received 15 x 15-minute intervention sessions. In the study examining WordDriver-1 (Seiler, Leitão, & Blosfelds, 2018), irrespective of pre-intervention cognitive, oral language, and phonological profiles, all eight participants (aged 7 – 8 years) made significant gains in decoding accuracy: standard scores on nonword reading measures improved from moderate/severe impairment into the normal range on the targeted areas (words with 1:1



Figure 1: Screen capture WordDriver-2

grapheme-phoneme correspondence). Though there were trends for gains in word reading, we concluded that participant delays in orthographic knowledge for vowel digraphs limited their progress. The second study, investigating WordDriver-1 followed by WordDriver-2 (Seiler & Leitão, in preparation), was delivered via teletherapy. It confirmed the previous results for WordDriver-1, and suggested that this approach effectively expanded orthographic knowledge for vowel digraphs. All five participants (aged 7 – 10 years) made significant gains (measured by researcher-developed nonword assessments) on two treated digraphs compared to an untreated vowel digraph.

While further validation of this tool is required, these results suggest that use of WordDriver resulted in improved decoding which would support further orthographic learning. It was concluded that this specifically targeted intervention may be an efficient component within the multi-component approaches that are necessary for this population.

Implications for classroom teaching

Some key take-home messages from this review of the research evidence on the development of word reading skills and the description of our intervention using WordDriver are that:

- Fluent word reading is an essential component of skilled reading.
- Accurate decoding helps in the development of clear orthographic representations of words.
- Students with persistent word reading difficulties take longer to develop decoding and fluent word reading, but intensive practice and more repetitions make a difference.

We would like to add a comment about an area that was not addressed directly in this article, but that is important in the context in which this research evidence is presented. It relates to the use of decodable readers in the early years of learning to read, as opposed to the provision of 'levelled readers' that are initially read predominantly by looking at the pictures and guessing from context. If young students are expected to read books that they cannot decode themselves, they may develop a disconnect between what they see as 'reading' and the practice of decoding. The disconnect may be particularly pronounced for children who do not find decoding easy. If on the other hand, their

reading practice with decodable readers involves successful decoding experiences, the opportunities for self-teaching (Share, 1985) are enhanced, even for slower-progress readers.

To conclude, our ongoing research is encouraging in terms of demonstrating the efficacy of an approach to develop word recognition skills. When used within a comprehensive intervention program, our WordDriver software may be beneficial for students who have not responded well to earlier remedial approaches. The WordDriver app is freely available for teachers and researchers, and we are happy to provide support: languageandliteracyinyoungpeople.com and worddriver.com.

References

Apel, K., Thomas-Tate, S., Wilson-Fowler, E. B., & Brimo, D. (2012). Acquisition of initial mental graphemic representations by children at risk for literacy development. *Applied Psycholinguistics*, 33(2), 365-391. doi:10.1017/s0142716411000403

Biname, F., Danzio, S., & Poncelet, M. (2015). Relative ease in creating detailed orthographic representations contrasted with severe difficulties to maintain them in long-term memory among dyslexic children. *Dyslexia*. doi:10.1002/dys.1506

Bowey, J. A., & Muller, D. (2005). Phonological recoding and rapid orthographic learning in third-graders' silent reading: A critical test of the self-teaching hypothesis. *Journal of Experimental Child Psychology*, 92(3), 203-219.

Catts, H. W., Hogan, T. P., & Fey, M. E. (2003). Subgrouping poor readers on the basis of individual differences in reading-related abilities. *Journal of Learning Disabilities*, 36, 151 - 164.

Chambrè, S. J., Ehri, L. C., & Ness, M. (2020). Phonological decoding enhances orthographic facilitation of vocabulary learning in first graders. *Reading and Writing*, 33(5), 1133-1162. doi:10.1007/s11145-019-09997-w

Coltheart, M. (2006). Dual route and connectionist models of reading: An overview. *London Review of Education*, 4(1), 5-17. doi:10.1080/13603110600574322

Cunningham, A. E., Perry, K. E., Stanovich, K. E., & Share, D. L. (2002). Orthographic learning during reading: examining the role of self-teaching. *Journal of Experimental Child Psychology*, 82(3), 185-199. doi:10.1016/S0022-0965(02)00008-5

Ehri, L. C. (2005). Learning to read words: Theory, findings, and issues. *Scientific Studies of Reading*, 9(2), 167-188.

García, J. R., & Cain, K. (2014). Decoding and reading comprehension: A meta-analysis to identify which reader and assessment characteristics influence the strength of the relationship in English. *Review of Educational Research*, 84(1), 74-111. doi:10.3102/0034654313499616

Gough, P. B., & Tunmer, W. E. (1986). Decoding, reading, and reading disability. *Remedial and Special Education*, 7, 6-10.

Hasbrouck, J., & Glaser, D., R. (2018). Reading fluently does not mean reading fast. International Literacy Association [Literacy Leadership Brief]. Retrieved from: <https://literacyworldwide.org/docs/default-source/where-we-stand/ila-reading-fluently-does-not-mean-reading-fast.pdf>

Hudson, R. F., Torgesen, J. K., Lane, H. B., & Turner, S. J. (2012). Relations among reading skills and sub-skills and text-level reading proficiency in developing readers. *Reading and Writing*, 25, 483–507. doi:10.1007/s11145-010-9283-6

Kyte, C. S., & Johnson, C. J. (2006). The role of phonological recoding in orthographic learning. *Journal of Experimental Child Psychology*, 93(2), 166-185. doi:10.1016/j.jecp.2005.09.003

Leitão, S. (2003). Applying psycholinguistic principles to spelling and word learning. *Australian Communication Quarterly*, 5(3), 114-117.

Lervåg, A., Hulme, C., & Melby-Lervåg, M. (2018). Unpicking the developmental relationship between oral language skills and reading comprehension: It's simple, but complex. *Child Development*, 89(5), 1821-1838. doi:doi:10.1111/cdev.12861

Louden, W. (2015). *High performing primary schools: What do they have in common?* Retrieved from Department of Education Western Australia: <https://www.ellenbrookps.wa.edu.au/wp-content/uploads/2012/09/2015-December-Louden-copy-for-circulation.pdf>

Machin, S., McNally, S., & Viarengo, M. (2018). Changing how literacy is taught: Evidence on synthetic phonics. *American Economic Journal: Economic Policy*, 10(2), 217-241.

Martin-Chang, S., Ouellette, G., & Bond,

- L. (2017). Differential effects of context and feedback on orthographic learning: How good is good enough? *Scientific Studies of Reading*, 21(1), 17-30. doi:10.1080/10888438.2016.1263993
- National Centre for Family Literacy, N. I. f. L. (2008). *Developing early literacy: Report of the National Early Literacy Panel*. Jessup, MD 20794-1398. Retrieved from: <https://lincs.ed.gov/publications/pdf/NELPReport09.pdf>
- National Reading Panel. (2000). *Teaching children to read. An evidence-based assessment of the scientific research literature on reading and implications for reading instruction*. Retrieved from: <https://www.nichd.nih.gov/sites/default/files/publications/pubs/nrp/Documents/report.pdf>
- Pullen, P. C., & Lane, H. B. (2014). Teacher-directed decoding practice with manipulative letters and word reading skill development of struggling first grade students. *Exceptionality*, 22(1), 1-16. doi:10.1080/09362835.2014.865952
- Rose, J. (2006). *Independent review of the teaching of early reading* (O201-2006DOC-EN). Retrieved from: www.standards.dfes.gov.uk/roserreview/
- Rushton, K., Ewing, R., & Diamond, M. (2018). Why real stories matter in learning to read. *Professional Educator* (October 2018), 14-17.
- Seiler, A., Leitão, S., & Blossfelds, M. (2018). WordDriver-1: Evaluating the efficacy of an app-supported decoding intervention for children with reading impairment. *International Journal of Language & Communication Disorders*, [http://dx.doi.org/10.1111/1460-6984.12388\(0\)](http://dx.doi.org/10.1111/1460-6984.12388(0)). doi:doi:10.1111/1460-6984.12388
- Share, D. L. (1995). Phonological recoding and self-teaching: sine qua non of reading acquisition. *Cognition*, 55(2), 151-218. doi:10.1016/0010-0277(94)00645-2
- Snowling, M. J., & Hulme, C. (2012). Annual Research Review: The nature and classification of reading disorders – a commentary on proposals for DSM-5. *Journal of Child Psychology and Psychiatry*, 53(5), 593-607. doi:10.1111/j.1469-7610.2011.02495.x
- Sparks, R., Patton, J., & Murdoch, A. (2014). Early reading success and its relationship to reading achievement and reading volume: replication of '10 years later'. *Reading and Writing*, 27(1), 189-211. doi:10.1007/s11145-013-9439-2
- Thomson, S., De Bortoli, L., & Underwood, C. (2016). *PISA 2015: A First Look at Australia's Results*. Retrieved from: <https://research.acer.edu.au/cgi/viewcontent.cgi?referer=https://www.google.com/&httpsredir=1&article=1021&context=ozpisa>
- Torppa, M., Tolvanen, A., Poikkeus, A. M., Eklund, K., Lerkkanen, M. K., Leskinen, E., & Lyytinen, H. (2007). Reading development subtypes and their early characteristics. *Annals of Dyslexia*, 57(1), 3-32. doi:10.1007/s11881-007-0003-0
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What educators need to know about Rapid Automated Naming (RAN)

In this article, **Elizabeth Norton** defines the intriguing Rapid Automated Naming (RAN) task, explains why it is related to reading, and argues that RAN can be a very useful component of literacy assessment.

Abstract

Rapid automatized naming (RAN) tasks require children to name an array of familiar items as quickly as possible, thus revealing the automaticity of many of the same cognitive and linguistic skills central to reading. RAN ability robustly correlates with reading ability, across different grade levels, reading measures, and languages. Despite all that is known about RAN, many teachers and practitioners are unsure about how or why to employ RAN tasks as part of literacy screening and assessment. Here, the RAN task is explained in terms of what it is and why it relates to reading. Next, the research on the RAN-reading relationship is reviewed. Finally, best practices for implementing RAN in literacy screening and assessment are presented.

What is RAN?

The rapid automatized naming (RAN) task may be one of the simplest assessments that a child can perform. A RAN task consists of an array of familiar items (such as objects, colors, letters, or numbers) each repeated several times, which the child is asked to name as quickly as possible. However, the simplicity of the RAN task is elegant in light of its strong association with reading and its predictive power to presage reading ability years into the future (Norton & Wolf, 2012).

There are three key aspects to a RAN task that differentiate it from other tasks and help explain its relationship with reading. Each is important for understanding RAN and its role in reading assessment. First, the items to be named are presented in an **array** (i.e., a grid) and the child names the items across each row from left to right. Most tasks have 8-10 items per row and 4-5 rows, for somewhere around 40-50 total items. This mirrors the process of reading connected text, as it requires similar sustained attention, eye movements, monitoring, and cognitive processing. Tasks that require naming single items quickly (also called discrete trial naming) are not nearly as strongly related to reading ability as RAN is (Logan et al., 2011), likely because the demand of consistent, sustained processing is absent. Researchers who have used slightly different arrangements of the grid or different numbers of items generally find similar results (Compton et al., 2002).

The second key facet of the RAN task is that the child names **familiar items**. Often for young children these are colors or familiar objects. For children who know their letter names and

numbers with automaticity, those alphanumeric stimuli can be used, and they show a stronger relation with reading (e.g., Araújo et al., 2015). The



stronger relation for alphanumeric than non-alphanumeric stimuli may be because the alphanumeric stimuli are more closely related to reading and are a smaller, closed set (that is, there is a limited set of items and no new items can be created within that set via small variations, as could be the case with colors or objects). The small set, typically 5-6 different items, is likely to be based on the history of RAN tasks, which were developed to be used for adults with aphasia who had lost some ability to name familiar items (see Cutting & Denckla, 1999). Note that a variant task called the rapid alternating stimulus (RAS) task includes multiple item types such as colors and letters in one array. Because traditional RAN is used more broadly, that is the focus here.

... the simplicity of the RAN task is elegant in light of its strong association with reading and its predictive power to presage reading ability years in the future ...

The third feature that defines a RAN task is that the items are named as quickly as possible and that the **naming time** is used as the indicator of ability. Most standardized RAN measures take

the total time to name the array. Some research measures calculate the time per item, items per second, or time to name a certain number of items (e.g., Compton et al., 2002); however, these generally show similar patterns in their relationship with reading. Qualitative analyses can examine the types of errors children make (for example, are the errors self-corrected? Are they substitutions of similar visual or phonological forms?), but because the stimuli should be highly familiar and able to be named automatically, there are typically few errors. Errors also typically contribute to the total time it takes a child to name the array and thus can be considered to factor into the total time.

Because RAN ability depends on a large number of perceptual and cognitive factors, one can think of RAN as the “check engine light” that indicates a problem, but doesn’t reveal the exact cause.

Overall, RAN is an important indicator because it shares many processes with reading. Wolf and Bowers (2000) proposed a model of the RAN-reading relationship that highlights how RAN shares attention, visual recognition, integration, and access processes with reading. One way to think of RAN is as a microcosm of reading because of their many shared processes (Norton & Wolf, 2012). Importantly, RAN is not just a subcomponent of phonological awareness (PA), as RAN improves prediction of reading ability beyond PA measures alone (e.g., Kirby et al., 2010).

What does the research on RAN and reading show?

RAN as a correlate of reading ability

Hundreds of studies with readers of many different abilities, ages, and languages have found significant relations between faster RAN and stronger reading ability. Meta-analyses (that is, studies that examine and aggregate the results of other studies) have been conducted about the relation between RAN and reading across languages; these provide the best big-picture view of how RAN relates concurrently to reading because

they analyze very large numbers of children and allow a more consensus view across studies. Two large meta-analyses found that the correlation between RAN and single word reading was $r=0.41$ (Swanson et al., 2003, with 2,991 individuals included across studies) and 0.45 (Araújo et al., 2015, $n=26,491$). (Note that these correlations are absolute values; in all cases, better RAN is associated with better reading.) The correlation with text (sentence or paragraph) reading was also 0.45 (Araújo et al., $n=2,798$). The relation with reading comprehension ranged from 0.45 (Swanson et al., $n=1,550$) to 0.39 (Araújo et al., $n=4,965$). Restricting analyses to just orthographically opaque languages like English, Araújo and colleagues found that the association of RAN with reading accuracy was 0.44 ($n=8,913$) and with reading fluency was 0.55 ($n=6,565$). Together, these results show that RAN is robustly related to reading, and in English, the strongest relations tend to be with speeded or fluency measures.

RAN as a predictor of reading ability

In terms of RAN serving as a predictor of future reading ability, one meta-analysis examined early predictors focused on reading comprehension (Hjetland et al., 2017). This analysis included 3,746 individuals who completed RAN assessment at around age 5 and then a reading comprehension assessment later, at around age 8. The correlation was found to be $r=0.34$. Similarly, of those studies included that also looked at word identification ($n=3,285$), the correlation with earlier RAN scores was 0.37. Importantly there was one outlier included in these analyses that was listed as having the opposite RAN-reading relation, so these are likely to under-estimate the strength of the RAN-reading relation. Our group is currently conducting a comprehensive meta-analysis of how early RAN measures in preschool or kindergarten relate to later reading, measured around the end of grade 2 (McWeeny et al., in prep). Our analyses reveal that the overall correlation between early RAN and later reading in English is 0.38, and that RAN relates similarly to timed vs. untimed measures, as well as similarly to single word reading and comprehension measures at this young age. These longitudinal data show

that RAN is not only a correlate, but a powerful predictor of reading ability.

RAN as a deficit in dyslexia

Given the strong association between RAN and reading, it makes sense that a child with poor RAN could have dyslexia (an unexpected difficulty with reading that is biologically based and not caused by primary sensory or perceptual problems, nor lack of effort or opportunity to learn to read; Peterson, & Pennington, 2012). In 1999, Wolf and Bowers introduced the double-deficit hypothesis (DDH), suggesting that dyslexia could be caused by deficits in phonological awareness and/or RAN, and that children with both (double) deficit would be the most severely affected. At that time, the field was dominated by the core phonological deficit view of dyslexia. Over the past two decades, dozens – if not hundreds – of studies have found that RAN deficits are common in children with dyslexia and can exist on their own or in tandem with other deficits like PA. Thus, the view in the field has begun to shift toward a multi-componential understanding of reading ability and dyslexia, recognizing that a weakness in RAN can cause poor reading, but that RAN, phonological, and other deficits can co-occur and that profiles of children with dyslexia are highly heterogeneous (Norton & Wolf, 2012).

The brain basis of RAN

Many of the patterns about RAN and reading observed in behavior are bolstered by the findings of neuroimaging research. When adults complete RAN tasks and reading tasks during fMRI scanning, their brains show highly similar patterns of activation, involving a host of regions that support visual, semantic, motor, articulatory, and sound-symbol correspondence processing (Cummine et al., 2015). In turn, research on deficits in dyslexia shows that RAN and PA are distinct; children with PA and RAN deficits showed different patterns of brain activation during a reading and rhyming task with fMRI (Norton et al., 2014). Thus, these brain data further our understanding of the fact that RAN and reading relate because of shared processing demands, and that RAN deficits are a unique and important biological cause of poor reading.

Best practices for using RAN in screening and assessment

Why and when should I assess RAN?

Consider RAN as an aspect of reading screening as well as assessment. Because RAN is such a strong predictor of later reading, it is a key component of an early literacy screening battery and a diagnostic reading assessment. We know that children’s RAN gets faster with age, but that children tend to be relatively stable in their RAN ability compared to peers (e.g., Ozernov-Palchik et al., 2017). This means that a valid assessment of RAN in kindergarten is a good indicator of later RAN ability, and thus later reading. Screening is crucial for early identification of children at risk for dyslexia, as intervention is more effective earlier (Lovett et al., 2017). For evidence-based recommendations on screening, see Petscher et al. (2019).

For children who are already identified with dyslexia or are in the process of being assessed, RAN can provide insight into the nature of their difficulties. An interdisciplinary approach that bring together the child’s teacher with speech-language pathologists, school psychologists, neuropsychologists and other relevant experts is ideal for gaining the clearest picture of the child’s profile of strengths and areas for development (Berninger, 2001).

How should I assess RAN?

Many standardized test batteries include RAN tasks. Using a standardized and normed assessment is the easiest way to understand where a child’s RAN ability falls compared to their peers of the same age or grade. It is possible to create a “homemade” RAN grid and use this, but without other children to compare performance against, the data are harder to interpret.

It is also crucial to get a valid administration of the RAN task. As for any assessment, this means making sure that the child is able to give their best performance. It is crucial to follow the directions for any standardized assessment and to ensure that the child is familiar with the items in the RAN task and can name them accurately. Thus, for kindergarten children who do not know their letters and or numbers automatically, using objects or colors is a better option. Once children know their letters, alphanumeric RAN is a stronger predictor (Araújo et al., 2015).

What RAN score indicates a problem?

A major challenge of all research on reading screening is determining which children are at risk (and thus need further assessment, monitoring, and/or intervention) and which children are on track. Despite extensive research, there is no single test or single cutoff score that indicates that RAN is a problem. This is in part because RAN ability is a continuum, not a cliff; a child who scores in the 9th percentile is not all that different from a child who scores in the 10th percentile. However, if a cutoff of below the 10th percentile is chosen, one child would be identified while the other would not. Thus, RAN should be

considered as a continuum and a piece of the puzzle with other assessments of language, reading, and cognition.

What does a low RAN score mean?

Because RAN ability depends on a large number of perceptual and cognitive factors, one can think of RAN as the “check engine light” that indicates a problem, but doesn’t reveal the exact cause. Even still, knowing the exact cause doesn’t mean that there is an easy fix, as detailed in the next section. However, it is important to keep in mind that because of the overlap in processes with RAN and efficient or fluent reading, a low RAN score in a child could indicate that they may have particular weaknesses in fluency.

If a child is identified with low RAN at screening, they may be monitored more closely, especially for difficulties with reading fluency.

What should we do for children with weak RAN?

A question I am often asked is “How can we improve that child’s RAN score?” The answer is frustrating to hear, I’m afraid – we know of no way to simply bolster a child’s RAN ability. Though some studies have tried to improve RAN via practice with naming (see Kirby et al., 2010 for review), the results do not show that training RAN leads to better outcomes than providing equal hours of reading intervention. It seems that RAN ability is a relatively intrinsic or set characteristic of an individual. Similarly, training processing speed and other executive function skills may lead to better performance on the training task, but rarely leads to meaningful, generalizable improvements (e.g., Melby-Lervåg & Hulme, 2013).

If a child is identified with low RAN at screening, they may be monitored more closely, especially for difficulties with reading fluency. Given the lack of evidence-based practices that currently exist that are specific to children with RAN difficulties, one course of action is to work on building accuracy and then automaticity in all the other areas of language and literacy. We know that good readers not only use certain areas of their brains when reading, but that skilled reading depends on robust structural connections that allow



Figure 1: Dr Norton administers a literacy screener, including RAN. Photo: Justin Barbin

fast association of orthography with phonology and other levels of language (Norton et al., 2015). Thus, instruction and practice using evidence-based curricula is crucial.

In summary, RAN is a powerful tool for identifying children at risk for reading problems and understanding the causes of reading difficulties and dyslexia.

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References

Araújo, S., Reis, A., Petersson, K. M., & Faisca, L. (2015). Rapid automatized naming and reading performance: A meta-analysis. *Journal of Educational Psychology, 107*(3), 868-883.

Berninger, V. W. (2001). Understanding the 'lexia' in dyslexia: A multidisciplinary team approach to learning disabilities. *Annals of Dyslexia, 51*, 23-48.

Compton, D. L., Olson, R. K., DeFries, J. C., & Pennington, B. F. (2002). Comparing the relationships among two different versions of alphanumeric rapid automatized naming and word level reading skills. *Scientific Studies of Reading, 6*(4), 343-368.

Cummine, J., Chouinard, B., Szepesvari, E., & Georgiou, G. K. (2015). An examination of the rapid automatized naming-reading relationship using functional magnetic resonance imaging. *Neuroscience, 305*, 49-66. doi:10.1016/j.neuroscience.2015.07.071

Cutting, L. E., & Denckla, M. B. (2001). The relationship of rapid serial naming and word reading in normally developing readers: An exploratory model. *Reading and Writing, 14*(7-8), 673-705.

Denckla, M. B., & Rudel, R. G. (1976). Rapid automatized naming (R.A.N): Dyslexia differentiated from other learning disabilities. *Neuropsychologia, 14*, 471-479.

Hjetland, H. N., Brinchmann, E. I., Scherer, R., & Melby-Lervåg, M. (2017). Preschool predictors of later reading comprehension ability: A systematic review. *Campbell Systematic Reviews, 13*(1), 1-155.

Kirby, J.R., Georgiou, G.K., Martinussen, R., Parrila, R., Bowers, P., & Landerl K. (2010). Naming speed and reading: from prediction to instruction. *Reading Research Quarterly, 45*, 341-362.

Logan, J. A., Schatschneider, C., & Wagner, R. K. (2011). Rapid serial naming and reading ability: the role of lexical access. *Reading and Writing, 24*(1), 1-25. <https://doi.org/10.1007/s11145-009-9199-1>

Lovett, M. W., Frijters, J. C., Wolf, M., Steinbach, K. A., Sevcik, R. A., & Morris, R. D. (2017). Early intervention for children at risk for reading disabilities: The impact of grade at intervention and individual differences on intervention outcomes. *Journal of Educational Psychology, 109*(7), 889-914. <https://doi.org/10.1037/edu0000181>

McWeeny, S., Choi, S. J., LaTourette, A., Choe, J., Roberts, M. Y., & Norton, E. S. (in prep). Rapid automatized naming (RAN) as a kindergarten predictor of future reading: A systematic review and meta-analysis.

Melby-Lervåg, M., & Hulme, C. (2013). Is working memory training effective? A meta-analytic review. *Dev. Psychol. 49*, 270-291. doi: 10.1037/a0028228

Norton, E. S., Beach, S. D., & Gabrieli, J. D. E. (2015). Neurobiology of dyslexia. *Current Opinion in Neurobiology, 30*, 73-78. <https://doi.org/10.1016/j.conb.2014.09.007>

Norton, E. S., Black, J. M., Stanley, L. M., Tanaka, H., Gabrieli, J. D. E., Sawyer, C., & Hoefft, F. (2014). Functional neuroanatomical evidence for the double-deficit hypothesis of developmental dyslexia. *Neuropsychologia, 61*, 235-246. <https://doi.org/10.1016/j.neuropsychologia.2014.06.015>

Norton, E. S., & Wolf, M. (2012). Rapid automatized naming (RAN) and reading fluency: Implications for understanding and treatment of reading disabilities. *Annual Review of Psychology, 63*, 427-452. <http://doi.org/10.1146/annurev-psych-120710-100431>

Ozernov-Palchik, O., Norton, E. S., Sideridis, G., Beach, S. D., Gabrieli, J. D. E., & Gaab, N. (2017). Early-reading profiles of children at kindergarten and longitudinally: Implications for early screening and theories of reading. *Developmental Science, 20*(5). <https://doi.org/10.1111/desc.12471>

Peterson, R. L., & Pennington, B. F. (2012). Developmental dyslexia. *The Lancet, 379*(9830), 1997-2007.

Petscher, Y., Fien, H., Stanley, C., Gearin, B., Gaab, N., Fletcher, J.M., & Johnson, E. (2019). *Screening for dyslexia*. U.S. Department of Education, Office of Elementary and Secondary Education, Office of Special Education Programs,

National Center on Improving Literacy. Retrieved from <https://improvingliteracy.org/sites/improvingliteracy2.uoregon.edu/files/whitepaper/screening-for-dyslexia.pdf>

Swanson, H. L., Trainin, G., Necoechea, D. M., & Hammill, D. D. (2003). Rapid naming, phonological awareness, and reading: A meta-analysis of the correlation evidence. *Review of Educational Research, 73*(4), 407-440.

Wolf, M., & Bowers, P. G. (1999). The double-deficit hypothesis for the developmental dyslexias. *Journal of Educational Psychology, 91*(3), 415-438.

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Experiencing RAN: Notes from a speech-language pathologist

Ros Neilson provides a clinical footnote to the information provided about research on RAN, writing from the point of view of a speech-language pathologist.

Reading specialists and psychologists who are not familiar with Rapid Automated Naming, may at first glance query its relevance to their day to day practice, beyond providing a screening tool. The research, after all, shows that RAN does not provide a useful target for direct intervention with clients (see Norton, 2020, this Bulletin.)

Speech-Language Pathologists (SLPs) who have seen RAN in practice, however, tend to take a different point of view. RAN can be very revealing indeed. RAN was introduced into SLP clinical practice in the third edition of an important oral language test, the CELF-3 (Semel, Wiig & Secord, 1995, out of print). The current CELF-5 no longer includes the RAN subtest, so SLPs have to turn to other tools to do the assessment.

There were three RAN tasks provided within the optional subtests of the CELF-3: colour naming, shape naming (both of which are traditional RAN tasks), and finally a non-traditional and very complex RAN-type task, colour + shape naming. The colour + shape array is reproduced in Figure 1. The student has to say, as rapidly as possible, “Green circle, green triangle, blue star . . . etc.” until the end of the array is reached. Readers may wish to try out the task for themselves.

Some students with reading difficulties who have generally at least low-average oral language and IQ scores, find the colour + shape naming task startlingly difficult. Time taken to complete the array is not the only issue by any means - the qualitative observations that the task allows are invaluable. Some students lose the order of the phrase syntax at times, switching to, for example, “triangle yellow” instead of “yellow triangle” midway through the array. Some inconsistently lose their control of articulation, stumbling and struggling with the consonant clusters in ‘square’, ‘star’, ‘triangle and ‘green’. Some show extremely strong word interference, saying, for example, “red, no, blue, no yellow square.” And the less compliant students often simply stop and say, “I can’t do it.”

What SLPs are seeing, in the clinic, is language difficulty under the microscope. The phonological, semantic and even syntactic routes by which these students produce language are vulnerable when it comes to a task that involves a closed set of items to be identified, time pressure, a lot of executive coordination, as well as overall speed of processing. All these factors, of course, are obviously involved in reading – and reading, moreover, also involves the extra dimension of use of the alphabetic code.

I have not seen published research confirming this, but I suggest that the language difficulties highlighted in RAN assessment may also be involved to a less obvious extent in spoken language. There are many students with reading difficulties whose oral language sounds unremarkable when they are chatting casually, but who still struggle to produce formal language on demand. Their sentences get lost in

mazes, they keep coming up with the wrong words, and their pronunciation of tongue-twister type words is very fuzzy.

As a SLP, I strongly endorse the suggestion made by Elizabeth Norton (Norton, 2020, this Bulletin) that RAN assessment can act as a diagnostic warning light. Students who have reading difficulties associated with weakness on RAN are at risk of being seen as merely slow learners, lazy, or not trying hard enough, and their oral language may make them even more vulnerable to such labels. Evidence from RAN assessment can be a part of an important advocacy role for those working to support these students, and the observations that RAN affords can help to shape the oral and written language targets chosen for intervention.



Semel, E., Wiig, E.H., & Secord, W. A. (1995). *The Clinical Evaluation of Language Fundamentals, Third Edition*. The Psychological Corporation. (Out of print)

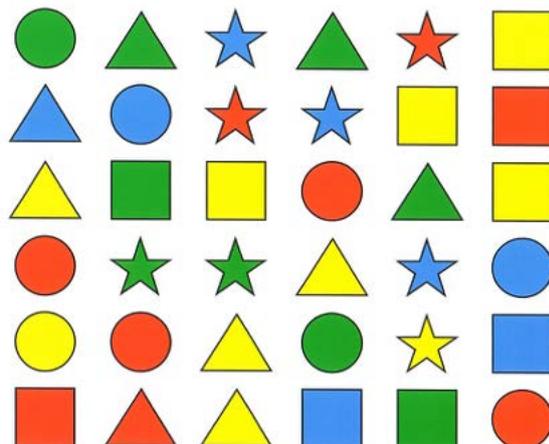


Figure 1: Coloured shape RAN task, reproduced from the CELF-3 (now out of print).

Discussion and Debate

Evidence strongly favours systematic synthetic phonics

Jennifer Buckingham provides a carefully-presented counterargument to the recent suggestion that the evidence in favour of systematic phonics instruction is weak, and that early phonics instruction should be replaced by ‘Structured Word Inquiry’.

Within the community of research and practice that is informed by scientific evidence, there is a general acceptance that children need to learn the alphabetic code in order to be able to read accurately and for meaning, and that the most effective way to teach the code is through systematic and explicit phonics instruction (Castles et al., 2018).

A recent challenge to that consensus has come from Professor Jeffrey Bowers who has published a journal article that claims to show that “there is little or no evidence that systematic phonics is better than the main alternative methods used in schools, including whole language and balanced literacy” (Bowers, 2020, p. 1). Furthermore, Bowers says, “Once this is understood, my hope is that researchers and politicians will be more motivated to consider alternative methods.”

Bowers is right to say that researchers should never consider that

they have found the ultimate solution and stop looking for better ones. However, it is very different to propose that teachers and politicians should consider using unproven ‘alternative’ methods. Teaching practice and education policy should be based on the best available evidence unless and until it is superseded by new information and new evidence.

Bowers reviews major meta-analyses of studies that have looked at the effect of systematic phonics instruction on various reading outcomes. His key criticisms are that the strength of the measured effects of systematic phonics are overstated and that the studies do not directly compare systematic phonics with what he calls ‘unsystematic phonics’.

However, Bowers’ interpretation of the findings of these meta-analyses is not accurate. There is stronger evidence in favour of using systematic phonics in reading instruction than not using it.

What is systematic phonics?

The broad term ‘systematic phonics’ describes practices for the teaching of decoding and word reading. Evidence-based understandings of systematic phonics place it within a comprehensive program of instruction that includes four additional essential elements – phonemic awareness, fluency, vocabulary and comprehension. Alone, systematic phonics is not a fool proof guarantee of reading success and its effectiveness is mediated by the quality of the rest of the literacy program.

Systematic phonics does not supplant or contradict the need for instruction that develops language comprehension. Therefore, comparing the effects of systematic phonics instruction with comprehension-based

programs is a false comparison. Both phonics and comprehension instruction are necessary; a finding of a positive effect of one on reading outcomes does



not prove that the other is unnecessary. Measures of reading comprehension are measuring both word identification and language comprehension factors. In the early stages of reading development, word identification is the stronger predictor of reading comprehension, but once decoding is fluent, language comprehension becomes more important (Garcia and Cain, 2014).

According to Bowers (2020), “systematic phonics explicitly teaches children grapheme-phoneme correspondences prior to emphasizing the meanings of written words in text (as in whole language or balanced literacy instruction) or the meaning of written words in isolation (as in morphological instruction).” (p. 3)

This is incorrect. Systematic phonics does not preclude a focus on the meaning of words. There is no directive that learning grapheme-phoneme correspondences (GPCs) must precede all other elements of reading instruction.

The common recommendation that morphology instruction comes after a period of systematic phonics instruction (the precise optimal time for this has not yet been determined) is based on scientific evidence that the phonological pathway for decoding words is essential for beginning readers. While implicit morphological understanding is evident in young children’s oral language, children’s use of morphological

Study	Effect size (Cohen's d or Hedge's g)
National Reading Panel (2000)/ Ehri (2001)	Overall d = 0.67 (decoding regular words) d = 0.60 (decoding pseudowords) d = 0.40 (irregular words) d = 0.51 (reading comprehension) Type of phonics Synthetic phonics d = 0.45 (average for all measures) Analytic phonics d = 0.35 (average for all measures) Grade level Kindergarten d = 0.56 (average for all measures) First grade d = 0.54 (average for all measures) Grade 2-6 d = 0.27 (average for all measures)
Camilli, Vargas & Yurecko (2003)	d = 0.24 (average for all measures)
Camilli, Wolfe & Smith (2006)	d = 0.123 * phonics only instruction
Torgerson, Brooks & Hall (2006)	d = 0.27 / 0.38 (fixed effects/random effects; word reading accuracy) d = 0.24 / 0.35 (fixed effects/random effects; reading comprehension)
Suggate (2010)	d = 0.5 (average for all measures) d = 0.59 (pre-reading) d = 0.42 (reading) d = 0.41 (comprehension) d = 0.32 (average for all measures; follow up)
Adesope, Lavin, Thompson, & Ungerleider (2011)	g = 0.40
Galuschka, Ise, Krick & Schulte-Korne (2014)	g = 0.322 (average for all measures)
Suggate (2016)	Post-test d = 0.44 (average for all measures) d = 0.48 (pre-reading) d = 0.45 (reading skills) d = 0.48 (comprehension) Follow up d = 0.25 (average for all measures) d = 0.26 (pre-reading) d = 0.30 (reading skills) d = -0.03 (comprehension) * included unpublished and published studies ** 8 out of 22 phonics interventions were computer-based phonics training
McArthur et al (2018)	d = 0.51 (mixed/regular word reading accuracy) d = 0.67 (nonword reading accuracy) d = 0.84 (irregular word reading accuracy) d = 0.45 (mixed/regular word reading fluency) d = 0.39 (non-word reading fluency) d = 0.28 (reading comprehension)

Table 1: Effect sizes for reading outcomes associated with systematic phonics instruction

knowledge in word reading is demonstrated later (Rastle, 2019).

Systematic phonics can include synthetic and analytic approaches, which differ in the unit of sub-word analysis. Synthetic phonics begins with phonemes – the smallest sub-word level. Children learn the associations between speech sounds (phonemes) and the letters or letter clusters that represent them in writing (graphemes), and that this is a reversible process. They learn to synthesise the phonemes and graphemes to read and spell words. Synthetic phonics instruction has a defined sequence for teaching grapheme-phoneme correspondences.

Analytic phonics uses larger sub-word units such as onset-rime for word analysis. For example, rather than learning to read the word rat as a composition of three letters and sounds, r-a-t, children would learn that the word rat is in a 'word family' with the rime -at, such as r-at, s-at, c-at, and so on.

There are far fewer GPCs than there are 'word families' and learning phonics at the phoneme level is more systematic and efficient than onset-rime families (Vousden et al., 2011). The vast majority of rimes can be read using their component GPCs (Brooks, 2015). Knowledge of phonemes is a stronger predictor of early reading acquisition than knowledge of rimes (Nation & Hulme, 1997).

Is Bowers' interpretation of the meta-analyses fair?

In his review of evidence on systematic phonics, Bowers looks in detail at meta-analyses conducted over the past twenty years, starting with the National Reading Panel (2000) later published as Ehri et al. (2001).

Bowers argues that the effect sizes in these studies are not large and do not justify the authors' conclusions that systematic phonics has the strongest evidence in its favour. However, the effect sizes in these studies are certainly stronger than the evidence found for any other method, including whole language. Subsequent studies have added to the evidence in favour of including systematic phonics in reading instruction (for example, Hjetland et al. 2019). Detailed descriptions of these meta-analyses and an explanation of the flaws in Bowers' interpretation of them is provided in Buckingham (2020).

Table 1 presents the main findings of meta-analyses and systematic reviews of phonics instruction and intervention. These are the same studies reviewed by Bowers, with the exception of the McArthur et al (2018) study which supersedes the earlier study included in Bowers (2020). The effect sizes relate to the difference in reading outcomes associated with systematic phonics instruction/intervention as opposed to non-systematic or no phonics instruction.

The most common interpretation of effect sizes is that proposed by Cohen (1969): 0.2 is small; 0.5 is medium or moderate; and 0.8 is large. Some of the studies in the above table are reported as Hedges' 'g'. According to Torgerson et al. (2018), the difference between these types of effect size estimates is minimal. By Cohen's interpretation, the effect sizes in the table fall mostly in the moderate range. The outlier is Camilli et al. (2006) who achieved a small effect size by making multiple coding manipulations to the studies that are methodologically debatable.

However, a recent paper by Kraft (2020) explains that these effect size classifications were devised from clinical studies and makes a persuasive empirical case that they are not appropriate for applied educational research. Kraft proposes the following effect size interpretations: <0.05 is small; 0.05 – 0.2 is medium or moderate; and >0.2 is large. Using these interpretations, the effect sizes of using a systematic phonics program are almost all very large.

Bowers' other key criticism, aside from the relative effect sizes, is what he regards to be weak evidence directly comparing systematic phonics with 'unsystematic' phonics. Given the difficulty of classifying the comparison conditions as unsystematic phonics, whole language (with or without unsystematic phonics), balanced literacy, and rare 'no phonics' teaching, it seems reasonable and practical to do what almost all studies and meta-analyses have done – compare the presence of systematic phonics instruction with the absence of systematic phonics instruction.

The available evidence from multiple studies shows that reading instruction that includes systematic phonics is more effective than instruction that does not. The range of effect sizes is due to numerous factors, including the duration, level of systematicity, intensity, age of students, beginning level of students, group size, instructional fidelity, and

the quality of classroom instruction. Nevertheless, the overall effect size is invariably and significantly positive.

What are the potential “alternatives” to systematic phonics instruction?

What are the alternative methods to systematic phonics, and what is the likelihood that they will be more effective? Bowers suggests that instruction “should focus more on the role that meaning plays in organizing spellings (via morphology) and that English spelling system (sic) makes sense once the interrelation between phonology, morphology, and etymology are considered.” (p. 23).

Jeffrey Bowers' brother Peter Bowers has developed such a program – Structured Word Inquiry (Bowers & Bowers, 2008). Jeffrey Bowers has co-authored papers with Peter Bowers on the rationale for SWI (Bowers & Bowers, 2017) as well as participated in evaluations of the program (Colenbrander et al., 2018).

There is no problem with academics developing reading programs. Such reading programs would naturally be informed by the developers' understanding of the best available evidence. The problem with positing Structured Word Inquiry (SWI) as a superior alternative to systematic phonics is that there are no studies showing that SWI is effective for teaching beginning reading, either with or without the sort of comparison group that Bowers (2020) says is necessary to truly prove efficacy. Evaluations of SWI do not compare it with systematic phonics for initial instruction.

Studies of SWI show that children can benefit from instruction in morphology and etymology after one or more years of initial reading instruction that includes phonics (Bowers & Kirby, 2010; Devonshire & Fluck, 2010; Devonshire et al. 2013; Colenbrander et al., 2018). They do not provide evidence to support the argument that instruction based on morphology and etymology could or should be an alternative to systematic phonics in the initial stages of learning to read.

There is strong evidence for the inclusion of systematic phonics in initial reading instruction.

Systematic phonics has one of the largest and most consistent evidence

bases in education. Synthetic phonics, which is the most systematic form of phonics instruction, has been specifically investigated in a number of randomised control trials (Christensen & Bowey, 2005; Hatcher, Hulme, & Snowling, 2004; Johnston, McGeown & Watson, 2011) and has been found to be a common factor in high performing schools (Joseph, 2019; Loudon, 2015; OFSTED, 2010). After the introduction of mandatory synthetic phonics instruction in 2006 and a phonics screening check in 2012 in all English primary schools, there was an improvement in upper primary reading in national assessments and early indications of gains in international assessments (Buckingham, 2016; Machen et al., 2018; Double et al., 2019).

Synthetic phonics is strongly aligned with cognitive scientific research and models of reading that have been found to be highly predictive – the Dual Route Cascading Model (of word reading) and the Simple View of Reading (for reading comprehension) in particular (Castles, Rastle & Nation, 2018). The same cannot be said for whole language, balanced literacy, or analytic phonics.

And while there is some validity to the argument that meta-analyses provide a more accurate estimate of the effect of an intervention, there is also a good argument to be made for giving strong consideration to the findings of individual studies that investigate a higher quality version of the intervention of interest. Meta-analyses include interventions that are short in duration, with small numbers, and restricted instructional scope and depth. Emphasis should also be given to the findings of larger studies with implementations that more closely resemble what would generally be considered ideal classroom practice, such as the Clackmannanshire study (Johnston et al., 2011).

Bowers' thesis rests on the flawed argument that when held up to the highest possible standards of evidence, systematic phonics falls short. It is therefore illogical to suggest using “alternative teaching methods” that have either much weaker evidence or no evidence base whatsoever.

It is one thing to say that researchers should consider investigating unproven alternative methods, but it is irresponsible to make the same recommendation for teachers. Classroom practice should use the methods with the strongest evidence available base, and at the moment that is undeniably systematic synthetic phonics.

References

- Adesope, O. O., Lavin, T., Thompson, T., & Ungerleider, C. (2011). Pedagogical strategies for teaching literacy to ESL immigrant students: a meta-analysis. *British Journal of Educational Psychology*, 81(Pt 4), 629–653. <https://doi.org/10.1111/j.2044-8279.2010.02015.x>
- Bowers, J. S. (2020). Reconsidering the evidence that systematic phonics is more effective than alternative methods of reading instruction. *Educational Psychology Review*, Online first. <https://doi.org/10.1007/s10648-019-09515-y>
- Bowers, S., & Bowers, P. (2008). Understanding SWI: “Structured word inquiry” or “scientific word investigation”. http://www.wordworkskingston.com/WordWorks/Structured_Word_Inquiry.html
- Bowers, J. S., & Bowers, P. N. (2017). Beyond phonics: The case for teaching children the logic of the English spelling system. *Educational Psychologist*, 52, 124–141. <https://doi.org/10.1080/00461520.2017.1288571>
- Bowers, P. N., & Kirby, J. R. (2010). Effects of morphological instruction on vocabulary acquisition. *Reading and Writing: An Interdisciplinary Journal*, 23(5), 515–537. <https://doi.org/10.1007/s11145-009-9172-z>
- Brooks, G. (2015). *Dictionary of the British English Spelling System*. Open Book Publishers.
- Buckingham, J. (2016). *Focus on phonics: why Australia should adopt the year 1 phonics screening check*. The Centre for Independent Studies. Research Report 22. <https://doi.org/10.13140/RG.2.2.35472.61440>
- Buckingham, J. (2020). Systematic phonics belongs in evidence-based reading programs: A response to Bowers. *The Educational and Developmental Psychologist*, Online first. <https://doi.org/10.1017/edp.2020.12>
- Camilli, G., Vargan, S., & Yurecko, M. (2003). Teaching children to read: The fragile link between science and federal education policy. *Education Policy Analysis Archives*, 11(15), 1–51. <https://doi.org/10.14507/epaa.v11n15.2003>
- Camilli, G., Wolfe, M., & Smith, M. L. (2006). Meta-analysis and reading policy: Perspectives on teaching children to read. *The Elementary School Journal*, 107(1), 27–36. <https://doi.org/10.1086/509525>
- Castles, A., Rastle, K., & Nation, K. (2018). Ending the reading wars: Reading acquisition from novice to expert. *Psychological Science in the Public Interest*, 19, 5–51. <https://doi.org/10.1177/1529100618772271>
- Christensen, C. A. & Bowey J. A. (2005). The efficacy of orthographic rime, grapheme–phoneme correspondence, and implicit phonics approaches to teaching decoding skills. *Scientific Studies of Reading*, 9(4), 327–349. https://doi.org/10.1207/s1532799xssr0904_1
- Cohen, J. (1969). *Statistical power analysis for the behavioral sciences*. Academic Press.
- Colenbrander, D., Parsons, L., Murphy, S., Hon, Q., Bowers, J. & Davis, C. (2018). Morphological intervention for children with reading and spelling difficulties. <https://www.nuffieldfoundation.org/wp-content/uploads/2019/11/Davis204217920-20Colenbrander20SSSR202018.pdf>
- Devonshire, V., & Fluck, M. (2010). Spelling development: Fine-tuning strategy use and capitalising on the connections between words. *Learning and Instruction*, 20(5), 361–371. <https://doi.org/10.1016/j.learninstruc.2009.02.025>
- Devonshire, V., Morris, P., & Fluck, M. (2013). Spelling and reading development: The effect of teaching children multiple levels of representation in their orthography.
- Double, K. S., McGrane, J. A., Stiff, J. C., & Hopfenbeck, T. (2019). The importance of early phonics improvements for predicting later reading comprehension. *British Educational Research Journal*, 45(6), 1220–1234. <https://doi.org/10.1002/berj.3559>
- Ehri, L. C., Nunes, S. R., Stahl, S. A., & Willows, D. M. (2001). Systematic phonics instruction helps students learn to read: evidence from the National Reading Panel’s meta-analysis. *Review of Educational Research*, 71, 393–447. <https://doi.org/10.3102/00346543071003393>
- Galuschka, K., Ise, E., Krick, K., & Schulte-Körne, G. (2014). Effectiveness of treatment approaches for children and adolescents with reading disabilities: A meta-analysis of randomized controlled trials. *PLoS One*, 9(2), e89900. <https://doi.org/10.1371/journal.pone.0089900>
- Garcia, J. G., & Cain, K. (2014). Decoding and reading comprehension: A meta-analysis to identify which readers and assessment characteristics influence the strength of the relationship in English. *Review of Educational Research*, 84(1), 74–111. <https://doi.org/10.3102/0034654313499616>
- Hatcher, P. J., Hulme, C. & Snowling, M. J. (2004). Explicit phoneme training combined with phonic reading instruction helps young children at risk of reading failure. *The Journal of Child Psychology and Psychiatry*, 45(2), 338–358.
- Hjetland, H. N., Lervåg, A., Lyster, S.-A. H., Hagtvet, B. E., Hulme, C., & Melby-Lervåg, M. (2019). Pathways to reading comprehension: A longitudinal study from 4 to 9 years of age. *Journal of Educational Psychology*. 11(5), 751–763. <http://dx.doi.org/10.1037/edu0000321>
- Johnston, R., McGeown, S. & Watson, J. (2011). Long-term effects of synthetic versus analytic phonics teaching on the reading and spelling ability of 10 year old boys and girls. *Reading and Writing: An Interdisciplinary Journal*, 25(6), 1365–1384.
- Joseph, B. (2019). *Overcoming the odds: A study of Australia’s top performing disadvantaged schools*. Research Report 39. The Centre for Independent Studies.
- Kraft, M. A. (2020). Interpreting effect sizes of education interventions. *Educational Researcher*, 49(4), 241–253. <https://doi.org/10.3102/0013189X20912798>
- Louden, B. (2015). *High performing schools: What do they have in common?* Western Australia Department of Education.
- Machin, S., McNally, S., & Viarengo, M. (2018). Changing how literacy is taught: Evidence on synthetic phonics. *American Economic Journal: Economic Policy*, 10, 217–241. <https://doi.org/10.1257/pol.20160514>
- McArthur, G., Sheehan, Y., Badcock, N.A., Francis, D.A., Wang, H.C., Kohnen, S., Banales, E., Anandakumar, T., Marinus, E., Castles, A. (2018). Phonics training for English-speaking poor readers. *Cochrane Database of Systematic Reviews* 2018, Issue 11. Article No.: CD009115. DOI: 10.1002/14651858.CD009115.pub3.
- Nation, K., & Hulme, C. (1997). Phonemic segmentation, not onset-rime segmentation, predicts early reading and spelling skills. *Reading Research Quarterly*, 32(2), 154–167. <https://doi.org/10.1598/RRQ.32.2.2>
- National Reading Panel. (2000). *Teaching children to read: an evidence-based assessment of the scientific*

research literature on reading and its implications for reading instruction. Bethesda, MD: National Institute of Child Health and Human Development.

OFSTED (2010). *Reading by six: How the best schools do it*. UK Office for Standards in Education, Children's Services and Skills.

Rastle, K. (2019). The place of morphology in learning to read in English. *Cortex*, 116(July 2019), 45-64. <https://doi.org/10.1016/j.cortex.2018.02.008>

Suggate, S. P. (2010). Why what we teach depends on when: Grade and reading intervention modality moderate effect size. *Developmental Psychology*, 46(6), 1556–1579. <https://doi.org/10.1037/a0020612>

Suggate, S. P. (2016). A meta-analysis of the long-term effects of phonemic awareness, phonics, fluency, and reading comprehension interventions. *Journal of Learning Disabilities*, 49(1), 77–96. <https://doi.org/10.1177/0022219414528540>

Torgerson, C. J., Brooks, G., & Hall, J. (2006). *A systematic review of the research literature on the use of phonics in the teaching of reading and spelling* (DfES Research Report 711). Department for Education and Skills, University of Sheffield.

Torgerson, C., Brooks, G., Gascoine, L., & Higgins, S. (2018). Phonics: Reading policy and the evidence of effectiveness from a systematic 'tertiary' review. *Research Papers in Education*, 1-31. <https://doi.org/10.1080/02671522.2017.1420816>

Vousden, J. I., Ellefson, M. R., Solity, J., & Chater, N. (2011). Simplifying reading: Applying the simplicity principle to reading. *Cognitive Science*, 35(1), 34-78. <https://doi.org/10.1111/j.1551-6709.2010.01134.x>

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The blending enigma: What is best practice for teaching sounding out and blending?

Given the importance of automatic decoding skills to the development of reading fluency, **Ros Neilson** turned to the expertise of the DDOLL Network and invited DDOLL members to describe their nitty-gritty strategies for teaching fluent sounding out and blending within systematic synthetic phonics programs. The range of answers was quite surprising. In this article Ros presents a summary of the very useful viewpoints expressed.

At the very core of synthetic phonics programs is the goal of teaching young learners how to sound out letters and blend those sounds into words. Once mastered, this ability lays the foundation for the development of accurate and fluent word reading skills, without which fluent text reading cannot occur. Phonics programs vary, however, in how much detail they provide about strategies to achieve the early goal of sounding out and blending, and how much fidelity they demand. Quite

surprisingly, there seems to be only a small amount of relevant empirical research available regarding specific blending strategies (e.g. Weisberg & Savard, 1993; Gonzalez-Frey & Ehri, 2020). This means that this aspect of phonics instruction is in danger of being treated more like an art than a science.

Is it a problem that there is a lack of consistency about how to teach blending? It could be argued that there are many ways in which good phonics programs differ, and it is likely that there are different effective ways to achieve the same goal. On the other hand, the lack of a consistently recommended strategy for teaching blending may indeed be a cause for concern, because success or failure in early blending has particularly important ramifications. When blending is not well taught, the outcome can be very disturbing – that is, young learners may display painfully dysfluent reading. It is indeed not uncommon to encounter students in remedial classes whose word identification attempts involve uttering a single separate phoneme for each letter in a word, followed either by desperately guessing a plausible word or helplessly leaving the sounds unblended. The problem is that this clearly inefficient reading strategy exposes a vulnerability in phonics approaches. When Whole Language proponents see this kind of laboured, dysfluent sounding out behaviour, it is very likely that the catch cry “*The child has been over-phonicked!*” will be heard. It is also likely that, when faced with students who show persistent failure with sounding out and blending, Whole Language teachers will feel vindicated in their preference for encouraging students to recite levelled readers by heart and read the pictures instead of the words. The

Whole Language approach to early reading at least gives both the teachers and the struggling students a superficial, if transient, impression of fluency.



Phonics programs vary ... in how much detail they provide about strategies to achieve the early goal of sounding out and blending, and how much fidelity they demand.

This predicament is the context in which I turned for advice to the experts within the DDOLL network, which consists of scientists, clinicians, teachers, and parents and contains a large and varied group of expert and experienced phonics teachers – see <http://www.cogsci.mq.edu.au/ddoll/>. I started a thread on the listserv that I called ‘The Blending Enigma’, in which I began by stating the obvious fact that blending can be tricky because the ‘letter sounds’ that we teach children – that is, phonemes pronounced in isolation - are quite different from phonemes as they are coarticulated in syllables. You don’t get the word *cat* by saying /k/, /a/ and /t/ quickly, even if you pronounce the /k/ and /t/ phonemes with no added voiced vowel. In my post I simply asked DDOLL members to describe how they taught blending. I would like to thank all those who contributed to the ensuing discussion,

either alerting me to published program material and research or describing their own practices. The teaching strategies that were suggested in the listserv were quite interestingly varied, and there were only one or two points that were made by all contributors. I will try at this stage to summarise the themes that arose in response to my question on the DDOLL network. I won't identify individual contributors because I can't possibly do justice to all the viewpoints expressed, and I concede that there are many other useful ideas that didn't crop up in response to my question - but I hope that the following sample of views will provide a springboard for further discussion.

Consistent themes: Explicit teaching and extensive practice

All responders to my question mentioned that some students tend to pick up blending easily with only a little modelling, but those students with learning difficulties need very careful modelling and extended practice. Explicit instruction in blending is always needed in mainstream classes, and 'dosage' is important for those students who need extra help.

Continuous versus staccato pronunciation of phonemes

Most contributors mentioned that they find it useful to begin to teach the blending process with continuant phonemes like the vowels and some consonants like /s/, /r/, /f/, /n/ - that is phonemes whose articulation can be prolonged - because this makes demonstration of the blending task easier. For example, if the word to be blended is *run*, the teacher would provide a model by saying each sound in a prolonged way without pausing between phonemes - "rrr...uuu...nnn". Some mentioned that although they start with continuants, they move as quickly as they can into pronouncing all phonemes separately, in a staccato fashion, so that they can check that the students can cope independently with this kind of presentation.

Several responders commented, however, that it doesn't seem to make much difference whether or not you start with continuous phonemes. It was

pointed out that most suggested sets of first sounds do include non-continuants - for example, the commonly used S-A-T-P-I-N group of initial letter sounds for teaching beginning phonics includes /t/ and /p/.

Using the vowel as an anchor

For young learners who find blending difficult, several contributors mentioned that they teach the student to identify the vowel sound in a CVC word before starting to articulate the first consonant.

When blending is not well taught, the outcome can be very disturbing - that is, young learners may display painfully dysfluent reading.

In this way the first consonant phoneme is released directly into the vowel, and it is possible to avoid pronouncing the first two phonemes separately as you begin to decode the word. For the word *run*, for example, the teacher would ask for the /u/ phoneme to be pronounced first, then show the student how to begin with "ru..." as they sound out the word.

Auditory modality versus use of alphabet letters from the start

Blending involves phonemic awareness, and some contributors mentioned

that they always teach the phonemic awareness component of blending in the context of alphabet letters. Some, instead, preferred to work on simple phonemic awareness first, providing blending and segmenting practice in the auditory modality before introducing letters. This difference in approach to the development of phonemic awareness is in fact a perennial debate on the DDOLL network (see Neilson, 2019).

Visual cues, gestures and props

Many contributors suggested using extra cues during the process of blending phonemes.

The most common extra cues that were mentioned were moveable plastic letters, used for both illustrating the coming together of sounds and for showing the location of changes as sounds in words were manipulated, e.g., a-t, at, c-at, ca-p, ta-p, and so on. Moveable letters are also available in several tablet Apps.

A sweeping gesture, moving the finger smoothly from left to right underneath the printed letters of the word being blended, was also frequently mentioned. Figure 1 illustrates the technique of the teacher modelling blending together with the class, in the context of reading 'Big Books' (Tse & Nicholson, 2014). There are also phonics systems in which the printed word is shown with loops from one grapheme to the next, with the hand gesture following the loops (Carnine et al., 2006, p. 90).

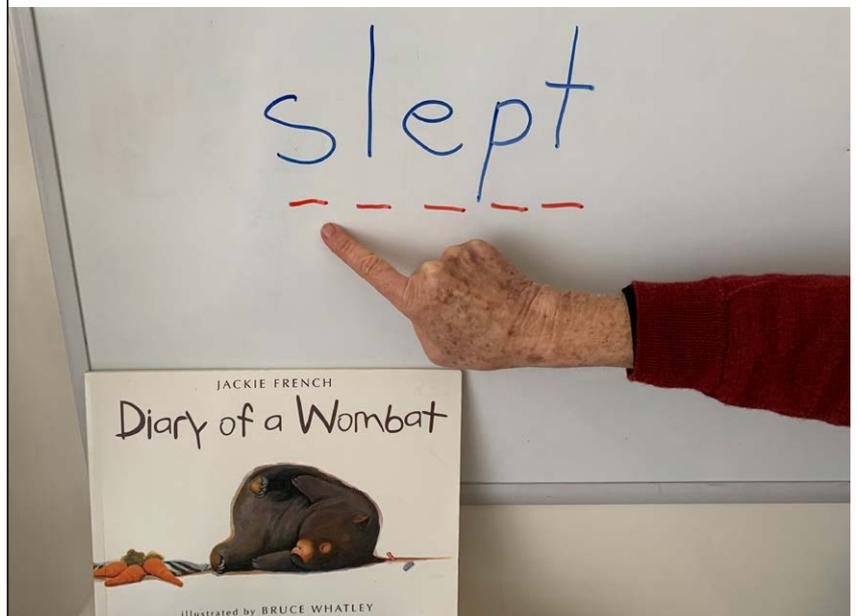


Figure 1: Modelling the blending of graphemes.

Whole-hand gestures mentioned included holding up one finger as each phoneme is sounded out, then making a fist with the fingers to represent the way in which the syllable is blended.

There was some mention of using role-play cues such as having children dress up as the letters of the alphabet, or hold letters in the air above their heads, and shuffle closer together to illustrate blending.

Concentration and auditory memory difficulties

One thought-provoking comment related to a teacher's observation that if students were unable to blend letters that they had sounded out themselves, they might be able to carry out the blending successfully when the teacher herself simply repeated the separate phonemes at the same pace. The suggestion was made that if children were able to concentrate on the sounds without having to retrieve the letter-sound correspondences, the task became easier.

Introduction of consonant clusters

Programs seemed to vary in their expectation that young students will be able to blend consonants in clusters as easily as they can blend CVC syllables. Some but not all programs include separate consideration of the order of difficulty of consonant clusters – for example, first introducing clusters at the ends of syllables (e.g. *cast*, *hand*), then teaching students to blend initial-syllable clusters with continuous phonemes (e.g. *slap*, *frog*), followed by clusters containing stops (*crib*, *stop*).

Conclusions

Students who sound out letters but cannot blend the phonemes into words have not been 'over-phonicked'. Rather, they haven't been taught phonics well. The collection of responses from the experts that I've tried to summarise here has been very thought-provoking for me, and a little disquieting. With so little empirical evidence about best practice, we are really lucky that many strategies seem to work, at least in the mainstream classroom setting.

I'm left with the conclusion that teachers of early reading should be aware that blending has to be an explicit component of what they teach, and

they must be prepared to give students as much practice as they need. Apart from that, I think it might be inevitable that the most competent teachers will simply make sure they understand the underlying linguistic issues, work with the program with which they feel most comfortable, monitor their students' progress, and respond, as good teachers do, to the strengths and weaknesses of each student they teach. Perhaps, realistically, that's all that best practice can be.

References

- Carnine, D.W., Silbert, J., Kame'enui, E.J., Tarver, S.G., & Jungiohann, K. (2006). *Teaching struggling and at-risk readers: A direct instruction approach*. Pearson Merrill Prentice Hall.
- Gonzalez-Frey, S.M. & Ehri, L.C. (2020). Connected phonation is more effective than segmented phonation for teaching beginning readers to decode unfamiliar words. *Scientific Studies of Reading*, DOI: 10.1080/10888438.2020.1776290.
- Neilson, R. (2019). The phonemic awareness versus phonic debate: Avoiding the friendly fire. *Learning Difficulties Australia Bulletin*, 51(2-3), pp. 21-27.
- Tse, L., & Nicholson, T. (2014) The effect of phonics-enhanced Big Book reading on the language and literacy skills of six-year-old pupils of different reading ability attending lower SES schools, *Frontiers in Psychology*, 5, Article 1222, pp. 1-20. <https://www.frontiersin.org/articles/10.3389/fpsyg.2014.01222/full>
- Weisberg, P., & Savard, C. (1993). Teaching preschoolers to read: Don't stop between the sounds when segmenting words. *Education and Treatment of Children*, 16(1), 1-18. Retrieved April 10, 2020, from www.jstor.org/stable/42899291

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From the chalkface

Raising the bar: The Kimberley Schools Project – Introducing direct and explicit instruction into remote community schools

Lorraine Hammond outlines an ambitious project in which she has been involved, working to bring early literacy direct instruction to remote schools in the Kimberley, with staff and students in her professional learning sessions joined by an assortment of parents, community members and camp dogs.

The question of how to raise the literacy and numeracy skills of Australian indigenous students is of perennial concern and a highly contentious issue, particularly when it comes to agreement on how to teach reading.

The 2020 *Closing the Gap* report documents some positive gains: the number of indigenous students at or above national minimum standards in

reading and numeracy has improved over the past decade. The same report, however, laments that “despite these improvements, in 2018 about one in four Indigenous students in Years 5, 7 and 9, and one in five in Year 3, remained below national minimum standards in reading.” (Australian Government, 2020, p. 45). In contrast, the report indicates that only about one in twenty (five percent) of non-indigenous Australians are now below minimum standards. Consequently, we must continue to address this challenge - and

evidence-based practice offers the best way forward.

A well-known voice at the forefront of indigenous education debates, Noel Pearson (2018), has advocated for effective reading instruction for many years:

“If we don’t teach the child to swim, they will drown. We know how to teach swimming. We know how to teach reading. Why are we not preventing Australian children from drowning through illiteracy?”

Like me, Noel Pearson is a pragmatic



Foundation class, Fitzroy Valley District High School

fan of teacher-led approaches to reading instruction like scripted Direct Instruction, also known as 'big DI' such as *Corrective Reading* (Engelmann, Hanner, & Johnson, 2007) and unscripted 'little di' that is also known as Explicit Instruction (EI) (Archer, 2011; Hollingsworth & Ybarra, 2018). At times, the nomenclature confuses commentators who rally vociferously against the perceived rigidity of scripted lessons, diminished teacher creativity and frequent unison oral responding. What they don't understand is the fundamental premise of teacher-led approaches: underachievement is an adult problem because all children will learn if they are taught correctly.

... underachievement is an adult problem because all children will learn if they are taught correctly.

In spite of those who oppose teacher-led approaches, mostly on ideological grounds, Direct Instruction (Stockard, Wood, Coughlin, & Khoury, 2018) and Explicit Instruction (Liem & Martin, 2013) are pedagogies that work. Over the years, I have developed a thick skin defending DI and EI as both a researcher and university lecturer and such defence often involves tackling prejudices. In the late 1990s a school principal told me that while he really liked the results achieved by the scripted Direct Instruction that I had supported his predecessor to put in place, he didn't like the approach. I suggested that the program was not actually for him, it was for the children in his school who could not read.

As Barbash (2012) eloquently summarised: "DI is the ugly duckling of education, despised and defamed despite repeated demonstrations that it works. No other educational reform strays further from accepted theory, differs more from accepted practice or draws such brutal slander for its achievements" (p. 38).

Explicit Instruction Programs for Indigenous Students

Aware of the extensive research showing DI's effectiveness in improving academic outcomes, particularly for disadvantaged and minority children, Noel Pearson's *Good to Great Schools*

Australia received funding from the Australian Government from 2014-2019 to implement scripted Direct Instruction and unscripted Explicit Direct Instruction (EDI). The *Flexible Learning for Remote Primary Schools* program was conducted in 34 remote and very remote schools in Western Australia, Queensland and the Northern Territory, and I had the opportunity to review some of the curriculum materials created by John Hollingsworth and Dr Silvia Ybarra, authors of *Explicit Direct Instruction* (2009, 2018). This positioned me well for what was coming in 2017: *The Kimberley Schools Project*.

The Kimberley Schools Project

It's often said that you need the right people in the right seats on the bus to achieve educational reform. Since 2008 I have been a Board Member at Challis Community Primary School along with The Hon Alannah MacTiernan MLC, a former WA State then Federal politician, who returned to State government as the Minister for Regional Development in 2017. You may know Challis from the ABC series *Don't Stop the Music*, but as well as providing a music program for many socially disadvantaged students, evidence-based approaches to teach literacy and numeracy including Explicit Instruction (Hollingsworth & Ybarra, 2018) and Direct Instruction such as *Reading Mastery* (Osborn & Engelmann, 2008) and *Spelling Mastery* (Dixon, Engelmann, Bauer, Steely, & Wells, 2007), are part of the suite of high impact instructional programs in the school.

Over the years, Minister MacTiernan (2014) has publicly championed Explicit and Direct Instruction, explaining that the "empirical evidence of the success of these techniques is becoming harder to ignore" (p.10). It was because of this that she allocated funding for *The Kimberley Schools Project*, a collaboration between the Department of Education, Catholic Education Western Australia, the Association of Independent Schools Western Australia and the Department of Primary Industries and Regional Development (<https://www.education.wa.edu.au/kimberley-schools-project>). As a collaborative initiative, the Project is also supported by the Hon Sue Ellery, MLC WA Minister for Education and Training.

After Emeritus Professor Bill Louden AM was recruited to lead the Project, I was asked to design and deliver the

assessment, professional learning and instructional coaching component for the targeted teaching pillar of the program. The other three pillars are early years learning and care; engagement and attendance; and connecting community, school and learning.

Aboriginal children make up more than 60 per cent of the school population in the Kimberley of WA, which is an area as big as Belgium. I thought on completing school that I was sensitive to the significant challenges that living in a remote community has, but my first visit to a participating school told me otherwise. As well as the historical, health, social, and educational disadvantage issues, many children speak English as an additional language and these schools have the lowest rates of school attendance in Western Australia.

Early stages of the Kimberley Schools Project: Demonstration Lessons

At the early stages of the Project I was asked to provide Explicit Instruction demonstration lessons. These character-building experiences took up to 45 minutes with groups of children I had never met before. They always drew an audience of curious staff, parents and community members, and on some occasions camp dogs, who can be found on most remote school grounds and sometimes wander into classrooms. The literacy lessons included phonological awareness, phonics, systematic instruction in the decoding of regular, irregular and nonwords, passage reading and comprehension, spelling and vocabulary. The lessons were delivered in fast paced, highly engaging, explicit instructional routines that required frequent student responses and movement. At the end of one session, the grandmother of one of the children in the class approached me and said she liked what she'd seen – "It's proper teaching."

During the same trip, I met an Aboriginal and Islander Education Officer who told me she'd attended the same school in the late 1990s where she now worked as a teacher assistant. She described the whole word approach to reading predicated on looking at the first letter and guessing that had failed many of her classmates and the

father of her two children. Due to her own persistence, she'd learned how to read and made sure her two boys could read before they started school. Not unsurprisingly, some teachers I met at the start of the project were reluctant to change their instructional practice. They had been faithfully using practices like *Reading Recovery*, multi-cueing and levelled readers for years, often because it was what they learned at university or because it was endorsed by their employer.

Kimberley Schools Project: Ongoing Professional Learning

The targeted teaching pillar of the Kimberley Schools Project is predicated on two principles. The first is 'culture before curriculum', which means the approval and endorsement of school communities was sought before they joined the Project. The second is 'servant leadership', or a 'whatever it takes' approach to support. At the beginning of 2018, I began delivering four days of professional learning and providing instructional coaching to the first ten schools to join the Project. I was assisted by four coaches, who visited schools at least twice per term in addition to me. We never ask teachers to do what we wouldn't do ourselves, so we provide regular demonstration teaching and teaching resources. We are also cognisant that we cannot ask teachers to do more than 10 per cent on top of what they are already having to do. So much of what we do is predicated on building positive relationships with staff and understanding the challenges of working in remote communities.

I have tried tokens, Dojo points, almonds and banana chips to manage behaviour, but this works better.

While the focus of the Project is on achieving early reading success and we work predominantly with education assistants and teachers of Kindergarten (4 year-old children in WA) to Year 2 students, professional learning and support is also provided for middle and upper primary staff as well as secondary teachers, particularly those who teach students with poor literacy skills. Semi-scripted Let's

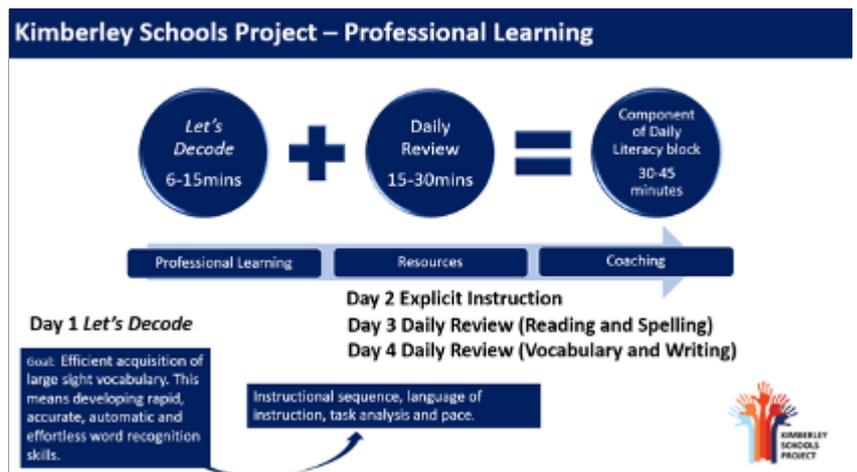


Figure 1. The Kimberley Schools Project Professional Learning

Decode is used alongside fully scripted programs such as *Spelling Mastery*, *Corrective Reading* and *MacqLit* (Macquarie Literacy Program for small group instruction). Our Aboriginal and Islander Education Officers deliver these programs alongside the teachers and often take small groups of students for a second session.

The first day of professional learning is *Let's Decode*, an approach to phonological awareness and systematic decoding instruction based on *Direct Instruction Reading* (Carnine, Silbert, & Kameenui, 1990). The formats (mini-lessons) take no more than six minutes (4 year olds) to 15 minutes (for 7 year olds) daily and those attending have the opportunity to practice directly with children. The goal of *Let's Decode* is the acquisition of a large sight vocabulary – that is, supporting children to becoming accurate and automatic at reading words by engaging them in repeated practice of taught phonics skills, and also requiring reading behaviours that facilitate the orthographic mapping process.

I developed a low variation curriculum for teachers to follow that includes a scope and sequence and daily lessons for the first four years of reading instruction – essentially a more fine-grained breakdown of the Australian Curriculum. This reduces the time required for teacher preparation and also results in a consistent approach, which means that children who move regularly between Kimberley schools can keep up with their peers. One of the earliest signs of success was a six year old who moved from Looma to Bidyadanga and announced, "I know this" when the teacher began the lesson.

Daily Review activities take no longer than 90 minutes and involve singing, props, and hoops to step out sounds, as

well as mini-white boards for formative assessment. This keeps students engaged as they are responding regularly and moving around on the mat. An experienced teacher observed that after introducing the Daily Review she was managing behaviour through instruction. "I have tried tokens, Dojo points, almonds and banana chips to manage behaviour, but this works better. They are too busy getting ready to respond to be off-task."

As part of the next phase in Professional Learning, a day on Explicit Instruction follows about one term after the introduction of *Let's Decode*. During this time teachers from all year levels attend and learn about the lesson design and delivery components of this high impact instructional strategy. The use of TAPPLE and Engagement Norms from Hollingsworth and Ybarra (2018), which are strategies to increase student engagement, are combined with Rosenshine's (2012) principles of effective instruction and Daily Review.

The remaining two days of Professional Learning are delivered across the remainder of the year and are about explicitly teaching students reading and spelling, then writing and vocabulary. A strong focus is placed on Daily Review, a fast-paced review of previously learned materials that provides multiple opportunities for practice (Rosenshine, 2012). For example, to promote automaticity in reading and spelling words, students revise precursor skills such as phonological awareness, short/long vowels, letter-sound knowledge, decoding and encoding words. Those who query EI and DI call this 'drill and kill', however in the Project it is giving children the multiple exposures they need to build the visual word form area and read words automatically (Dehaene, et al., 2010).

Evaluation

There is ongoing evaluation within, and of, the Project. Schools are asked to undertake *PAT-R* testing and the *South Australian Spelling Test*. Twice per term, K-2 teachers conduct one-minute assessments from *DIBELS 8* such as phoneme segmentation or nonword reading, depending on the age of the students. *DIBELS* assessments closely parallel what is taught in Let's Decode, and this enables teachers to see when students are responding to instruction, and to question, if they have been attending regularly, why they are not making gains. Finally, coaches from the project assess students on measures of phoneme awareness, phonic knowledge, timed non and real word reading from the *Macquarie Online Test Interface* (MOTIf; www.motif.org.au) and the *Test of Word Reading Efficiency* (TOWRE).

The data documenting the efficacy of the Kimberley Schools Project has yet to be published, but there are promising signs that students are making gains. The Kimberley School Project team look forward to the contribution that the publication of the data will make to the debate on raising the bar for the literacy and numeracy skills of Australian indigenous children.

Three years later, 23 Kimberley Schools have now opted-in to be part of the Project, and the number of coaches has doubled to eight. Staff who have been part of the Kimberley Schools Project are highly sought after, and this has raised the profile of teaching in remote communities.

Educational reform is a marathon, not a sprint. The American economist Eric Hanushek quantifies the impact of teachers, and their instruction, on student outcomes.

“Having a good teacher as opposed to an average teacher for three to four years in a row would, by available estimates, close the income achievement gap. Closing the black-white achievement gap, which is a little larger than the average income gap, would take good teachers three and a half to five years in a row” (Hanushek, 2014, p. 85).

The job of aligning teachers' practice with the reading science will clearly take some time, but it's a worthy endeavor. When I hear criticisms about the appropriateness of systematic phonics instruction and teacher-led instruction for indigenous children, or any children

for that matter, I always wonder: What viable alternatives do those who say that have in mind?

References

- Archer, A. L., & Hughes, A. C. (2011). *Explicit instruction: Effective and efficient teaching* (pp. 1-22). The Guilford Press.
- Australian Government (2020). *Closing the Gap Report 2020*. <https://ctgreport.niaa.gov.au/content/closing-gap-2020>
- Barbash, S. (2012). *Clear teaching: With direct instruction, Siegfried Engelmann discovered a better way of teaching*. Education Consumers Foundation. http://education-consumers.org/pdf/CT_111811.pdf
- Carnine, D., Silbert, J., & Kame'enui, E. J. (2010). *Direct instruction reading* (5 ed.). Boston, A: Merrill.
- Dawson, G.K., Clinton, J., Koelle, M., & McLaren, P. (2017). *Evaluation of the Flexible Literacy for Remote Schools Program: Main Report. June 2018*. Centre for Program Evaluation, the University of Melbourne.
- Dehaene, S., Pegado, F., Braga, L. W., Ventura, P., Nunes Filho, G., Jobert, A., ... & Cohen, L. (2010). How learning to read changes the cortical networks for vision and language. *Science*, 330(6009), 1359-1364.
- Dixon, R., Engelmann, S., Bauer, M. M., Steely, D., & Wells, T. (2007). *Spelling Mastery [Curriculum program]*. Science Research Associates.
- Engelmann, S., Hanner, S., & Johnson, G. (2007). *SRA Corrective Reading*. McGraw-Hill.
- Hanushek, E. (2014). Boosting Teacher Effectiveness. In Chester E. Finn and Richard Sousa (eds.), *What lies ahead for America's children and their schools*. Hoover Institution Press.
- Hollingsworth, J. & Ybarra, S. (2018). *Explicit direct instruction: The power of the well-crafted, well taught lesson*. Corwin Press.
- Liem, G. A. D., & Martin, A. J. (2013). Direct instruction. In J. Hattie, & E. M. Anderman (Eds.), *International Guide to Student Achievement* (pp. 367-368). Oxon, UK: Routledge.
- MacTiernan, A. (July 8, 2014). Lessons reflect direct gains: Pupils clearly respond better to explicit instruction. *The Australian*, p. 10. Retrieved from [http://www.theaustralian.com.au/subscribe/news/1/index.html?sourceCode=TAWEB_WRE170_a&mode=premium&dest=http://www.theaustralian.com.au/opinion/lessons-](http://www.theaustralian.com.au/subscribe/news/1/index.html?sourceCode=TAWEB_WRE170_a&mode=premium&dest=http://www.theaustralian.com.au/opinion/lessons-reflect-direct-gains/news-story/3aae5acda9c08ae929031449f3529aab&mentype=anonymous)

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Osborn, J., & Engelmann, S. E. (2008). *Reading mastery signature edition*. Columbus, OH: SRA McGraw-Hill.

Pearson, N. (May 18, 2018). NAPLAN: small schools are beacons of light at chalkface <https://www.theaustralian.com.au/nation/inquirer/naplan-small-schools-are-beacons-of-light-at-chalkface/news-story/081f2ce6bd4a43f29bfc0403cbb602c4>

Rosenshine, B. (2012). Principles of instruction. Research-based strategies that all teachers should know. *American Educator*, 36(1), 12-39.

Stockard, J., Wood, T. W., Coughlin, C., & Rasplia Khoury, C. (2018). The effectiveness of direct instruction curricula: A meta-analysis of a half century of research. *Review of Educational Research*, 0034654317751919.

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Consultant Notes

From the Consultants Committee Convenor, Ann Ryan

It seems paradoxical that during this time of isolation, LDA Consultant Members have been brought closer together. This is a direct result of changed circumstances, new ventures online and an increased need for team and collegiate support. I am so incredibly grateful for the guidance of network leaders who have been quick to respond to member requests and who offer additional network meetings for shared learning. I am also left in awe of the work parents do to support their children with learning difficulties.

The Consultants Committee have met more regularly with the Network Leaders over this period. This has provided valuable opportunities for increased collaboration and has allowed the Consultants Committee to stay better connected with members. As Convenor of the Consultants Committee, I am appreciative of the volunteer time given across all networks, the readiness of LDA Consultant members to share best online practise of what works best, and their knowledge of apps and technologies. Many of us have felt like a pilot juggling a daunting array of app changes, screens, external video cameras, headphone changes, online and external whiteboards and manipulatives. It has been a huge learning curve for us all and I thank all in the team for rising to meet the need.

This has been very worthwhile, as the Consultant Specialist Teacher role has been valued more than ever as we have provided support not only to students, but also to parents acting in their new roles as 'school' teacher. For students with learning difficulties, the period of home schooling has presented

additional challenges. In many schools, it has often been the case that the designated teacher-aide support staff and modified programs have been discontinued as mostly mainstream curriculum activities are sent home for parents to oversee. It seems that the work of many teacher aides has been redirected to the laudable supervision of distance education work for students who have needed to attend school. Meanwhile, teaching staff working from home have been busier than expected with their own new challenges of providing distance delivery, often supported by video sessions. It has been a turbulent time for all.

Many parents have embraced the opportunity to teach their children. The greatest benefits have occurred where parents have freed themselves from the constraints of the curriculum and have directed their efforts to explicit teaching of foundational skills. Some have noticed first-hand the impossible situation for children when presented with project, problem solving and inquiry tasks that assume basic skills which of course are not yet established by the students we work with.

For others, it has been a source of self-doubt and confusion. Some heart wrenching comments from parents I work with include "We must be bad teachers," "I didn't know my English skills were so bad" and more simply, "I don't know what to do." The first comment came from a husband and wife team who have sat in with every session I have run with their child over the past twelve months – they are intelligent, committed and highly capable people who have given much time to teaching themselves how to best support their child. But left alone to deliver on a mainstream curriculum for a student with learning difficulties, they have felt inadequate - and understandably so when the curriculum does not fit the learning stage of the student. The second comment came from a CEO of a government body. This parent had battled with trying to make sense of inferential versus literal questions so that a Year 3 student could correctly classify them. I recognised the task had been taken off a well-known

teacher resource website and was best suited to a student with advanced skills. The third comment was in fact heard very often, from perfectly astute parents lost in a sea of unfamiliar classroom jargon.

Hence, it has been a privilege to be in a position of offering support and guidance, and I share this position with every Consultant Specialist Teacher member. The commitment by families to do whatever it takes to manage the extraordinarily difficult task of juggling work and home teaching has been utterly admirable. This morning I worked with a student as she sat in the back of the family car travelling down through the vineyards and magical hills of the King Valley, and then up the Hume. I too enjoyed the scenery as it flashed past. I have worked online with a young child in a car outside Aldi with a quick change over of parent supervision as one collected the groceries and another attended a medical appointment. I have also worked with a student sitting in the front of a ute while Dad fed out hay to the animals from the back. These sessions reflect the extraordinary value parents place on education for their children and the great effort they contribute to ensuring specialist programs continue.

I am heartened by the value of our work. I am also acutely aware of the need for more appropriately qualified, experienced, and passionate educators to join our team. Please visit the website and contact us if you would like to become a certified LDA Consultant.



Notes to Contributors to the LDA Bulletin

The LDA Bulletin is published three times a year and is distributed to all LDA members in both hard copy and electronic format.

The Bulletin aims to provide information and support to educators in a range of professions as they implement effective evidence-based teaching. As a practice-based journal, articles in the LDA Bulletin generally focus on topics related to the development of literacy and numeracy in both mainstream student populations and students with learning difficulties.

We welcome the submission of articles from LDA members and others with an interest in learning difficulties and effective instruction, for possible inclusion in upcoming issues of the Bulletin. Contributions may come from researchers, literacy and mathematics specialists, classroom teachers, and other professionals in the field of education. Articles focusing on effective approaches to teaching and effective intervention are particularly welcome.

Submissions to the LDA Bulletin are peer-reviewed within the Bulletin Editorial Team. If accepted, any requests for changes are returned to the author/s for consideration.

Submissions should be accompanied by a digital photo of the author/s and a brief by-line stating the qualifications, professional positions, and/or professional interests of the author/s. References should be kept to a minimum, and presented in *APA (7th edition) format*.

Copyright of articles published in the LDA Bulletin is retained by the author/s. If the article is distributed by the author/s, its publication in the LDA Bulletin must be appropriately referenced.

Please contact Roslyn Neilson, LDA Bulletin Editor, with any questions about content, deadlines or style, and with suggestions for topics: bulletin.editor@ldaaustralia.org

Contributions to the LDA Bulletin typically include:

	Content	Length *
Feature articles	Topics likely to be of interest to LDA members that summarise research on a significant aspect of literacy or numeracy learning.	2000 - 3000 words
Reports from the chalk face	Summaries of the implementation of specific evidence-based school practices.	2000 – 3000 words
Debates and discussions	Overviews and evaluations of relevant controversies in the field of education.	2000 words
Reviews of resources, books or journal articles	Critical evaluations of assessment tools and available teaching resources, books in the field of education, and relevant peer-reviewed research.	1000 – 2000 words

* All length guidelines are flexible, depending on the content of what is covered.

