Learning Difficulties Australia | Volume 56, No 2, August 2024

Bulletin

Examples of evidence-based practice in oral language, writing, early childhood mathematics, MTSS and more

From the President

Geoffrey Ongley

As we wrap up FY2024, and look toward FY2025, I am seeing a bright future for LDA. We currently have more interest than ever before in what we have to offer; with over 900 members this year (our highest to date). I want to thank all of our members for being part of the association and supporting its important work.

Our continued growth is truly a reflection on all the work that has been put in from our presenters, volunteers (such as our council members) and staff alike. Thank you for supporting and being part of LDA. Together, we are changing the lives of many children and look forward to doing more as we grow.

You may not be aware but next year is a big one for LDA… it will be our 60th anniversary year! How incredible is that? The planning for a celebratory event has already begun, and I hope to share more on this with our members later in the year as the plans solidify.

Now, in support of holding a larger event next year, we have decided to reduce our spending on this year's AGM by holding it as 'online-only', in order to best position us for 2025. We look forward to seeing you both online at our AGM this year to have your say on various important matters, and also we hope to see you at our larger event in 2025. We can't wait!

In other news, our team continues to tirelessly execute on the vision of ensuring it is well understood that learning difficulties is the business of every teacher. We remain here to help ensure teachers have what they need to give their students the best chance of success in their lives, by providing quality resources and information to our members, and continue to look for more ways to do so.

On this front, we currently have a focus on offering "more for members", and part of this is the development of a catalogue of self-paced PL and other curated resources that is included with student, standard and consultant membership. We look forward to you having a list of exclusive and curated free PL; all in one place for you to access, on the LDA website.

While we talk about PL, I would like to thank Dawn Grant-Skiba, Laura Glisson, Peta Collins, Louise Selby and Hema Desai for creating, organising and sharing such engaging PL with us over the last few months. I'm excited by the plans Hema has ahead for us in FY2025 and think you will be too. There's a few courses coming up that you're not going to want to miss out on!

Finally, if you love LDA and are wondering how you might be able to contribute, we are always looking for keen individuals to help out. At the moment we would love some help curating articles, and engaging to support authors with editing and review support for the LDA Bulletin. We are also interested in folks who would like to put together a book, article or resource review that may be of interest to LDA members, or contribute an article to share your thoughts and insights with our community. If you have a keen interest in these activities and would like to contribute, please send an email to our Bulletin editor Laura Glisson at *bulletin.editor@ldaustralia.org*, expressing your interest, including the topics or focus areas you are particularly passionate about.

Your involvement, as a member, volunteer, speaker, staff member or article contributor is crucial to our success, and we appreciate your continued support and dedication. Thank you!

Geoffrey Ongley
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Geoffrey Ongley is the Co-founder, Director and CEO of Training 24/7, as well as the CEO of Get Reading Right. Educationally, he has completed a Bachelor of Computer Science, Master of Business Administration (Finance), and a Graduate Certificate in Professional Legal Studies.

In this issue of the Bulletin...

Laura Glisson, Editor, LDA Bulletin

I am pleased to bring you the second edition of the Bulletin for 2024 entitled 'Elevating education: Examples of evidence-based practice in oral language, writing, early childhood mathematics, MTSS and more'. This edition includes 13 fantastic articles written by classroom teachers, school leaders, researchers and speech pathologists. A wide range of topics are covered from writing assessment and intervention, to read-alouds and oral language, mathematics in the early years, supporting ADHD in the classroom, and Multi-Tiered Systems of Support (MTSS) for literacy. There is sure to be something for all of our readers!

Firstly, we hear from a team of researchers from the Language and Literacy in Young People research group in Perth (https://languageandliteracyinyoungpeople.com) about the impact of language and literacy difficulties on the mental health of children and young people. In this article, Associate Professor Suze Leitão and colleagues describe a series of research projects investigating the prevalence of language difficulties in secondary schools with Flexible Learning Programs and co-designing intervention supports for these students. Additional projects include evaluating intervention programs designed to support coping and self-esteem in upper-primary children with reading difficulties, as well as providing training to psychology, general medicine and psychiatry students and clinicians on the intersection of language, literacy and mental health. Importantly, the team describe a current Australia-wide Medical Research Future Fund research project aiming to investigate the language, literacy and socioemotional wellbeing of year 6 students as they prepare for transition into secondary. A critical study in the Australian education landscape!

The second piece is 'Solving the ADHD puzzle: Unveiling little-known strategies for classroom success' by Andrew Hayes, ADHD coach and teacher. Hayes artfully describes the challenges faced by teachers when trying to support students with ADHD in their classrooms. Framed within Sweller's Cognitive Load Theory (2011), Hayes describes the impact that high cognitive load can have on students with ADHD, followed by 12 practical strategies to best support these students in your classroom.

Our feature article of this edition is 'Facilitating language comprehension through Read Alouds' by Dr Molly Ness. Here, Ness describes the benefits of interactive read alouds, and presents strategies and routines for building background knowledge, teaching complex vocabulary, and building comprehension through read alouds. Packed full of practical ideas for educators, this piece is a must-read for all classroom teachers.

Of equal interest, is a research article by Dr Tessa Weadman, titled 'Reading to or reading with? Using a shared book reading approach to support students' oral language and early literacy skills'. In this article, Weadman introduces us to 'The Emergent Literacy and Language Early Childhood Checklist for Teachers (ELLECCT)'. The ELLECCT is a free, shared book-reading observational tool from Weadman's PhD, which can be used to support early childhood and primary teachers to hone their practice. In this article, Weadman presents critical components of the ELLECCT, and describes the importance of strategies related to dialogic reading, vocabulary promotion, responsiveness, print knowledge, and paralinguistic and nonverbal skills.

Next, we have an article titled, 'Theme-based learning: Improving children's oral language skills' from Rosemary Simpson, educational consultant and ex-principal of 20 years at North East Language Development Centre in Perth. Here, Simpson discusses the importance of high-quality, evidence-based and robust oral language instruction, including the use of a thematic approach. Simpson makes the case for a well-designed theme with purposeful and explicit instruction such as semantic mapping, targeted vocabulary teaching, and syntax and oral narrative activities, alongside meaningful play-based experiences to support the development of schema and rich knowledge in young learners.

'Mathematics in early childhood education?' is the next article, written by Dr Elien Vanluydt and Dr Nore Wijns, two speech pathologists and researchers in the area of mathematics. Here Vanluydt and Wijns draw on their 'Wis & Co' research project, and present evidence-based, practical and intentional strategies to support the development of proportional reasoning and repeated patterning in preschool children.

Following this, Jessica Colleu Terradas brings us two articles - 'Exploring global perspectives: Insights from my Churchill Fellowship about literacy assessment

practices within a MTSS approach' and 'No more students falling through the cracks: Adopt universal screening'. These exceptional pieces summarise some of Colleu Terradas' findings from her recent Churchill Fellowship. Read these for practical ideas and recommendations, alongside case-based examples of effective MTSS in action from the US and UK.

The theme of MTSS is wrapped up by Adam Inder from the Australian Education Research Organisation (AERO), in his piece 'MTSS to support secondary students: New resources for leaders and teachers'. This article reminds us of the importance of MTSS, before summarising a suite of excellent resources published by AERO to support leaders and teachers in their implementation of MTSS at a whole school level.

Next, we have three articles on writing assessment, by Dahmen Higgs, Jeanette Breen, and Jenny Baker. Spanning the use of technology to support with formative assessment, to the comparison of typing and handwriting in correlation to NAPLAN data and comparative judgement, and to utilising close analysis of pre-, during and post-instruction writing samples, these three articles are a must read if you're looking to enhance your approach to assessing writing.

To finish, we have '10 tips for supporting written expression in school-aged students' from speech pathologist, Sara Chong. Packed full of practical ideas, this article is a fantastic example of a clinician applying research findings into their practice.

A sincere thanks to our contributors for this issue. We appreciate you so generously sharing your knowledge and expertise with our readers. If you are interested in contributing to a future edition of the Bulletin, please get in touch at bulletin.editor@ldaustralia.org.

Laura Glisson, Editor, LDA Bulletin

Laura is a Certified Practising Speech Pathologist (Speech Pathology Australia) with over 14 years experience working with school-aged children and young people with speech, language and literacy difficulties. Laura works as the Co-director and Co-founder of Tracks to Literacy, where she provides professional learning to educators and clinicians on oral language and literacy instruction, intervention and assessment. Laura also works clinically with upper primary and secondary-aged students with language, literacy and associated mental health difficulties, and is a Clinical Coordinator and lecturer in the Curtin School of Allied Health at Curtin University in Perth.

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Language, Literacy and Mental Health: Current progress

Leitão, S., Wilmot, A., Vanluydt, E., McArthur, G., Hill, L., Jackson, E. & Boyes, M.

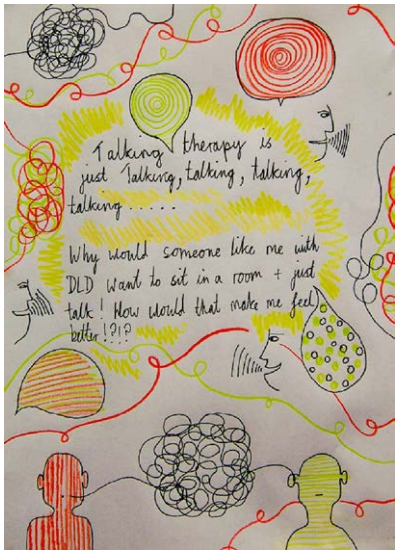
Approximately four children in every classroom experience language difficulties in the oral (receptive and expressive language) and/or written (reading, spelling, writing) domains (Brimo et al., 2021; Calder et al., 2022; Norbury et al., 2016). Indeed, Developmental Language Disorder (DLD; i.e., persistent and significant difficulties in expressive and/or receptive oral language) and Developmental Dyslexia (i.e., a persistent and severe problem with learning to read) are two of the most common childhood neurodevelopmental conditions (McGregor, 2020). Spoken language, reading, and writing skills are critical for learning and teaching, and it is widely known that children with language and literacy difficulties often struggle with the academic demands of school. What is less well known is that these children are also at elevated risk for mental health concerns – particularly in relation to their self-concept, their anxieties, their attention, and their avoidance behaviours (Donolato et al., 2021; Francis et al., 2019; McArthur et al., 2022; McArthur et al., 2020; St Clair et al., 2023).

So, what does this mean for those who work with children every day – in the classroom and beyond? We need to have a deeper understanding of the strengths and needs of these learners, and we need to understand how best to support them, their learning and their mental wellbeing.

The Language and Literacy Young People (LaLYP) research group is dedicated to raising awareness about DLD and other language difficulties. We are also committed to carrying out research to better understand and support the mental health of children with language and literacy difficulties. We work with children and young people who have oral and written language difficulties, as well as their families, aiming to understand their perspectives and co-design resources with them. We work closely with the Dyslexia SPELD Foundation (DSF), with a network of private community speech pathologists, and with national and international research collaborators. We also collaborate with the Association of Independent Schools of WA (AISWA) in a program of research which aims to profile and understand the language strengths and needs as well as the mental health and wellbeing of high school students attending a Flexible Learning program. This has led to a program of work collaborating with teachers and psychologists to support oral language and academic engagement among these high school students and support their educational and wellbeing outcomes.

In a 2020 edition of this bulletin (*https://ldaustralia.org/wp-content/uploads/2020/11/1141-LDA-Bulletin-September-2020_WEB.pdf*), we discussed the DSF Clever Kids program, which is a manualised mental health program for upper-primary aged children with reading difficulties (*https://dsf.net.au/our-services/clinical-services/clever-kids-program*). We had just completed a randomised-controlled-trial of DSF Clever Kids which revealed positive effects on children's coping, self-esteem, and emotional symptoms (Boyes et al., 2020). DSF now offers training in facilitating the Clever

Kids program and provides multiple free parent information sessions on how to support the mental health of students with reading difficulties https://dsf.net.au/families/telethon-family-support-hub



In speaking to adolescents and adults with DLD we have become increasingly aware of the lack of accessible mental health services for people with language difficulties. This was eloquently expressed by 15-year-old Siouxie who said:

> *"Talking therapy is just talking, talking, talking ... Why would someone like me with DLD want to sit in a room and just talk! How would that make me feel better!?!?" (Siouxsie, 15-years) © Siouxsie Webster*

Our community partners have also identified mental health as an area of unmet need, with notable increases in demand for services. Addressing the need for accessible mental health services for children with language difficulties is clearly an urgent priority. In response, we are commencing funded research projects to investigate the language-based accessibility and inclusivity of child mental health programs and develop accessibility guidelines for educators and clinicians. Additionally, we received funding to routinely deliver professional development and training related to the intersection of language, literacy, and mental health, and implications for mental health support amongst students and practicing clinicians in psychology (Hill et al., 2024), general medicine, and psychiatry. Our vision is to directly address inequities in mental health service access for children with language difficulties; promoting wellbeing for children who often fall through the cracks in educational and mental health services.

In tandem with the implementation programs described above, we are also continuing our research to explore the most salient risk and protective factors for mental health among children with language and literacy difficulties. Funded by the Medical Research Future Fund we have just ventured into an ambitious program to recruit 800 Year 6 Australian students with or without language/literacy difficulties to track their academic and socioemotional wellbeing as they transition to secondary school. The findings from this study will complement our earlier work exploring significant risk and protective factors associated with mental health among children with reading difficulties (Boyes et al., 2019; Wilmot et al., 2023). Research of this nature is crucial to enable parents, teachers and others to (a) identify children who are more (or less) at risk of mental health concerns, and (b) identify the most salient and cost-effective targets for tailored mental health programs.

In the words of Siouxsie, *"communication is everywhere, and I have no voice"*.

We need to support the wellbeing of children with language difficulties who so often fall through the cracks of educational and mental health services. To do so we need to amplify the voices of children and their families, raise awareness and advocate for their needs and priorities, and design and test accessible interventions to promote their mental health. We need to do this in collaboration with the children themselves as well as their families and teachers. We hope that those who read this article – the educators and practitioners who work with these children – will hear our call to action and consider joining us in this endeavour. This could be through sharing our research projects with potential families and young people enabling them to take part and provide us with their voice. It could be through contacting us at LaLYP and considering joining one of our advisory panels or co-design groups to provide your voice. It could be through accessing our research papers and programs from our website to hear our voice. We look forward to hearing from you!

For information about current/ongoing projects, including the chance to be involved in our upcoming research related to the transition from primary to secondary school, please see here to register interest: https://www.facebook.com/ChildMentalHealthResearch

To find out more or to contact us, please see here: https://languageandliteracyinyoungpeople.com

To read freely accessible publications from our research group, please see here: https://languageandliteracyinyoungpeople.com/research/publications

Acknowledgements

We are grateful to all the children, young people and families who have taken part in our work. We are also grateful to the many teachers, speech pathologists, psychologists and other professionals who have contributed to our research.

Our research is funded by: MRFF (Medical Research Future Fund), Healthway, an International DLD Project Research Grant, Australian Rotary Health, and Speech Pathology Australia.

Mark Boyes is supported by the National Health and Medical Research Council, Australia (Investigator Grant 1173043).

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https://languageandliteracyinyoungpeople.com/about/about-us

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***Dr Elizabeth (Lizz) Hill** is a speech pathologist and teaching/research academic at Curtin University. Lizz completed her PhD in September 2020, for which she explored language skills of adolescents with acquired brain injury and links with social and emotional wellbeing. Currently, Lizz's research explores the intersection of mental health and language, with a particular focus on accessible mental health services for people with language and literacy difficulties. She is passionate about working in collaboration with people with lived experience of language and communication challenges, and their supporters, to co-develop solutions to support social and emotional wellbeing. Lizz has published 15 peer-reviewed journal articles and is a co-lead investigator on over $1.8 million in research funding.*

***Dr Emily Jackson** is an early career academic in the field of speech pathology. She completed her PhD in 2021, which focused on vocabulary and memory in young people with developmental language disorder. In mid-2021, Emily commenced a teaching and research position at Curtin University in the School of Allied Health. Prior to this, Emily worked as a practitioner in private practice and a not-for-profit organisation with children, adolescents, and their families to improve communication and academic outcomes. Emily is currently involved in several industry-linked research projects that aim to improve educational and mental health outcomes for neurodivergent high school students.*

***Professor Mark Boyes** is a mental health researcher at Curtin University, where he co-leads the Mental Health domain of the Curtin enAble Institute and the Language and Literacy in Young People research group. His research investigates psychosocial outcomes among vulnerable youth, including children with language and literacy difficulties, children affected by HIV/AIDS, and youth who self-injure. His aim is to use this knowledge to develop and evaluate evidence-based interventions promoting mental health for youth and families.*

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Solving the ADHD puzzle: Unveiling little-known strategies for classroom success

Andrew Hayes

In today's media landscape, ADHD related stories are seemingly everywhere. Reports related to ADHD often spotlight schools struggling to cope with students out of control and the masses of teachers leaving the profession because they are struggling to manage behaviour in the classroom. The media often attributes this issue to the fact that many children wait months for a diagnosis due to the daunting wait times see a Paediatrician. However, it could be argued that these topics are casting a shadow over a more immediate and actionable concern: the lack of attention and awareness given to the essential classroom strategies that can support children with ADHD. As ADHD prevalence rises, many parents and teachers seem to lean heavily on the reliance of medication as a quick fix to make the symptoms of ADHD and many of the stresses and problems associated with it, simply go away. However, it's not quite that simple, while medication can help, even children who are medicated continue to experience challenges within a classroom setting. As such, there is more to this puzzle, a puzzle that has a large, ignored piece just waiting to be placed in the right position. They are overlooking the critical piece labelled, 'tailored teaching methods'. If acknowledged and implemented correctly this piece can have a profound impact on children with ADHD in achieving success and disruptive behaviours being reduced.

This theme was highlighted in a recent encounter I had with a graduate teacher who was celebrated for her organisation, fancy classroom with Pinterest-inspired laminations, and impeccable punctuality. Despite her many strengths, she was struggling greatly with her students diagnosed with ADHD; unaware of what ADHD truly entailed, let alone the strategies available to her teaching practice that can support these students. Furthermore, it became apparent that her colleagues were additionally unable to offer her much support as they too seemed to be as she termed it ''winging it''. Her experience underscores a significant reality experienced by many teachers across Australia, the lack of adequate training for teachers in supporting students with ADHD (Strelow, et al.,2021). There is a lack of training available for both pre-graduate students and those already practising. Due to this lack of training, many teachers lack insight into how best to assist these students to thrive.

Attention Deficit Hyperactivity Disorder (ADHD) is a neurodevelopmental condition that affects a significant proportion of the student population in Australia. According to various studies, the prevalence of ADHD among children in Australia is around 7.7% to 9.3%. (Salari, 2023) Well documented symptoms of ADHD include attention regulation, hyperactivity, and impulsivity. These symptoms can make traditional classroom settings particularly challenging for overwhelmed teachers already struggling to cope with a multitude of challenging classroom related factors including allergy management, rising compliance protocols and mental health issues.

This rescue kit disguised as a feature article explores the key strategies that teachers can use to support students with ADHD. This article aims to equip teachers with skills to ensure these students receive the support they need right now and allow teachers to feel that they are meeting an important need. In this article, I will focus particularly on how cognitive load affects students with ADHD and will suggest several key strategies that could be implemented to mitigate its impact and greatly enhance both the teaching experience and academic success of students with ADHD. In their book, Sweller, Ayres, and Kalyuga (2011) provide an in-depth analysis of cognitive load theory. They discuss a variety of developmental factors that can exacerbate cognitive load which in simple terms is the amount of mental effort being used in one's working memory at any one moment in time.

So what is cognitive load and what impact does it have on learning?

Cognitive load is divided into three types: intrinsic, extraneous, and germane load. Intrinsic load is related to the difficulty of the material itself. Extraneous load pertains to how the material is presented. Finally, germane load involves the effort required to process and understand the material (Sweller, Ayres, & Kalyuga, 2011).

For students with ADHD, managing cognitive load can be particularly challenging as their working memory often functions less efficiently than that of their classmates, leading to quicker mental overload. These challenges are compounded by the well-entrenched symptoms of ADHD, such as distractibility and impulsivity, which further strain their cognitive resources (Martinussen et al., 2005).

The impact of high cognitive load

As discussed in *Effective Classroom Interventions for ADHD Students*, (Nelson, 2023) high cognitive load can significantly impact students with ADHD in several ways. These include reduced academic performance, increased frustration and anxiety, behavioural issues, fatigue and burnout.

Reduced academic performance

Students with ADHD may struggle to keep up with the curriculum when the cognitive load is high. They might find it difficult to understand complex concepts or complete multi-step tasks, leading to lower academic achievement.

Increased frustration and anxiety

The constant struggle to manage high cognitive demands can cause frustration and anxiety. This emotional stress can further impair their ability to concentrate and learn effectively.

Behavioural issues

Overwhelmed by high cognitive load, students with ADHD often exhibit a variety of behavioural problems. They might act out, become disruptive, or withdraw from classroom activities and even display school refusal behaviours.

Fatigue and burnout

Continual cognitive strain can lead to mental fatigue and burnout. Students may become disengaged or exhibit signs of exhaustion, making it even harder for them to participate and benefit from classroom activities.

So what can teachers do about the challenges of cognitive load?

Teachers can positively influence the academic performance of children with ADHD, and peer relationships of students with ADHD, by employing strategies that build strong teacher-student relationships and effective classroom management practices. These methods help improve student engagement and reduce disruptive behaviours (Hamilton & Astramovich, 2016).

Let's explore some key strategies that I have found extremely beneficial in my role as a teacher and ADHD Coach.

1. Keep instructions simple! Very simple!

By consistently breaking down instructions into small, manageable chunks; presented in a clear, consistent and predictable way, helps students with ADHD process information more effectively. Teachers should check for understanding throughout the lesson through brief supportive check-ins. Written instructions should also be given to students to free them from the task of needing to rely solely on their working memory and allows them to focus on the task at hand.

2. Use the right type of visual aids

Clear uncluttered visual aids such as charts, mind maps and images that only contain relevant information and minimalist colours can help students with ADHD better understand and retain information. These tools can provide a visual representation of complex concepts, making them easier to grasp and more fun to create.

3. Create a predictable and structured classroom environment every day

A well-organised, predictable and routine-focused classroom environment can reduce student uncertainty which can lead to rumination, anxiety and negative behaviour. Students find safety in knowing what is happening in the classroom that day. Most children with ADHD hate surprises. Consistent routines and clear expectations can provide the structure and sense of safety they need to be able to relax and be able to really engage in quality learning.

4. Implement flexible seating options

Allowing students with ADHD to choose seating arrangements that minimise distractions can enhance their ability to concentrate. Options such as seating away from windows or doors, sitting at the front of the classroom and using noise-cancelling headphones can all be beneficial. In addition, many children with ADHD actually focus better when they are able to move and have proprioceptive feedback. Proprioceptive feedback is where the student obtains some feedback about where their body is in space. Students with ADHD often seek to obtain this feedback by rocking on a chair, touching things or rocking their torso around. Students with ADHD therefore often find it challenging to sit on the mat where they are not getting that proprioceptive feedback. Activities in which they are expected to "stay still and listen and don't touch anything" can in fact make it even harder to learn. Choosing seating that allows movement and/or proprioceptive feedback that is not as disruptive for other students can be very helpful, such as stand up desks, bumpy cushions, wobble stools, floor level "hug chairs" and allowing stretch kick bands around the legs of a chair.

5. Enforce regular movement breaks

Short, frequent movement and proprioceptive breaks can help students with ADHD to manage their cognitive load more effectively. These breaks allow them to recharge and return to tasks with renewed focus and can also provide incentive and reward for good work. Integrating playful breaks into school curricula can enhance learning gains in most students (Parker, Thomson & Berry, 2022).

6. Use of the Pomodoro Technique in lesson design

The Pomodoro technique is a time management method designed by Francisco Cirillo in 1992 originally using a tomato timer. The Pomodoro Technique initially involves allocating 5 minutes to a task followed by a 5-minute break, aiming

to enhance productivity and maintain focus. These short breaks, beneficial for memory and emotional regulation, aid students in better-recalling information and staying on task (Que et al., 2023). By sectioning short periods of work in between regular breaks, students can achieve success supported by clear and manageable work sprints.

7. Mix up your teaching, don't be boring!

Having an open mind and tailoring instruction to meet the diverse needs of students can help those with ADHD stay engaged and succeed. This might include offering alternative assignments, using technology to support learning, or providing fun out of the box lesson ideas. By taking the time to know your students and what makes them tick, while blending your findings into the curriculum, can be extremely effective in supporting children to engage in learning.

8. Teach and model organisational habits

Helping students develop organisational habits can reduce cognitive load. Teachers can guide students in using age-appropriate easy to use planners, help set goals, and model how to create to-do lists. By verbalising how these skills help you in your role as a teacher, students can see the value in them and are more likely to implement them.

9. Immediate rewards

Many children with ADHD are unable to work towards long term goals or be able to work on goals unless they can see an immediate benefit or physical reward. When planning activities in the classroom, try to build in immediate rewards for achieving goals. Many children with ADHD also benefit significantly from praise. Remember to praise behaviours that you want to reinforce.

10. Communication and collaboration with parents

The most effective support for students with ADHD involves strong collaboration between teachers and parents. Regular communication between these stakeholders can ensure that strategies are consistently applied and adapted at school and at home to meet the student's evolving needs. It will also foster a sense of collective efficacy.

Engaging parents in their child's education can provide valuable insights and support. Teachers can share strategies and progress updates, while parents can reinforce these strategies at home.

11. Working with specialist ADHD coaches, psychologists, occupational therapists and special education professionals

ADHD coaches who are trained in education, school psychologists, occupational therapists and special education professionals can all offer additional resources and support for students with ADHD. Collaborating with these specialists can help teachers implement effective interventions.

12. Seek out professional development opportunities and coaching

The more you learn about ADHD the more you will be able to support students in your classroom. Ongoing professional development and coaching can equip teachers with the knowledge and skills needed to support students with ADHD. Training about ADHD and related strategies can enhance their ability to create an inclusive and supportive classroom environment. Some ADHD coaches are also teachers and can provide training to individual teachers to aid them in the management of children with ADHD.

Conclusion

In conclusion, making small changes to your classroom and your teaching, can benefit many children with ADHD. By reducing cognitive load as much as possible a student's memory reserves can be saved for the times when they need it most. These changes can result in improving children with ADHD's self-esteem, academic performance and behaviour. By understanding the challenges these students face, and implementing strategies to reduce cognitive load, teachers can create a more supportive and effective learning environment for everyone.

About the author

Andy Hayes is a qualified teacher, an Accredited ADHD Coach, and a former Director of Teaching and Learning at a private school in Perth. His educational journey also includes a six year stint teaching in London, UK. Now, as an ADHD coach and consultant he combines his unique lived experience with ADHD with his extensive educational background to support families and schools to support children with ADHD effectively. He is passionate about educating schools to become more neurodiversity aware, and welcoming. His approach is to empower children with ADHD to reach their full potential and lead fulfilling lives through evidence-based practices. Andy lives in Perth with his family. He is a graduate of The ADDCA Training Academy in New York, He holds a Master of Education from The University of Notre Dame Australia and a Graduate Certificate of Instructional Leadership from The University of Melbourne.

Conflict of interest

The author declares that there is no conflict of interest regarding the publication of this article. He did not receive funding from public, commercial, or not-for-profit sectors to write this piece.

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Facilitating language comprehension through Read Alouds

Dr Molly Ness

In today's hyperfocus on the science of reading, we cannot overlook the essentiality of read alouds. With an extensive research basis highlighting their cognitive, socioemotional, linguistic, and even physiological benefits; read alouds are a key element in building students' language comprehension. In fact, a longstanding body of research highlights the multitude of ways in which students benefit from read alouds. The purpose of this article is (1) to overview how read alouds align to the science of reading, (2) to overview the myriad of benefits of read alouds, and (3) to explain three central components in effective read alouds.

What is an Interactive Read Aloud?

An interactive read-aloud is a shared literacy experience engaging children and adults in conversation and engagement around a high-quality text. When we read aloud across various genres, formats, and content areas, we build students' background knowledge and expose them to sophisticated vocabulary—all necessary components in language comprehension. Some of the key components of an interactive read aloud include:

- A give-and-take of language and conversation (Blewitt & Langan, 2016).
- A joyful and engaging experience for all involved (Vlach, Lentz, & Muhammed, 2023).
- An invitation from the teacher to talk about the text before, during, and after reading (Beck & McKeown, 2001).

More specifically, research highlights how read-alouds support students' multifaceted reading development. In particular, read-alouds foster students' higher-order thinking skills (Lennox, 2013), strengthen students' independent writing (Dowdall, Melendez-Torres, Murray, Gardner, Hartford, & Cooper, 2020), increase the likelihood to engage in independent reading (Ledger & Merga, 2018), and develop students' content knowledge and vocabulary (Dwyer & Martin-Chang, 2023). Read alouds are particularly beneficial for multilingual learners, with increases in vocabulary and comprehension (see Giroir, Grimaldo, Vaugh, & Roberts, 2015; Schrodt, Fain, & Hasty, 2015). Read alouds foster socio-emotional development, including helping students control emotional outbursts and improving their ability to empathise (Thompson & Melchion, 2020; Verden, 2012). Lastly, read-alouds evoke joy, for both students and teachers (Ledger & Merga, 2018).

...results show a strong correlation between students' first-grade vocabulary knowledge and their high school reading comprehension

Though read-alouds may be a cornerstone of literacy instruction in early childhood classrooms, their

frequency declines in both older grades and content area classrooms. While 77% of teachers set aside time for read alouds, only 36% commit to reading aloud every day (Scholastic, n.d). It is possible that the decline of read alouds is due to the constraints of test prep materials and/or the inclusion of scripted materials (Merga & Ledger, 2019).

Despite the well-documented benefits of read alouds, a 2017 survey of elementary teachers revealed that 50–70% of respondents did not allot intentional planning time for their read alouds. Research indicates that when teachers do not intentionally plan their read aloud discussions, they are more likely to ask surface-level questions, clarify content, or ask for simple summarisations - rather than facilitating richer text reflections or reactions (Haaland et. al, 2020)

Maximising the instructional benefits of read alouds

to maximise the instructional potential of read alouds, I intentionally focus on three areas in which to support students (Ness, 2023); these include (1) building and activation of background knowledge, (2) explicit vocabulary instruction, and (3) intentional use of teacher-generated think alouds to model comprehension and metacognition. These components are readily applicable to any content area read-aloud. While a kindergarten teacher might apply them to a narrative picture book, a seventh-grade social studies teacher might do the same in reading aloud a speech from Martin Luther King Jr.. However, read alouds do not and should not take the place of explicit reading instruction, as explained by reading expert Timothy Shanahan, who reminds us that "Reading to children is not a particularly effective way of teaching reading. …what [shared reading] should not replace instruction in which students would usually be expected to do the reading."

Let's first unpack the role of background knowledge.

1. Background knowledge as a comprehension obstacle and opportunity

A wide body of research suggests background knowledge supports students' comprehension during and after reading (Cervetti & Wright, 2020). Background knowledge supports comprehension in several ways. As education journalist Natalie Wexler (2019) explains, background knowledge serves as a magnet to make new learning stick; when people know a bit about a topic, they are more likely to anchor new information to previously known knowledge. This enables readers to draw inferences about missing information and ideas not explicitly explained or as discussed in schemata theory; people are more likely to retain and transfer information if they already have some foundational knowledge of the concept (Anderson, 1984).

Consider this: children's books contain more rare words than prime-time television shows for adults

Understandably, much focus has been placed on the ways teachers activate and build students' background knowledge (Cabell & Hwang, 2020; Cervetti & Wright, 2020; Wexler, 2019); background knowledge, however, is just a small part of the knowledge and skills students bring to the classroom. While background knowledge focuses on content and topics related to ideas a text presents, students also bring to school certain understanding of social norms, ways of interaction, and cultural elements they have learned and use to navigate in their everyday lives. These norms, ways, and cultural elements can differ greatly from one student to the next; these *funds of knowledge* convey the notion that families have produced and acquired knowledge, social norms, practices, and experiences in their homes and communities. Researchers Luis C. Moll, Cathy Amanti, Deborah Neff, and Norma Gonzalez (1992) coined the term funds of knowledge; they refer to funds of knowledge as "the historically accumulated and culturally developed bodies of knowledge and skills essential for household or individual functioning and wellbeing" (p. 133). While background knowledge and funds of knowledge certainly overlap, they are not the same thing; whereas background knowledge is what students know from their academic and personal experiences, funds of knowledge intentionally honour the experiences and assets students bring from their cultures, families, and communities.

Prior to reading, we evaluate the text for potential comprehension breakdowns and instructional opportunities. The aim here is to consider the background knowledge and funds of knowledge that the text assumes the reader brings. If readers need some familiarity with a concept or topic in the text, then think through how to intentionally frontload their knowledge to eliminate a potential comprehension stumbling point. Also we can deliberately examine the text for instructional opportunities within the text; for instance, does the text lend itself to making inferences, figurative language, or another particular literary device?

In this first step, the teacher acts as a detective, sorting out what might be problematic so you can set up your students for success. Consider these reflective questions:

- What do students need to know about the topic before reading this book?
- Are there locations, references, interactions, events, or experiences in the book that students are likely to be unfamiliar with?
- What settings and interactions are included in the book, and what are the associated funds of knowledge with these?
- What does the book assume readers bring to the page with them?
- Are there elements of a character's background, culture, or community that might be unfamiliar to readers?
- Where else in the text might readers struggle? What potential points of confusion are there? Be careful about multiple characters, changes in settings (locations and time frames), and how the use of literary devices (figurative language, metaphors, and other syntactic structures) influence the text.
- What experiences, knowledge, explanation, or exposure can you build, enhance, or lend to students in advance of reading?
- What ways (for example, conversation, demonstration, photographs, or video explanation) can you use to enhance, build, and / or activate students' background knowledge and funds of knowledge?

2. Navigating the complexities of vocabulary instruction

The link between vocabulary and comprehension is undeniable; if readers can't identify the words in a text, they cannot understand the text. A rich body of research highlights that vocabulary knowledge relates to—and even predicts—reading comprehension (Beck, McKeown, & Kucan, 2013; Cunningham & Stanovich, 1997). Researchers and professors of education, Anne E. Cunningham and Keith E. Stanovich (1997), designed an amazing milestone study. For this longitudinal study, a group of first graders underwent a battery of reading assessments—including assessments on foundational skills, vocabulary knowledge, cognitive skills, and comprehension. These same students took tests in reading comprehension, general knowledge, and vocabulary—ten years later. The results show a strong correlation between students' first-grade vocabulary knowledge and their high school reading comprehension.

Read alouds are an optimal point for vocabulary instruction because of their lexical richness (that is, their wealth of uncommon words). A 2019 study evaluated the inclusion of rare words in children's literature and found that of every 1,000 words, 30.9 are rare (Logan et al., 2019). Consider this: children's books contain more rare words than prime-time television shows for adults (22.7 of 1,000) and children (20.2 of 1,000) alike, and even more than college graduates'.

1. Choose target vocabulary words ahead of the read aloud (Hadley & Mendez, 2021).	Researchers Tanya S. Wright and Susan B. Neuman (2014) remind educators that teaching words on the fly too often leads to poor word choice, insufficient definitions of words, and insufficient examples of the words in other contexts.
2. Focus on just-right words.	Just-right words are words you find in the vocabulary of proficient readers; these words are often more sophisticated ways to identify simple concepts. For example, almost every kindergartner knows the word happy. Some just-right words for this simple concept might be enthusiastic, satisfied, or elated. These words might be beyond children's encoding abilities, but they can use them orally.
3. Choose depth over breadth.	Because your intent is to provide meaningful interaction with novel words, focus on a select number of words and teach them deeply as opposed to briefly covering them. In a storybook of typical length, select four to six words to teach. These criteria help guide the selection of words to teach (Beck et al., 2013): • Words repeated more than once in a text. • Words that are interesting and relevant to students in their everyday interactions. • Words that relate to something students already know.
4. Explain through simple, straightforward, student-friendly definitions.	During a read aloud, don't send your students to the dictionary or lead students in using context clues to deduce meanings. Instead, give them a student-friendly definition of the word, which explains the word concisely and in everyday language. Adhere to the rule of three Ss: *short, simple, and straightforward*. This is not a time for multiple explanations of vocabulary words, grammatical reminders about parts of speech, or mini lessons in word study or etymology.

conversational speech (17.3 of 1,000; Logan et al., 2019). Wiithout read alouds, children may miss out on the lexical richness that underpins language comprehension.

In read alouds, we explain novel vocabulary words, with words divided into two buckets: (1) Words to Teach and (2) Words to Explain. *Words to Teach* are the Tier Two words (Beck et. al, 2001) that are sophisticated ways to explain simpler concepts, and those that are relevant, engaging, and likely to be used by students. *Words to Explain* require brief and simple unpacking, so as to not hinder comprehension of overall content). As we encounter novel words, we state the word in the context of the book, provide a student-friendly definition, and connect the word to additional contexts. Here are four guiding principles:

- Choose target vocabulary words ahead of the read aloud (Hadley & Mendez, 2021). Researchers Tanya S. Wright and Susan B. Neuman (2014) remind educators that teaching words on the fly too often leads to poor word choice, insufficient definitions of words, and insufficient examples of the words in other contexts.
- Focus on just-right words. Just-right words are words you find in the vocabulary of proficient readers; these words are often more sophisticated ways to identify simple concepts. For example, almost every kindergartner knows the word happy. Some just-right words for this simple concept might be enthusiastic, satisfied, or elated. These words might be beyond children's encoding abilities, but they can use them orally.
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To help determine vocabulary priorities for read alouds, I recommend considering these reflective questions:

- Which words can simply be explained and do not need additional instruction?
- Which words are likely to be used in everyday conversation and writing and thus should receive additional follow-up instruction?

3. Building comprehension through Think Alouds

I have long believed in the power of think alouds, the purposeful use of *I language* to model how you are making meaning from the text (Ness, 2017). Through first-person narrative language, these think-alouds show how you are making inferences, synthesising information, generating questions about the text, considering the author's purpose, and addressing the times that you address comprehension breakdowns. A wide body of research shows the effectiveness of think alouds in increasing reader comprehension (Ness, 2018; Pratt & Hodges, 2022). Think alouds are effective for students of all ages, from preschool (Dorl, 2007) to secondary levels (Coiro, 2011; Lapp, Fisher, & Grant, 2008). Think aloud instruction benefits students across text format and genre; in online text (Coiro, 2011; Kymes, 2005), in narrative text (Dymock, 2007), and in informational text (Coiro, 2011; Lapp et al., 2008; Ortlieb & Norris, 2012). Equally promising are the benefits of think alouds for struggling readers (Berkeley & Larsen, 2018) and English learners (Ghaith & Obeid, 2004; McKeown & Gentilucci, 2007). Perhaps think alouds' impressive power to improve student reading comprehension lies in how its verbal modeling makes the invisible cognitive process of understanding visible to students; a think aloud is as if you've cracked open your brain to show students all the steps and manoeuvres to take to build understanding. Some useful sentence starters to jumpstart think alouds include:

- *I'm getting the sense that…*
- *I'm wondering…*
- *I'm not sure I understand when/how…*
- *At first I thought…, now I think….*
- *I'm confused here, so I might….*
- *I'd like to ask the author…*

During typical read alouds, teachers pose questions to readers as to assess their comprehension, provide language interaction, and to monitor engagement and focus. As we intentionally include think alouds, we shift the focus to building comprehension.

Final thoughts

When we embrace the read aloud as an opportunity to build engagement, vocabulary, content knowledge, comprehension, motivation, and so many other academic and linguistic skills; we increase students' development as readers, writers, and thinkers. Explicit planning of read alouds offer these opportunities every day in every classroom. As we thoughtfully align our instruction with the science of reading, we must be mindful that read alouds are not an instructional luxury, nor a time filler. The read aloud is a must do, want to do, should do, get to do, have to do, and essential in building students' language comprehension across elementary and secondary classrooms.

About the author

Molly Ness is a former classroom teacher, a reading researcher, and a teacher educator. She earned a doctorate in reading education at the University of Virginia, and spent 16 years as an associate professor at Fordham University in New York City. The author of five books, Molly serves on the Board of Directors for the International Literacy Association and is a New York state chapter founder of the Reading League. Dr. Ness has extensive experience in reading clinics, consulting with school districts, leading professional development, and advising school systems on research-based reading instruction. She is the creator of the End Book Deserts podcast, which brings awareness to the 32 million American children who lack access to books. When she is not reading and writing about reading and writing, Dr. Ness is driving her ice-hockey obsessed teenage daughter to the rink, learning how to fly fish, or hiking with her poorly behaved goldendoodle.

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Reading to or reading with? Using a shared book reading approach to support students' oral language and early literacy skills

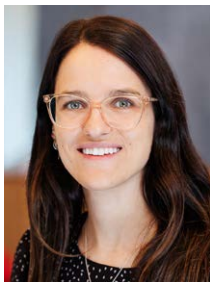
Dr Tessa Weadman

Shared book reading

Reading to children is often a daily occurrence in Australian classrooms and early learning centres and a widely promoted practice to support oral language and early literacy development (Cabell et al., 2019; Zucker et al., 2013). Shared book reading is an interactive reading approach that encourages interaction through book-related talk and conversation, which in turn supports children's engagement (Zucker et al., 2013). Although frequent reading has long been recognised as an important contributor to enhancing early language and literacy learning (Ece Demir-Lira et al., 2019; Sénéchal & LeFevre, 2002), it is the quality of the interactions that can be particularly impactful in promoting longer term early language and literacy outcomes (Zucker et al., 2013). Quality in shared book reading can be maximised through extratextual talk; spontaneous conversation and utterances beyond reading the story text (Kaderavek et al., 2014). Extratextual talk that fuels these interactions may take place before, during and after reading the story and is positively related to oral language and early literacy developmental outcomes (Cabell et al., 2019).

The Emergent Literacy and Language Early Childhood Checklist for Teachers (ELLECCT)

A large body of international research highlights the benefits of professional learning, coaching, and training in supporting teachers to increase their use of extratextual talk and strategies to support early language and literacy in context of shared book reading (e.g., Cabell et al., 2015; Wasik & Hindman, 2020). The main outcome from my PhD research under the supervision of Professor Tanya Serry and Professor Pamela Snow resulted in a freely available, shared book-reading observational tool — 'The Emergent Literacy and Language Early Childhood Checklist for Teacher' (ELLECCT; Weadman et al., 2022). The ELLECCT captures a vast range of early language and literacy strategies used by teachers throughout shared book reading with preschool children. While the ELLECCT focused on a preschool population, most of the strategies are also applicable to children in the first two years of primary school. The ELLECCT holds value as both a research tool and a coaching tool. It is currently being used to support early childhood teachers (ECTs) and Foundation teachers to increase their shared book reading practices in early childhood and school-based settings.



The ELLECCT is a research-based tool that includes strategies that are well established in the research literature to foster the oral language and early literacy skills of preschool children. Further detail about the ELLECCT shared book reading strategies is provided below. The development of the ELLECCT included two separate panels (incorporating 11 ECTs and 11 speech pathologists) to evaluate the content validity and face validity

of the tool. Intra-rater and inter-rater reliability were also assessed across 32 shared book reading observations with ECTs. The findings indicated strong evidence of validity and moderate evidence of reliability (Weadman et al., 2022). The ELLECCT manual includes a classification system that outlines all the different sections and items on the tool as well as the checklist. Additional information contained within the manual are video recording, transcription and scoring procedures for research purposes. The ELLECCT manual is available in the Supplementary Material of the Weadman et al. (2022) open access paper.

The ELLECCT contains five main sections pertaining to early language and literacy as well as one section relating to paralinguistic and nonverbal strategies. Several of the central strategies from the ELLECCT have been described below with examples from the story Alpacas with Maracas, written by Matt Cosgrove.

Prompts

The first section contains dialogic book reading prompts that may be used by teachers to ask children questions and encourage dialogue between the adult and child/ren about the story (Towson et al., 2016). Dialogic reading prompts follow the acronym CROWD: Completion Prompt, Recall Prompt, Open-ended Prompt, WH prompt, Distancing Prompt (Whitehurst et al., 1988). Dialogic reading prompts have a strong evidence base for supporting vocabulary development (e.g., Mol et al., 2008; Opel et al., 2009). Table 1 (adapted from Weadman et al. 2003) summarises the five dialogic reading prompts with examples from *Alpacas with Maracas*.

Vocabulary promotion

The second ELLECCT section contains four strategies shown to promote vocabulary word learning. These items (including descriptions) were adapted from Milburn et al. (2014). Table 2 outlines these four strategies with examples.

Responsive statements

The Responsive Statements section (adapted from Milburn et al. 2014) includes linguistically responsive statements that can be used by teachers in response to children's comments. Table 3 contains two key strategies with examples. Additional strategies that may be utilised by teachers include imitations (repeating back what the child says), acknowledgement (acknowledging an utterance spoken by the child or providing praise e.g., *"Okay, yeah, I know"*), and commands (directing talk or behaviour e.g., *"Show me . . .", "Point to . . ."*).

Print Knowledge

The two sections of the ELLECCT targeting early literacy include 'Print Knowledge' and 'Phonological Awareness'. Many of these items

Prompt	Description	Example
Completion prompt	Statements or questions that prompt the child to fill-in-the-blank	*"This guy is called Macca. He's an _____ (alpaca)" (While pointing to the picture)*
Recall prompt	Questions requiring the child to remember previous events in the story	*"What happened to Macca and Al when they first tried out for the talent show?"*
Open-ended prompt	Encourage a multi-word response (at minimum) from the child	*"Why did Macca and Al decide to play the maracas?"*
WH-prompt	Who, what, when, where, why, how questions	*"Who came last in the talent show?"*
Distancing prompt	Questions requiring the child to relate the book content to their own personal experiences	*"Tell me about when you played with a maraca."*

Table 1. Dialogic Reading Prompts

Item	Description	Example
Select and stress a word	Stress and isolate a target word (e.g., pausing) to draw attention to it.	*"Their choir was . . . DIRE . . ."*
Explain a word	Provide a definition or a synonym for a target word.	*(Dire): "If something is dire, it is really bad or terrible."*
Relate a word	Relate the target word to something in a child's experience or real-life context	*"Look at my drawing – it is quite dire. I need to practice!"*
Repeat a word	Repeat back the target word during book-related talk	*"Oh no! Macca and Al's drumming and dancing are dire too!"*

Table 2. Vocabulary Promotion Strategies

Item	Description	Example
Comment	Statements that relate to the story. These also include a label alone or a label plus other information, or story-related onomatopoeia	*"They look like they are having so much fun, even though they came last."*
Expansion	Statements that contain at least one content word from the child's utterance plus additional syntactic or semantic content	*Child: "Them alpacas is bad with dancing". Teacher: "Yes, those alpacas are bad at dancing."*

Table 3. Responsive Statements

increase children's awareness about the role of print. Attention towards print can be increased when teachers use a print referencing style (Justice et al., 2009). Print referencing strategies (adapted from Ezell and Justice, 2000) and utterances that increase children's understanding of print concepts (adapted from Clay, 1993) may be appropriate for children entering school with limited awareness of book structure and function. Table 4 includes several of these core print referencing and print concepts strategies. The phonological awareness strategies included on the ELLECCT focus on syllables, rhyme and alliteration awareness and production. These strategies have less research in context of shared book reading, although have value for younger children in early childhood settings. Children in primary school should receive phonemic awareness instruction with letters; strategies that are not included on the ELLECCT tool.

Item	Description	Example
Verbal reference to print	Questions about print: Questions relating to the print in the text	*"What does this word say?"*
	Comments about print: Comments specific to the print in the text	*"This word says 'Stop'!"*
	Requests about print: Directive requests for the child to perform an action or complete a task	*"Point to the word on that sign."*
Nonverbal reference to print	Pointing to print: Pointing out words or letters in the text or print in illustrations.	*"Point to the word on that sign."*
	Tracking print: The teacher runs their finger along the text while reading.	
Print concepts	Utterances relating to concepts of print including front cover, back cover, title, author, illustrator, read top to bottom	*"The author of this book is _____. The author is the person who wrote the story."*

Table 4. Print Knowledge Strategies

Item	Description
Pauses	Pausing before key words, pausing after finishing a page, or turning to a new page to allow children to respond to questions, ask questions or comment.
Facial expression	Use of facial expressions to emphasise meaning or aspects of the book. For example, demonstrating a happy, sad, or surprised expression.
Gesture	Use of gesture to emphasise meaning or aspects of the book. For example, hand movements or pointing.
Prosody (intonation)	Changes in voice intonation to emphasise meaning or aspects of the book. For example, using varying intonation.
Volume	Changes in voice volume to emphasise meaning or aspects of the book. For example, speaking softly or loudly.
Rate of speech	Changes in the rate of speech to emphasise meaning or aspects of the book. For example, using a fast or slow rate of speech.

Table 5. Paralinguistic and Nonverbal Strategies

Paralinguistic and nonverbal strategies

the final ELLECCT section describes strategies that teachers can use to make their storytelling more engaging and animated. These items are based on Jefferson's (2004) Conversation Analysis conventions. Reading using an appealing style makes the reading session more engaging for children (McGinty, 2006) and can also support story comprehension (Moschovaki et al., 2007). Although these strategies are important, dialogic reading strategies and being responsive to children's utterances will ultimately boost engagement and contribute more impactfully to children's oral language skills. Table 5 outlines the paralinguistic and nonverbal strategies.

Australian early childhood teachers' shared book reading strategies

Much of the existing shared book reading research focuses on an international context. Our recently published open access paper described Australian ECTs' common oral language and early literacy strategies used throughout shared book reading (Weadman et al., 2023). The ELLECCT was used to capture the shared book reading practices of 32 Victorian ECTs working with children in the year prior to school entry.

The results indicated the majority of the ECTs read to children in a way that was engaging through their use of paralinguistic and nonverbal strategies. They frequently used facial expressions, gesture and varied prosody to engage young children while reading. The findings demonstrated variability in the oral language strategies provided to support preschoolers. The ECTs most frequently asked WH prompts and were less likely to focus their time on more cognitively demanding prompts such as distancing and recall prompts. Analysis of the ECTs question types showed the ECTs were three times more likely to ask a closed question than an open-ended question. Closed questions typically elicit a one- or two-word response (Hindman et al., 2019) and are often less demanding (Lonigan et al., 1999). These findings indicate ECTs would benefit from increasing the number of open-ended questions they ask when reading to children to encourage longer responses from children. The ECTs in the study were generally responsive

to children's utterances, which is important for promoting extended dialogue and engagement (Girolametto & Weitzman, 2002). Comments were the most frequently used statement, while language expansions were the least frequent. Language expansions are a valuable language-expansion strategy for supporting the oral language ability of children with language difficulties. Therefore, ECTs would benefit from increasing their use of language expansions during shared book reading.

An important finding was the low focus on early literacy strategies demonstrated by the ECTs within the study. The ECTs rarely used verbal or nonverbal print referencing strategies while reading. These results are in line with international shared book reading research (e.g., Justice et al., 2009; Zucker et al., 2009). Promisingly, there were some ECTs who incorporated some print concept strategies that focused on print organisation (e.g., title and author). These results highlight that this could be a focus area for ECTs working with younger children.

Shared book reading is a meaningful context that ECTs and primary school teachers can capitalise to support the oral language and early literacy skills of young children. The ELLECCT is an example of a tool that can be used to support teachers, speech pathologists and parents with increasing the amount of extratextual talk they use while reading to children. Extratextual talk is beneficial for supporting the learning of young children and promotes *reading with* rather than only *reading to* children.

About the author

Dr Tessa Weadman works as a lecturer and researcher in the School of Education at La Trobe University. She is a member of La Trobe University's SOLAR Lab (Science of Language and Reading), and she also works as a paediatric speech pathologist in Melbourne. Tessa's research interests span across preschool and school-age language and literacy development.

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Conflict of interest

The author declares that there is no conflict of interest regarding the publication of this article. She did not receive funding from public, commercial, or not-for-profit sectors to write this piece.

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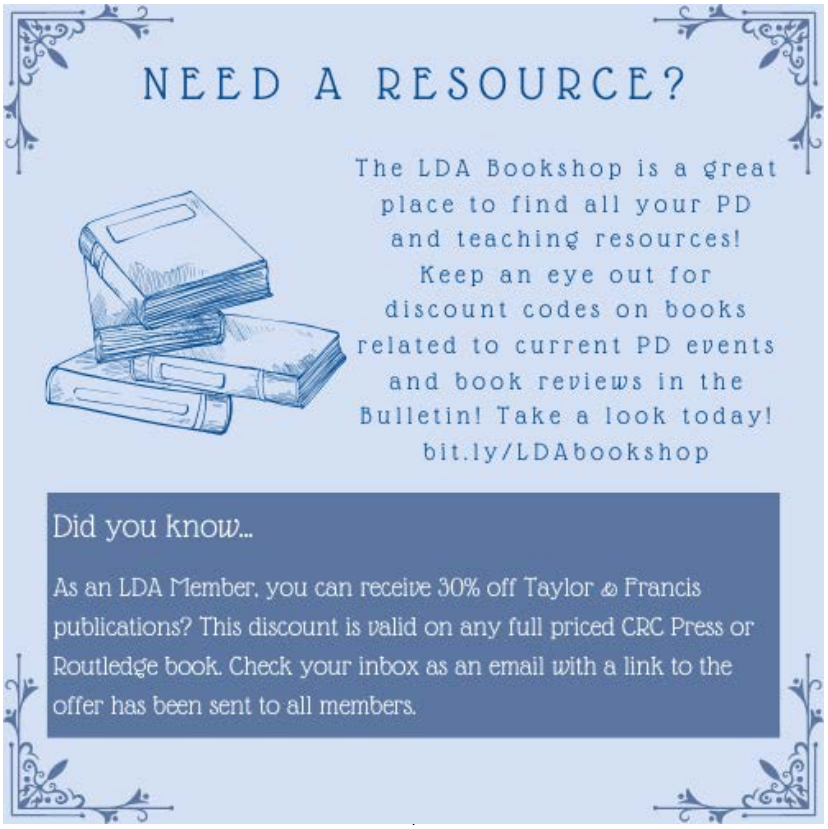

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Theme-based learning: Improving children's oral language skills

Rosemary J Simpson

As the Principal of a Language Development Centre for more than 20 years, my understanding of the critical role oral language proficiency plays in children's social and academic development, particularly for those with developmental language disorders (DLD), can offer valuable insights to educators, policymakers, and other stakeholders. In this article, I want to share practical strategies and approaches that have proven to be effective in supporting students to develop their oral language skills. I hope that sharing my experiences and insights will help to raise awareness about the academic and social challenges faced by students with limited oral language skills and provide effective strategies to teachers. Investing in oral language training for teachers and increasing access to speech pathology services in all schools will result in improved educational outcomes and foster a more inclusive learning environment for all students.

Effective communication skills rely heavily on the foundation of oral language development including:

- **Foundation for Literacy:** Oral language serves as the foundation for developing reading and writing skills. Through oral communication, children learn vocabulary, sentence structure, and grammar, which are essential elements for reading comprehension and writing proficiency.
- **Academic Success:** A solid foundation in oral language is closely linked to academic achievement. Students with strong oral language skills are better equipped to understand and engage with classroom instruction, comprehend complex texts, and participate actively in academic discussions.
- **Communication Skills:** Effective oral communication is fundamental for interacting with peers, teachers, and other members of the community. Children who develop strong oral language skills can express themselves clearly, engage in meaningful conversations, and collaborate with others more effectively.
- **Confidence and Wellbeing:** Proficiency in oral language boosts children's confidence in expressing themselves and contributing to social interactions. This confidence extends beyond the classroom and positively impacts their overall sense of wellbeing and self-esteem.
- **Addressing Disparities:** Research indicates that children from disadvantaged backgrounds often have limited exposure to spoken language, leading to a smaller vocabulary and reduced readiness for academic learning. Addressing these disparities in oral language development is essential for promoting educational equity and closing achievement gaps.
- **Cumulative Impact:** The effects of oral language proficiency extend across the entire curriculum, influencing learning outcomes in all subjects. To understand mathematical word problems, interpret scientific concepts, or analyse historical events, strong oral language skills are required.

Educators should be alarmed at statistics that reveal that a significant proportion of our students enter school with limited oral language abilities. The seminal study by Hart and Risley (1995) conducted in the United States starkly illuminates the formidable challenges confronting both young learners and educational establishments alike. This study found that, by the age of 3 years, children from the most disadvantaged socio-economic group are exposed to 30 million less words than that of their peers with well-educated parents. This places an enormous burden on both the disadvantaged children, who are all expected to engage in the same curriculum content on school entry, as well as the educators trying to close the gap.

Current research (Brushe et al., 2021) conducted in Australia has shown that this gap begins to emerge between the ages of 12 -18 months of age.

In addition to these alarming statistics, research (Calder et al, 2022) shows that schools will also have:

- an estimated 6.4% of children with severe (clinically diagnosed) oral language issues; and

- an increasing number of children from non-English speaking backgrounds, requiring explicit oral language teaching.

Children with oral language difficulties are likely to face more than just academic challenges. Indeed, there should be a profound societal concern regarding their impact on social development. National research (Snow & Powell, 2012) has shed light on several alarming statistics.

- Between 50-70% of children exhibiting emotional and behavioural issues also experience clinically significant language difficulties.
- Children grappling with oral language difficulties are twice as likely to develop a mental illness by the age of 19.
- An estimated 60-90% of young offenders harbour a clinically significant, yet often undetected, oral language disorder.

A notable study (Bower et al, 2018) conducted at Banksia Hill, a juvenile detention facility in Western Australia, revealed startling findings. Nearly half of the incarcerated youth exhibited severe language impairments, struggling with both comprehension and expression. Sadly, many of these juveniles had never been formally diagnosed with language issues prior to their detention.

Addressing disparities in oral language development is crucial for promoting educational equity and closing achievement gaps.

Consider the implications of these findings within the justice system. Imagine the daunting challenge faced by these individuals during legal interviews, where they encounter unfamiliar legal jargon and complex grammatical structures. Their inability to comprehend such language impedes their capacity to provide coherent and accurate explanations regarding alleged events. Viewers of documentaries like "Making a Murderer" (Ricciardi & Demos, 2015) can attest to the stark reality of this predicament.

It is evident that addressing oral language difficulties is not merely an educational concern but a crucial societal imperative, with implications that extend far beyond the classroom. Addressing these societal concerns requires comprehensive strategies that encompass early intervention, support services, public awareness campaigns, and policy initiatives aimed at promoting inclusive environments and equal opportunities for individuals with oral language difficulties. However, it seems obvious that investing in the development of oral language skills, especially in the early years of schooling, will contribute significantly to this serious issue.

Educators agree that, to participate effectively in our society, the ability to read and write is critical. Schools are continually under scrutiny for failing to adequately improve reading and writing levels. This focus is particularly intense following the publication of NAPLAN (National Assessment Program – Literacy and Numeracy) – a series of tests focused on students' reading, writing, language (*spelling, grammar and punctuation*) and numeracy skills administered to Australian students in year 3, 5, 7 and 9).

A recent study (Hunter et al, 2024) conducted by the Grattan Institute, stating that one third of Australian students are able to read proficiently, has intensified criticism of schools already grappling with challenges such as teacher shortages, behaviour issues, transiency, absenteeism and insufficient training in oral language development. The existing pressure on school leaders to prioritise NAPLAN resulting in periodic school reviews has further exacerbated these issues. As a result, there's an increasing urgency to begin reading and writing instruction as soon as a child enters kindergarten (the first year of schooling (non-compulsory) in WA). This approach will not address the oral language development deficits that many students face upon entering school. Explicit teaching in oral language development should be integrated into early education curricula to ensure that all students have a strong foundation in communication skills before progressing to reading and writing. An oral language assessment for all children at this entry point would be an excellent start instead of waiting until Year 3 to determine that the child has a problem!

As the Principal of one of the Language Development Centres (LDCs), I've had the privilege of collaborating with speech pathologists, as well as exceptional teachers and education assistants. The LDC had a very effective approach to teaching and learning through thematic instruction. It was found that some key benefits of theme-based learning included:

1. **Repeated Exposure and Practice:** When students engage with a theme over an extended period, they encounter related vocabulary and concepts multiple times, reinforcing their understanding and retention.
2. **Meaningful Integration:** Thematic learning enables connections to be made across different subject areas, such as science, health and humanities and social science, fostering a deeper understanding of how knowledge is interconnected in the real world.
3. **Reduced Teacher Workload:** Integrating multiple subjects within thematic units can streamline lesson planning and delivery for teachers, as they can leverage the same theme to address learning objectives across various domains.
4. **Engagement and Motivation:** Themes can be selected to resonate with students' interests and experiences, making learning more engaging and motivating. This can lead to increased participation and enthusiasm for learning.
5. **Holistic Development:** Thematic instruction promotes holistic development by addressing not only academic skills but also social, emotional, and practical skills within relevant contexts.
6. **Real-World Application:** By exploring themes that are relevant to students' lives, they can better understand the practical applications of their learning and see its significance beyond the classroom.

Over the decades, schools have experienced shifts in their approach to thematic teaching, ranging from high enthusiasm to complete disregard. However, it is crucial to highlight exactly what was meant by the term 'thematic approach' at the LDC where it was not a passing trend or a superficial addition to the curriculum. Instead, the thematic approach at the LDC was more than just a pedagogical method — it was a comprehensive educational strategy designed to deeply engage students in their learning process. It also encouraged active participation and inquiry-based

learning, encouraging students to explore topics of personal interest within the context of broader themes. This not only enhanced their academic achievement but also nurtured their curiosity and passion for learning.

In the LDC themes, were chosen through a continuous process of monitoring the interests of children across various age groups. Additionally, input from speech pathologists was utilised to identify topics that would facilitate the acquisition of essential vocabulary vital for both daily life and accessing the curriculum.

…addressing oral language difficulties is not merely an educational concern but a crucial societal imperative…

Each topic began with a semantic mapping activity, where children shared their existing knowledge about the topic with the teacher, which was all recorded on the white board in one particular colour. At the completion of the topic the process was revisited and all of the 'new' words and information were recorded in a different colour. This visual representation showcased the substantial growth in both vocabulary and knowledge, providing positive reinforcement for both the teacher and the students.

Themes always commenced with a captivating cognitive hook, typically through an excursion, incursion, or an engaging activity designed to provide students with some relevant background knowledge. For instance, at the outset of the Occupations theme, teachers organised class visits to the on-site dental clinic. During these visits, dental staff would generously share insights into their roles and occupations, weaving in key vocabulary (provided by the teacher) that was selected to be taught throughout the theme. Following the 'talk', children were presented with a small toothbrush and toothpaste set, and the dental staff guided them through the proper technique of cleaning their teeth. Following this hands-on experience, the class would return to the classroom and collaboratively construct a procedural narrative, with the teacher's support, outlining the process involved in effective tooth brushing: *"First, I put toothpaste on my toothbrush. Then, I clean my teeth. After that, I rinse my mouth and wash my toothbrush."*

The next steps included these key components such as:

1. **Classroom Setup:** Student engagement was enhanced by creating a themed environment in classrooms, encouraging exploration, conversation and inquiry. This could include setting up specific areas like home corners, puzzles, books, and figurines that align with the theme being taught.
2. **Resource Organisation:** The school's storerooms were organised thematically. Materials related to each theme were grouped together, providing easier access for teachers. This organisation system facilitated lesson planning and ensured that teachers had all necessary materials at hand to support the theme-based approach.
3. **Explicit Teaching Program:** There was a consistent and explicit approach to teaching, so that the students always understood the learning intentions and the success criteria.
4. **Theme Implementation:** All themes focused on the explicit teaching of oral language skills including vocabulary, phonological awareness, description, classification and categorisation, comprehension and oral narrative. For each of the themes, teachers and speech pathologists would develop a list of vocabulary to be taught. There was always a focus on encouraging grammatically appropriate complete sentences depending on their level of development.
5. **Repeated Opportunities:** When appropriate, the themes incorporated science, health and humanities and social science, as well as art.
6. **Practice Opportunities:** During intentional play sessions children were able to practice new vocabulary and concepts, in the home, reading, and puzzle corners. These activities created engaging experiences where the children can apply what they have learned in a meaningful context. This approach aligns with best practices in early childhood education, which emphasise hands-on, experiential learning to support children's development and understanding.

Language Development Centres employ a systematic approach to data collection to monitor the progress of students at various levels: individual, class, and whole school. By collecting data systematically, educators can track students' growth over time and identify areas where additional support may be needed. Analysis of this data has consistently demonstrated significant improvements in students' oral language skills, highlighting the effectiveness of the thematic approach.

Mainstream schools serving students with limited vocabulary and background knowledge can also benefit from adopting this approach. By immersing students in rich, interdisciplinary experiences centred around themes, educators can scaffold learning and provide opportunities for meaningful language practice across different contexts.

The thematic approach also aligns with principles of differentiated instruction, allowing educators to tailor instruction to meet the diverse needs of their students. By addressing language development within the context of thematic units, educators can provide targeted support and interventions to help students build vocabulary, develop language skills, and deepen their understanding of content.

In summary, the success of the LDC in fostering language development through a thematic approach, highlights its potential applicability and effectiveness in mainstream schools, particularly for students with limited vocabulary and background knowledge. Adopting this approach can provide students with a holistic and engaging learning experience while supporting their language development and academic success.

Certainly, addressing strategic issues facing Australian Departments of Education is also crucial for enhancing educational outcomes. Some of the problems facing schools include teacher recruitment and retention, cuts to government funding, an increase in challenging behaviours and differing views on teaching pedagogy.

However, these problems could be significantly reduced and students' progress significantly improved, by the following actions:

- **Evidence-based approaches to teaching reading and writing are mandated in all Australian schools.** This action emphasises

the importance of using teaching methods that have been proven effective through research. By ensuring that all teachers are trained in evidence-based practices for literacy instruction, schools can better support students' development in reading and writing, leading to improved literacy outcomes.

- **Maintaining consistency in teaching and learning through stable leadership.** Stability in school leadership can contribute to consistency in educational approaches and organisational culture. When business plans have continuity across changes in leadership, it can help maintain a coherent vision for teaching and learning, reducing disruptions and ensuring that efforts to improve outcomes are sustained over time.
- **Mandating standardised oral language assessments at school entry.** Early identification of students at risk of language difficulties can enable timely interventions to support their development, identifying students who are likely to also require additional support to develop literacy skills.
- **Increasing speech pathology services for Australian children, particularly in the early years.** Early intervention for children with language difficulties is crucial for preventing academic challenges at school.
- **Employing speech pathologists in all Australian schools.** They can provide specialised support for students with communication disorders or difficulties. By integrating speech pathology services into the school environment, educators can collaborate more effectively to address the diverse needs of students and promote inclusive learning environments.

Implementing these actions would require collaboration among government agencies, education professionals, and other stakeholders. However, by addressing key areas such as evidence-based instruction, early intervention, and support for students with communication needs, these actions have the potential to positively impact student outcomes and contribute to a more effective and equitable education system. And that is what we are all seeking – better outcomes for our children!

About the author

Rosemary Simpson is the Co-founder and Co-Director of Tracks to Literacy, which supports many government and non-government schools in the implementation of an evidence-based, robust approach to the implementation of effective oral language teaching across the schools. She is currently a member of the Curriculum and Assessment Committee which advises the SCSA Board on curriculum and assessment related matters across all years of schooling from K-12. For over 20 years, after a teaching career in mainstream, education support and behavioural specialist facilities Rosemary was the Principal of the North East Language Development Centre, a public school in Western Australia that caters for students with Developmental Language Disorders. The school provides direct intervention for ~250 students from Kindergarten to Year 1. She was also responsible for establishing an outreach support to ~145 mainstream schools through building capacity of their staff to teach oral language and literacy skills at a whole-school level. As the longest serving committee member for the Western Australian Primary Principals' Association, Rosemary was presented with a Life Membership in recognition of the support she had provided for school leaders across the state.

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Conflict of interest

The author declares that there is no conflict of interest regarding the publication of this article. She did not receive funding from public, commercial, or not-for-profit sectors to write this piece.

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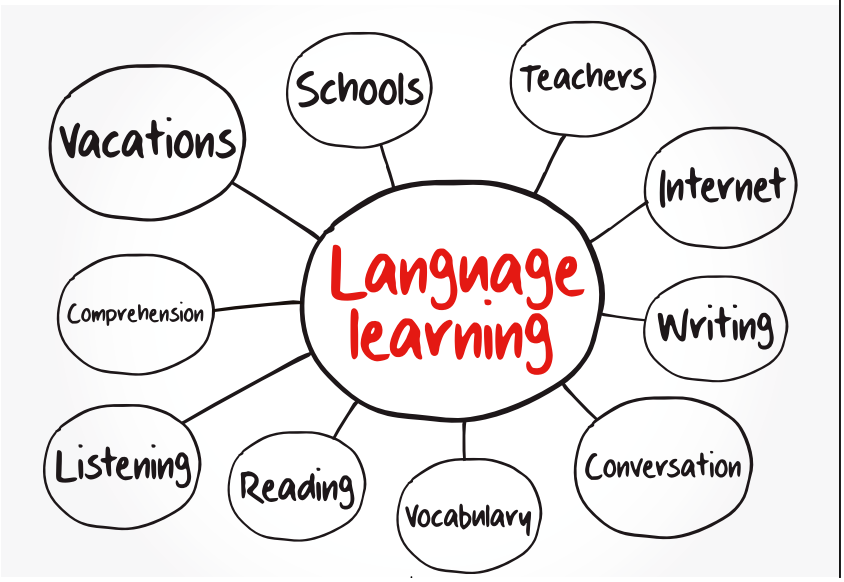

Mathematics in early childhood education?

Elien Vanluydt &
Nore Wijns

Young children love to explore the world around them. To make sense of that world, they are constantly using mathematical insights. They manipulate materials, investigate, compare, sort, and seek solutions to problems. Often, they are amazed by their own mathematical reasoning and that of others. By exploring that world together with them, you are supporting their mathematical development. However, many questions are raised when thinking about mathematics in early childhood education (ECE). What can preschoolers already do? Which mathematical activities are meaningful? How can we address the needs of preschoolers in terms of mathematics? Does focusing on mathematics in preschool come at the expense of other important domains, such as socio-emotional development? Do children who struggle with mathematics already experience difficulties in kindergarten? These challenging questions intrigued the researchers of the Wis & Co project (Centre of Instructional Psychology and Technology, KU Leuven, Belgium). In this contribution, they aim to answer some of these questions and discuss how two engaging mathematical topics (repeating patterns and proportional reasoning) can be meaningfully introduced in ECE. Additionally, we reflect on children's spontaneous attention to mathematics, delve into the importance of rich mathematical language and consider early predictors of mathematical difficulties.

Why mathematics in early childhood?

Young children already face – consciously or unconsciously – challenges and choices that require them to tap into their mathematical knowledge. When they are asked if they want one or two cookies, the decision is usually quite easy, because they know that two is more than one. Having a solid mathematical foundation is not only useful for young children, it also offers many benefits later in life. First, having a strong mathematical foundation in preschool helps children during the transition to primary school, where mathematics education gets a more formal character (Horning et al., 2014). Second, this solid mathematical foundation has positive long-term effects (Duncan et al., 2007; Duncan & Magnuson, 2011; Watts et al., 2014; 2018). Children with higher mathematical abilities in early childhood have higher mathematical abilities not only at the end of primary school, but even during secondary education. Importantly, this association holds even when considering other important factors such as cognitive abilities or socioeconomic background. Third, abilities like number ordering and recognising large numbers (above 20 and even above 100) in preschool are predictive of mathematical aptitude in primary school (Nguyen et al., 2016). Finally, researchers also demonstrated that preschoolers' mathematical abilities are strong predictors of their later reading abilities (Duncan et al., 2007). Interestingly, early mathematical abilities were found to be equally predictive of reading as early language abilities, whereas the reverse was not necessarily true. Thus, establishing a solid mathematical foundation in early

childhood is crucial, not only for long-term mathematical development but also for later reading abilities.

A safe climate with attention for wellbeing is a prerequisite for preschoolers to learn and thrive. Consequently, socio-emotional development rightfully holds a central place in early childhood education. Researchers acknowledged this and investigated the association between children's socio-emotional development and the mathematical experiences received in preschool (Le et al., 2019). The results were promising. Children who engaged with challenging mathematical content developed improved social skills (e.g., initiating and maintaining friendships or showing empathy) and work ethic (e.g., interest in learning and exploring). Additionally, they showed enhanced attention (e.g., persistent in finishing tasks) and less externalising behaviour (e.g., getting angry, getting into a fight, or disturbing class activities) than children who engaged less with challenging mathematical content. Remarkably, these associations held for and were even stronger for children who started ECE with low academic or socio-emotional skills. This means that attention to challenging mathematical content in early childhood education does not need to come at expense of positive socio-emotional development, in fact they can go hand in hand.

Mathematics as a broad domain in early education

Mathematics is a broad learning domain that encompasses various subdomains (e.g., patterning, proportional reasoning, fractions, algebra). Are all these domains equally suitable for early childhood education? Although it is evident to not introduce advanced mathematics, we argue that young children can already engage in quite complex mathematical content in a playful manner. Moreover, particularly these more challenging mathematical tasks (e.g., clock reading, counting backwards/forward from a given number, counting beyond 100, addition and subtraction or correctly using measurement instruments) are associated with higher mathematical, language and socio-emotional abilities (Claessens et al., 2013; Le et al., 2019; Nguyen et al., 2016). Importantly, these associations are also true for children with initially low mathematical abilities.

Children who engaged with challenging mathematical content developed improved social skills

Research has also shown that early notions of many more complex mathematical abilities are present in young children, even if they have not received specific or formal education in them. For instance, most countries only introduce proportional reasoning in the second half of primary education, yet research has shown that preschoolers can already reason proportionally in certain tasks, such as allocating quantities of food to fish (Resnick & Singer, 1993) or fair sharing grapes among puppets (Vanluydt et al., 2018). Because the first notions of proportionality (and many other mathematical abilities) are already present early on, they can be valuable starting points for introducing more complex mathematical content into ECE. Addressing more challenging mathematical content creates valuable learning opportunities. However, the question remains, what topics should be addressed and how? In what follows, we propose two mathematical topics and give some guidelines on how they can be meaningfully introduced in preschool and early primary education.

Repeating patterns

Patterning activities are well embedded in ECE settings. In activities such as threading beads or stamping, patterns are created (e.g., blue-yellow-red-blue-yellow-red-…). Most young children enjoy these types of activities because patterns have an appealing quality; they look pretty. Furthermore, including pattern-related activities in ECE is valuable because children who excel at these activities tend to perform better in mathematics later in life (Fyfe et al., 2019). Research has, however, shown that not every pattern-related activity is equally valuable for children's mathematical development (Wijns et al., 2021). To understand better which activities are most valuable, we need to understand the essence of a pattern. A pattern consists of several elements that exhibit a certain regularity. There are many different sorts of patterns in mathematics, but we will focus on repeating patterns. The regularity in a repeating pattern is the unit that repeats itself. For instance, in a bead necklace with alternating blue, yellow and red beads, the pattern unit is blue-yellow-red (see Figure 1). The pattern unit, that repeats itself, forms a repeating pattern in the necklace, allowing us to predict how the necklace continues.

When working with preschoolers on repeating patterns, we need to explicitly teach them what a repeating pattern is and what is not, just like we teach them what four, a triangle or heavy means. First and foremost, pay attention to the correct use of the term 'repeating pattern'. Using examples and counterexamples is an effective way to introduce the concept of a repeating pattern (e.g, ΔooΔooΔoo) and a random sequence (e.g., ΔΔooΔoΔoo). While sorting examples of repeating patterns and random sequences, characteristics of repeating patterns can be identified: *'Why is this (not) a repeating pattern?'* The repetition of the pattern unit is essential in this context.

To further understand the characteristics of a repeating pattern, it can be helpful to explore a variety of repeating patterns together:

- AB-pattern, e.g., tall – short
- ABC-pattern, e.g., apple – pear – banana
- ABCD-pattern, e.g., blue – yellow – red – green
- AAB-pattern, e.g., tall – tall – short
- ABBC-pattern, e.g., oΔΔ◊

This will allow young children to discover that a repeating pattern can consist of more than just two elements (e.g., ABC, ABCD), and that in a repeating pattern two identical elements can be next to each other (e.g., AAB, ABBC). What makes it even more exciting is that you can create all these patterns in many ways:

- With manipulatives, e.g., blocks
- On paper, e.g., using stamps in distinct colours or figures (green frog - blue dolphin)
- Using sounds, e.g., "beep – beep – boop"
- Through movements, e.g., jump – clap – wave

There are countless possibilities, but the first step for making repeating patterns must always be agreeing on which part will repeat, or in other words defining the pattern unit. When working with patterns involving sounds and movements, the pattern unit can be visualised with pictures created by the preschoolers. Depending on the age of the children this could be a drawing (e.g., a child with hands in the air) or a more abstract symbol. This process will support them in translating the world around them into symbols, which is an essential part of mathematics.

In activities with repeating patterns, the focus should be on regularity and

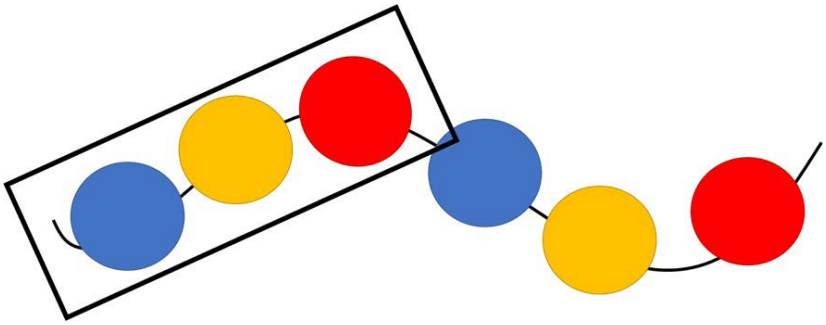

Figure 1. A necklace with a repeating pattern that has blue-yellow-red as pattern unit

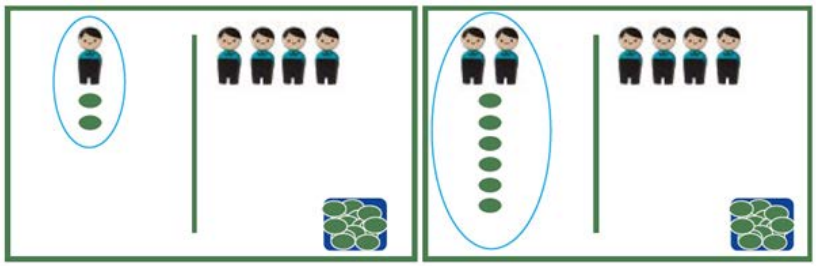

Figure 2. Example of a simple proportional problem with a one-to-many correspondence (i.e., unit ratio given) and a more challenging proportional problem with a many-to-many correspondence

structure, or more specifically the unit that repeats itself. By familiarising young children with this concept, they will notice repeating units in other situations more quickly. Consider for instance our numerals, they were designed according to a repeating pattern: the units from 0 to 9 are repeated when counting forwards. The concept of a unit is not only essential for understanding repeating patterns, it forms the basis for measurement (units of measurement), multiplication (repeated addition of equal groups), and proportional reasoning (unit ratio).

Proportional reasoning

Another valuable, yet challenging topic is proportional reasoning. Proportionality is one of the most commonly applied mathematical concepts in daily life (e.g., adjusting recipes for the right number of people, converting currencies from $ to £, using the driving speed and distance to estimate the time needed for the total journey, etc.). Moreover, it forms an important foundation for complex mathematical concepts such as fractions, algebra, geometry, probability, and statistics. However, many young people and even adults experience difficulties with it and it has been referred to as the stumbling block of the primary school curriculum (Resnick & Singer, 1993).

Although proportional reasoning is difficult for many, research has shown that there are situations in which young children already reason proportionally (Vanluydt et al., 2018; 2022). A typical example is fair sharing (e.g., *If mum gives me six cookies and tells me to share with my 2 siblings, I know I should fairly share the cookies, so we are getting two each*). Within the Wis & Co project a task was designed to assess proportional reasoning in a fair-sharing context: With puppets and grapes several situations are created in which children are challenged to make fair shares (e.g., Figure 2). Many preschoolers already understand that fair sharing means that everyone should receive an equal amount. Determining the unit ratio or one-to-many correspondence in the problem situation plays a crucial role in this process: the unit ratio indicates how much each 'unit' receives, or in our task, how many grapes each puppet gets. In simple proportional problems, the unit ratio or one-to-many correspondence is given (see blue circle on the left in Figure 2: each puppet has two grapes). In more challenging proportional problems, a many-to-many correspondence is given (see blue circle on the right in Figure 2: two puppets have six grapes), and children must find the unit ratio themselves (if two puppets have six grapes, each puppet gets three grapes). By using manipulatives, children can distribute the grapes fairly among the puppets on the left side to find the unit ratio (i.e., how many grapes for each puppet to make situation fair).

Most 4-to-5-year-olds (71%) are already able to solve simple proportional problems (Vanluydt et al., 2018). Moreover, early understanding of one-to-many correspondence was identified as an essential step in the development of proportional reasoning (Vanluydt et al., 2022). Children who still struggled with one-to-many correspondences at the beginning of primary school were not likely to develop their proportional reasoning abilities in the following years. In other words, understanding of one-to-many correspondence is the stepping-stone toward understanding of more challenging proportional reasoning problems involving many-to-many correspondences.

Introducing the concept of one-to-many correspondence early on, particularly for children who did not develop this understanding by themselves, supports children to take further steps in their development towards a deeper understanding of proportional reasoning (Vanluydt et al., 2023) and might even prevent the difficulties that children and even adults experience in dealing with proportional situations later in life. Educators can include this into their classroom by introducing proportional problems with small quantities in a meaningful context, through play situations and with manipulatives. Think about a play situation in which a small group of children are pretending to be pirates and find a treasure chest full of golden coins. When the four pirates open the chest, they find twelve coins. Challenge the pirates to share the coins among the pirates *so that it is a fair situation*. When they have established a *fair share*, ask them how many coins each pirate gets for the situation to be fair.

The fair-sharing context is very recognisable for most young children, but there are many other meaningful contexts that can be used. For example, recipes. Create a play situation in which you want to make four pots of soup, but you only remember the recipe to make one pot of soup (e.g., for one pot of soup you need three carrots) and use visual representations or manipulatives to support your story (e.g., see Figure 3). Ask your class for help: *"How many carrots do I need if I want to cook three pots of soup? First, I must figure out how many carrots I need for each pot of soup. How many carrots do I need for each pot of soup? For* ***each*** *pot of soup we need three carrots. If we need three carrots for each pot of soup, how many carrots do we need in total?"* Let children allocate three carrots to each pot of soup so they can see how many carrots you need in total (by drawing or using manipulatives) and they can answer your final question.

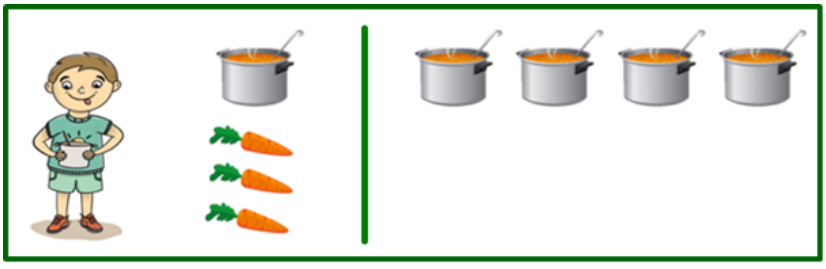

Figure 3. Example of a simple proportional problem in the context of recipes

Once children are confident with solving simple proportional problems (i.e. unit ratio given), you can move to more difficult proportional problems where they must identify the unit ratio themselves (i.e., with many-to-many correspondences).

Free play and thematic work provide excellent opportunities to systematically introduce more challenging mathematical content at a younger age.

Presenting proportional problems with small quantities and manipulatives make proportional situations accessible to young children and allows them to reason about the relationship between quantities, without the need to focus on calculating (Vanluydt et al., 2023). In current educational practice in many countries formal instruction in proportional reasoning is preceded by formal instruction in multiplicative reasoning, and particularly the automatisation of the multiplication tables. Since introduction to proportional reasoning can initially be done in familiar contexts with small non-symbolic quantities and supported by using manipulatives, it does not have to coincide with or be preceded by formal instruction in and automatisation of these arithmetic operations. By using manipulatives and small quantities we do not necessarily need arithmetic skills to start reasoning relationally. The focus in these problems can therefore be on reasoning instead of calculating. Reasoning on the relations between the quantities instead of on the arithmetic operations that must be done to solve a problem (Nunes & Bryant, 2010). We advocate for introducing the first steps towards proportional reasoning already in ECE and the first years of primary education, where proportional reasoning may already be addressed in playful and meaningful contexts with manipulatives.

Spontaneous attention for mathematics

Some children have spontaneous attention for mathematical elements in their environment. For instance, they immediately notice there are *three* paint brushes or that there are numbers on your T-shirt. Others will arrange their toy cars in a pattern, alternating between red and blue cars. Research has shown that there are significant individual differences in young children's spontaneous attention for mathematics, and more specifically for numerosities, number symbols and patterns. Moreover, these differences play a role in children's mathematical development. Children who spontaneously identify numerosities, number symbols or create patterns tend to have better mathematical abilities (Rathé et al., 2021; Wijns et al., 2020).

What does this mean for early childhood education? The first step is awareness: recognise that such spontaneous attention processes often occur in young children. Observe children during their playtime and see where their attention goes. Which children show a lot of interest in mathematics? Which children do not (yet)? Which situations trigger a spontaneous mathematical learning moment, and why?

…when you observe spontaneous mathematical behaviour this forms the ideal opportunity to engage with them and enrich them.

A second step is creating a rich play and learning environment where children have many opportunities to spontaneously engage with mathematics. Provide small sets of countable quantities throughout the classroom (e.g., three flowers painted on the wall) and meaningful contexts in which number symbols play a role (e.g., on a calendar, on a shopping list, in picture books); or include various materials (e.g., beads or bottle caps) in activities so children have the possibility to create patterns. However, try to limit the number of different elements: A pack of twenty blocks in four different colours will more likely lead to creating a pattern than a bag with fifty different types of buttons.

Additionally, when you observe spontaneous mathematical behaviour this forms the ideal opportunity to engage with them and enrich them. Involve other children, who may not have discovered the fascinating world of mathematics yet. Finally, teach by example. Mention numerosities in everyday situations (e.g., *'Today I brought two boxes'* or *'There are three butterflies in this picture book'.*), guide

children's attention to number symbols (e.g., 'There is a number in the book. It is the number one') and every now and then try to create patterns.

Rich mathematical language

Although mathematics and language are two distinct subjects in the school curriculum, children learn mathematics in a language-based instructional setting. The language used for learning and teaching mathematics involves general vocabulary (e.g., more, together) that is also used in everyday language, as well as more specific mathematical vocabulary (e.g., ratio, perimeter). Language and mathematical learning disorders frequently (30-70%) co-occur in individuals (Fuchs & Fuchs, 2002; Ostad, 2009; Willcutt et al., 2013). Moreover, many studies point out that language abilities predict children's mathematical abilities (e.g., Lefevre et al., 2010, Zhang et al., 2017). General language abilities are important for mathematical development, but increasing research shows that specific mathematical vocabulary plays an even bigger role (Purpura & Reid, 2016; Vanluydt et al., 2022). There are many mathematical words that preschoolers must learn to describe the world around them. The most obvious ones include counting words (e.g., one, two), shapes (e.g., circle, triangle), quantitative words (e.g., more, fewest) and spatial words (e.g., nearest, below). By wearing your 'math glasses' you can create so many opportunities to meaningfully introduce mathematical vocabulary in the classroom. In fact, every domain offers these opportunities. For instance, when exploring repeating patterns, specifically use vocabulary like 'pattern', 'pattern unit' or 'repeating'. Mathematical vocabulary is needed to describe the relationships between the quantities in additive, multiplicative and proportional situations (e.g., halve, double). Subtle differences in wordings can have a large impact on the relationship you are describing (e.g., two

more or two times more).

Being aware of the subtle differences in mathematical vocabulary and offering correct mathematical vocabulary is a good start: By frequently naming quantities, shapes, and other mathematical concepts such as patterns, young children will pick up these words more quickly and start using them themselves. These words can then be used in powerful mathematical interactions, which, in turn, are necessary to stimulate mathematical thinking.

Mathematical difficulties

Do children who struggle with mathematics already experience difficulties in kindergarten? If we can identify children at risk for mathematical difficulties at an early age, we can develop tools for early diagnosis of mathematical difficulties or dyscalculia and take targeted measures to support these children as much as possible from a young age.

Within the Wis & Co project children with mathematical difficulties were identified by their scores on the mathematics test from the Flemish Leerling Volg Systeem (i.e., LVS; similar to NAPLAN in Australia). Children with a percentile score of 25 or below on this test at the end of the first grade *and* the beginning of the third grade were considered to have mathematical difficulties. Preliminary results comparing this group of children with mathematical difficulties to a group of children with average mathematical abilities, showed that significant differences between these groups are already observable in ECE. Children with mathematical difficulties in elementary school had lower scores on several early mathematical tasks in ECE (i.e., number comparison, number recognition, counting, and patterning). They also scored lower on visual-spatial skills, vocabulary, and verbal working memory. Further analysis showed that counting, visuo-spatial abilities, and vocabulary were the most important predictors of later mathematical difficulties. This suggests that paying extra attention to these skills in ECE can help to identify at-risk children. Introducing these abilities from ECE onward can support children at increased risk for mathematical difficulties.

Conclusion

In this contribution, we reflected on the importance and possibilities of mathematics in ECE. We provided examples of challenging mathematical topics that can already be addressed in preschool and early primary education. Our hope is that we have inspired you and sparked your interest to further explore various challenging mathematical subjects.

Young children are capable of much more than we intuitively assume. They enjoy engaging in mathematical activities, reasoning mathematically, and surprising themselves and others around them. Engaging in challenging mathematics in ECE is associated with various positive aspects in their general development.

Free play and thematic work provide excellent opportunities to systematically introduce more challenging mathematical content at a younger age. Not only are young children capable of handling this, it also adds variety to the rich classroom environment. Why not even explore patterns or proportional reasoning as a theme in itself? Teachers are incredibly creative and resourceful, and young children, in turn, are very curious. Leverage this and dare to challenge them. Let their clever remarks and reasoning surprise you!

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Exploring global perspectives: Insights from my Churchill Fellowship about literacy assessment practices within a MTSS approach

Jessica Colleu Terradas

Background

My teaching career has focused on supporting at-risk students struggling with reading. After earning a Master of Education at Edith Cowan University, I became a special education teacher at Como Secondary College in Perth (Western Australia), providing remedial reading interventions for adolescents aged 12 to 15. Here I witnessed the many challenges faced by older students who struggled to access mainstream curriculum content, mostly due to poor reading skills. To find effective practices, I received a Winston Churchill Fellowship in 2020, allowing me to research language and literacy screening and reading interventions. I visited England, France, Belgium, and the US, meeting incredible passionate practitioners and leading experts like Anita Archer, Stanislas Dehaene, and Sharon Vaughn.

In this article, I will be sharing aspects of my learnings, taken from the full report. To identify effective language and literacy screening and intervention practices for at-risk students (access at *https://www.churchilltrust.com.au/fellow/jessica-colleu-terradas-wa-2020/*). From my interviews and the many school observations conducted overseas, a multi-tiered system of support (MTSS) was the dominant approach used to guide the response to intervention process and provide targeted support for struggling students. This article describes the conditions for building an effective MTSS in schools, with a focus on assessment practices, supported with a practical international case study featuring Louden Elementary School (California, US).

Multi-Tiered System of Support (MTSS)

What is it? 'MTSS is an evidence-based framework designed to meet the needs of all students by ensuring that schools optimise data-driven decision making, progress monitoring, and evidence-based supports and strategies with increasing intensity to sustain student growth.'[1]

Why MTSS? It is designed to support ALL students to ensure no one falls through the gaps. The goal is to move from a 'wait-to-fail' approach where students are usually flagged after having failed for a prolonged period of time, to a preventive MTSS model where students with academic, socio-emotional and behavioural needs are identified early on, and receive timely and targeted intervention.

Who does it benefit? MTSS allows teachers to more accurately assess student needs and align instruction, resources, and interventions, thereby reducing the number of students requiring additional support. This approach ensures that schools utilise resources in the most effective and efficient manner for maximum student benefit.

Evidence was reported by the Ohio Department of Education with the Ohio Dyslexia Pilot Project (2012–2015)[2], which provided funding to school

districts to implement a multi-tiered system of supports (MTSS) framework for the prevention, early identification of and early intervention in reading difficulties. The results confirmed the impact of MTSS on learning and on the cost-of-service delivery. Districts that implemented a tiered system of early literacy supports increased the percentage of proficient readers and decreased the percentage of students requiring more intensive and expensive supports (Figure 1).

What does it look like? MTSS includes five key components:

1. Evidence-based practices
2. Universal screening
3. Tiered levels of instruction
4. Progress monitoring
5. Data-based decision making

Evidence-based practices are grounded in research and meet the needs of all students both in core instruction and intervention, including high-impact teaching strategies that account for how the brain learns.

Universal screening is an educational practice in which all students are assessed to identify those who may be at risk for learning difficulties or academic failure. The goal is to proactively detect early signs of potential problems in areas such as reading. Universal screening involves brief, standardised assessments conducted three times a year, providing data that help educators make informed decisions about instructional strategies and support services.

Tiered levels of instruction refer to a systematic approach to educational support that provides varying levels of instruction and interventions based on students' needs. It involved three tiers:

- **Tier 1 : Universal instruction for all students**
  - High-quality, evidence-based explicit instruction delivered to all students in the general education classroom.
  - If Tier 1 instruction is not successful in meeting the needs of at least 80% of the school's population, schools must evaluate the quality and delivery of their curriculum, and consider solutions to create a better match between students' needs and the core curriculum and instruction (e.g. improving explicit instruction, using flexible groupings, maximising time on-task and increasing student engagement).
  - Ongoing formative assessment occurs in the classroom.
- **Tier 2: Targeted group instruction for some students**
  - Tier 1 plus Tier 2: The school provides additional support in small groups for students who have been identified at risk through universal screeners and/or are not making adequate progress in Tier 1.
  - Typically, an additional 20 to 45 minutes of instruction 3–5 times a week (e.g. two to three 15-minute intervention periods, for example). Targeted group interventions must be more intensive than core instruction; more supportive, with corrective feedback, and more explicit with positive reinforcement; carefully scaffolded; and ideally occur in smaller flexible, skill-based groups of approximately 3 to 5 students, for primary schools, and 6 to 8 students for middle and secondary schools.
  - More frequent progress monitoring should occur.
- **Tier 3: intensive individual interventions for a few students**
  - Tier 1 plus Tier 3: Students who have not demonstrated progress with targeted group interventions at a Tier 2 level of support require more time in more intensive settings.
  - Distinguished from Tier 2 interventions because they are individualised based on data collected, and occur with smaller student-teacher ratios (e.g. ideally one-on-one, however, groups of 3–5 students or a larger group broken into a few groups of 3–5 students is acceptable for middle and secondary schools), and possibly occur for a longer duration of time (e.g. more daily minutes or more weeks spent in intervention), including 45–60 minutes 5 times a week in addition to core instruction.
  - Ever more frequent progress monitoring should occur.

The most common misconception about MTSS is to think Tier 2 and Tier 3 interventions can replace Tier 1 core instruction. Instead, Tier 1 is critical to nail for a successful MTSS implementation.

Progress monitoring: Progress monitoring uses valid and reliable tools and processes to assess performance, quantify the improvement of responsiveness to intervention and instruction, and evaluate the effectiveness of instruction, interventions, and/or supports. For students receiving Tier 2 intervention, progress monitoring should occur every 2–4 weeks, with a clear exit plan in place. The goal is to catch these students up to return to Tier 1 instruction. For students in Tier 3 intervention, progress monitoring should occur weekly, proportionally to the level of frequency and intensity of the intervention.

Data-based decision making is the cornerstone of MTSS. At all levels, from individual students to the school level, data is used to make decisions about instruction, intervention and fidelity implementation. It helps determine how to allocate resources and inform professional development decisions in schools.

The MTSS implementation generally requires four types of assessment. Each comes with a specific purpose and is closely linked to instruction (see Table 4).

Table adapted from 2022 Stephanie Stollar Consulting LLC – the Centre of Literacy and Learning[3]

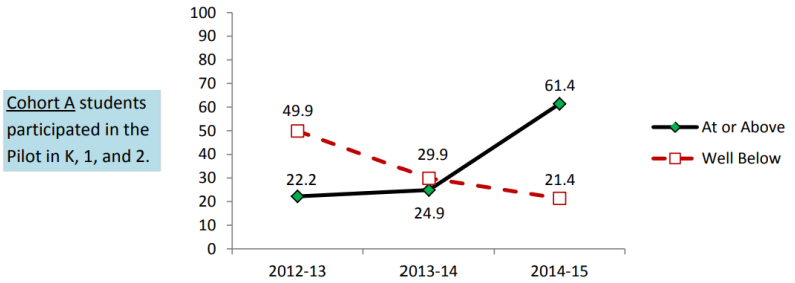

Figure 1. Percentage of students 'At or Above' benchmark and 'Well Below' benchmark at the end of each school year over the course of the Three-Year Dyslexia Pilot Project

How to implement MTSS

- Step 1: establish a strong team and school processes to review data (e.g. consistent data meetings, staffing decisions, programming, etc.)
- Step 2: upskill staff about evidence-based reading instruction and provide ongoing professional learning to effectively analyse screening, progress monitoring and fidelity implementation data. Seek coaching, peer observation and feedback to change practice and ensure that evidence-based reading instruction is embedded over time. Full implementation is reached when 50% or more of the intended practitioners, staff and/or team members are implementing the identified strategies with fidelity and seeing strong outcomes for all students
- Step 3: conduct universal screening for all students and further diagnostic assessment
- Step 4: implement a problem-solving process that assists grade level teachers and literacy support coordinators in analysing student data (using multiple data sources) to inform instruction and identifying interventions. Make teachers and leaders understand the scores and what they mean. Include schedule, curriculum and instruction (scope and sequence, routines, materials, instructional grouping)
- Step 5: provide Tier 2 and Tier 3 interventions for students who require additional support.
- Step 6: monitor progress and respond to data by adjusting what you teach and how you teach. Provide more intensive and targeted interventions for the most at risk students
- Step 7: evaluate the effectiveness of the instruction and the fidelity of implementation
- Step 8: continuously refine implementation to meet the ongoing needs of students and staff and celebrate success

Screening	Diagnostic
Assessment questions: 1. Which students and systems are at risk? 2. Is the core reading instruction at Tier 1 effective? 3. Is targeted intervention at Tier 2 effective? 4. Is intensive intervention at Tier 3 effective? 5. Which essential skills should be enhanced in Tier 1? In Tier 2? • Given to all students • Brief, standardised, predictive • Indicators of essential early literacy skills • Provide student-level and system-level information • Administered up to three times a year **Examples:** Acadience Reading, Dibels 8th Benchmarking testing	**Assessment questions:** 1. Why is the student at risk? 2. What should we teach next? 3. How should small groups be refined? • Given to some students who are at risk or who are not making progress • More in-depth than screening • Closely linked to instruction **Examples:** the Macquarie Online Test Interface provides evidence-based tests for free (*https://www.motif.org.au/*)
Progress monitoring	**Outcome evaluation**
Assessment questions: 1. Is it working? Are students making progress? 2. Should we make a change to instruction? 3. Should we intensify support? • Brief, standardised • Alternate forms of the same task • Sensitive to changes over small units of time • Weekly, fortnightly, monthly **Examples:** Acadience Reading, Dibels 8th progress monitoring tools	**Assessment questions:** 1. Did it work? 2. Are students at benchmark? 3. Did students meet Year level expectations? • Group administered, standardised • Tests grade-level expectations **Examples:** NAPLAN, PAT-Reading, school reports and assignments

Table 1. The four types of assessments in the MTSS framework

Case study: Loudon Elementary School (California, US)

This international case study reports information collected from my interview with Dr Stephanie Stollar, Adjunct Professor in the online reading science program at Mount St. Joseph University (Cincinnati) and a founding member of a national alliance for supporting Reading Science in Higher Education. She is also the founder of Stephanie Stollar Consulting LLC and the creator of The Reading Science Academy.

Further information was also collected from attending her presentation 'Using MTSS to Bring the Science of Reading to Light' at the 6th Annual Conference of the Reading League in Syracuse (New York, 2022), co-presented with Sharon Dunn, Principal of Loudon Elementary School from 2009 to 2019 (now an MTSS leadership consultant) and Diane Bryson, former first-grade lead teacher. The session talked about the school's success story and how MTSS was used to build instructional capacity within staff to improve reading outcomes.

According to the Principal, Loudon Elementary School used to be the lowest performing in the Panama-Buena Vista Union School District (Bakersfield, California) and had a long history of poor academic outcomes. The sixth graders struggled with reading, including some students who were three years below grade-level expectations.

The first step Sharon took after being appointed as principal was to implement

the introduction of a universal screener, Acadience Reading, so she could see which students were above, at, or below benchmark in reading. The screener was administered three times a year, at the beginning, middle and end of the year to all students from Kindergarten (first year of compulsory schooling, children aged 5-6) through to Year 6. The first data reports showed that 65% of Kindergarten students were identified as being at risk of reading failures (see yellow and red in figure 16) when they entered school. By the end of the year, 72% of the students were moving into first grade highly at risk. 'The ship is sinking and sinking fast because Kindergarten lays the foundations. Everything trickles up from there, the first year of compulsory schooling, first grade, second grade, are pivotal in early reading skills,' Sharon said.

Urged on by the situation, Sharon decided to take a team to Los Angeles to attend the Acadience Super Institute, where she met the screening's authors, Dr Roland Good and Dr Ruth Kaminski. Sharon and her team focused on learning all they could about the Acadience K-6 assessment measures as well as the implications for core reading instruction and intervention. Equipping herself with a thorough understanding of Acadience data analysis, she purposely invested in building a team within her school which included specialists, teachers and middle leaders, and planned regular meetings to review data, using a collaborative problem-solving approach. Drawing in the expertise of specialists, like Cara Bergen (who helped guide differentiation of the core instruction) and Dr Stephanie Stollar (who helped support with Acadience professional development and MTSS guidance), the leadership team and the teachers established more targeted small group instruction according to needs within Tier 1. They used specific measures from the Acadience Reading screening tool to group students during a portion of the English language arts block (the equivalent of the literacy/English block in Australia) with a focus on word reading ability, phonetic decoding ability and word reading fluency in the early years. Soon the students were making gains but still not enough to close the gap between students at year level and the ones below, with the students in the early years still remaining below reading benchmarks.

In response, Sharon introduced teachers to diagnostic testing through 95 Percent Group[4] – 'the type of assessment that could tell our teachers whether it's a vowel team or an 'r' controlled vowel that is the problem. Not only that … 95 Percent Reading Group had the materials and processes to clean up the greatest reading skill deficits', she said. Diagnostic assessments tell at a glance the specific greatest skill deficit a student needs addressed during intervention (Tier 2) – or what should be taught next. Sharon brought in 95 Percent Group diagnostic assessments, materials and processes, including decodable readers, and put in place protocols for the teachers to remedy the skill deficits. She also provided professional learning and coaching aligned with the Science of Reading to the whole school, three times a year with a consultant from 95 Percent. Sharon sat side-by-side with the teachers to learn with them. Funding was set aside for this process to help lead the school improvement journey. 'Fortunately, we had a healthy budget because of our poverty situation. I was able to cut back on extraneous things that weren't results oriented and focus all that funding on the professional development of staff and giving the teachers release time during the school day to then hone what they've learned, apply it, and collaborate in the most efficient way. This created collective teacher efficacy, which has an effect size of 1.57, according to John Hattie's work, which is also strongly correlated with student achievement.'

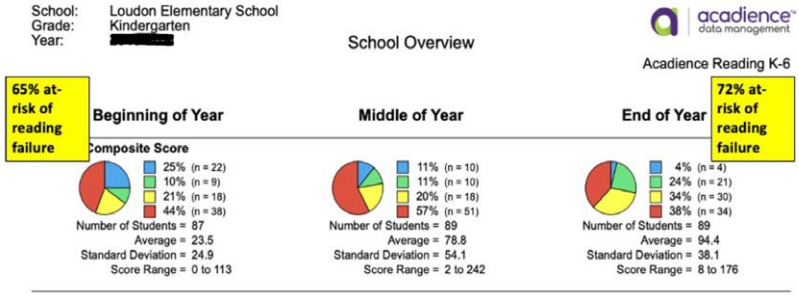

Figure 2. Loudon Elementary School data from the Acadience Reading report for first year of compulsory schooling students in 2010–11, including beginning, middle and end benchmarking goals. ©Sharon Dunn MTSS Leadership Consultant LLC

Three areas had become a high priority at Loudon:

1. **Tier 1 core reading instruction** aligned with reading research. The most common mistake is to start with Tier 3, instead of starting with Tier 1. If more than 30% of students in Tier 1 are below national minimum benchmark, there is a problem with the core curriculum instruction
2. **A school-wide literacy strategy** using an MTSS framework; and
3. **Robust assessments.** Valid and reliable universal screeners, diagnostic assessments and progress monitoring were conducted, supported by high-quality professional learning for teachers and school administrators. Consultants came into the school and worked with staff to analyse the data to inform instruction. They designed a schedule that guaranteed that students would receive additional opportunities for learning in a systematic way using the MTSS framework.

Based on the Acadience screening data, core instructional groupings were established to target skills within each cohort (rather than just a class). For example, the Year 1 cohort included 106 students and nine staff members, and all the students were placed in groups according to their skill needs, utilising a flexible service delivery model (Figure 3.1 and 3.2). Tier 2 provided increasingly intensive, evidence-aligned instruction, utilising 95 Percent Group diagnostics, materials and processes to target lowest reading skill deficits to promote accurate decoding. During this time, students who were accurate worked on fluency of reading connected to text and writing. More intensive support, extra instruction and teaching staff were provided for the most at-risk students during Tier 2.

Figure 3.1 shows how the flexible skill-based grouping occurred. For example, 18 Year 1 students were placed in the intensive group with one teacher and two education assistants (re 'para') while 33 students scoring well above benchmark (see in the "enrichment" group) were placed in a group with only one teacher (45 minutes daily). Figure 3.2 shows that within the intervention grouping,

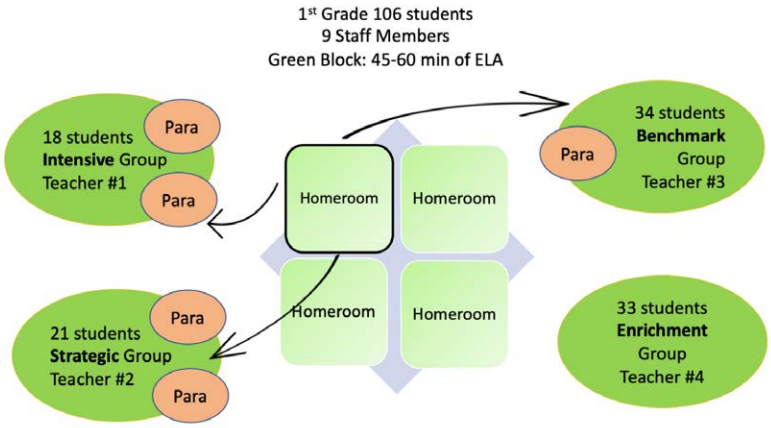

Figure 3.1. Tier 1 core instruction slide from the presentation 'Using MTSS to bring the Science of Reading to light', TRL Annual Conference in Syracuse (NY) ©Sharon Dunn MTSS Leadership Consultant LLC

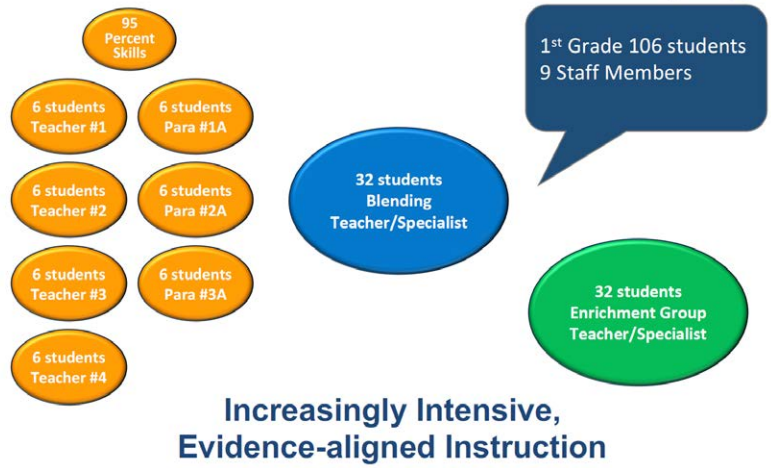

Figure 3.2. Tier 2 intervention slide from the presentation 'Using MTSS to bring the Science of Reading to light', TRL Annual Conference in Syracuse (NY) ©Sharon Dunn MTSS Leadership Consultant LLC

students received increasingly intensive evidence-based instruction (with 95 Percent Group intervention materials), as shown in orange, in smaller groups with six students maximum and one staff member, as well as more frequent progress monitoring. The groups were usually smaller, flexible and skill based, with a narrowing range of skills (30 minutes daily).

In this way, all human resources, time and materials available within the school were optimised and individual students' learning needs met, ensuring a 'flexible service delivery' for core instruction and increasingly intensive evidence-based instruction for Tier 2 interventions.

According to the principal, it takes three to five years to make substantial changes. In the 2018–19 school academic year, Loudon scored fourth in the Panama-Buena Vista Union school district compared to 2015, when the school was the lowest among 24 schools altogether. Figure 4 shows the percentage of students meeting and/or exceeding the benchmark in reading from 2015 to 2019, from Year 3 through to Year 6, in the California Assessment of Student Performance and Progress (CAASPP)[5]. Nearly 60% of Loudon students met the standard in reading according to the end of the year state assessment. Based on Acadience screening results, the reading outcomes moved from 28% proficient readers in the first year of compulsory schooling to 93% of sixth graders reading proficiently and accurately at grade level mid-year 2020. Sharon reminded me that: 'There is nothing to fix reading overnight, but you can create a system that makes it better every year and stay the course'.

Conclusion

On the basis of my Fellowship findings, MTSS is an important piece of the educational support system used for guiding the response to intervention process in order to support teachers in providing targeted support for struggling readers, and in closing the reading gap. Departments and system leaders should aim to make this model a reality in every Australian school.

Based on my experience working with schools, success for an effective MTSS implementation depends on (1) how often staff meet and collaborate to review data, (2) making strategic instructional decisions, (3) selecting and implementing evidence-based intervention programs with fidelity, (4) using frequent progress monitoring to determine whether students are making adequate progress in reading, and if they are not, (5) having the expertise to intensify interventions.

Finally, I want to share five key takeaways for Australian schools (leaders and teachers) regarding effective literacy assessment practices

- The best approach is not to wait for students to struggle – avoid the wait-to-fail approach and adopt a preventive model where struggling students are provided with timely and targeted support
- Screen all students for early identification and intervene as soon

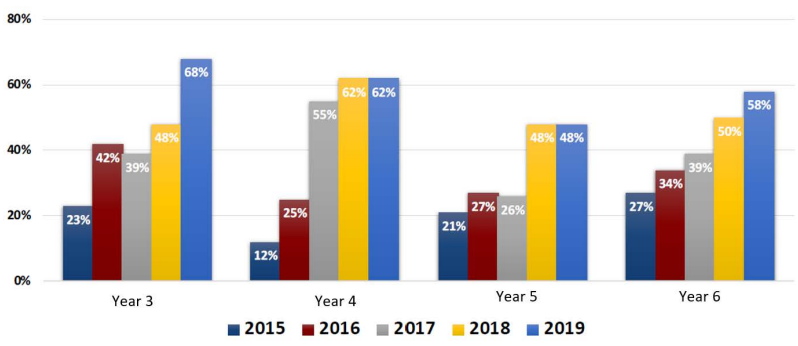

Figure 4. The percentage of students meeting/exceeding standards in reading from 2015 to 2019 at Loudon Elementary School from Year 3 through to Year 6, in the official state assessment (CAASPP). ©Sharon Dunn MTSS Leadership Consultant LLC

as possible

- Carefully match the intervention to the level of needs and closely monitor student progress
- Be responsive to the data you collect – the data is only as good as what you do with it
- The key to MTSS is the strengthening of Tier 1 classroom instruction – there is no way out of a Tier 1 problem.

Acknowledgements

I wish to acknowledge the Winston Churchill Trust and my sponsors, Dr Dorothy and Brian Wilson OAM. This incredible experience would not have been possible without their contributions and ongoing support. I also thank all the individuals I met during my trip who generously shared their insights and experience.

About the author

Jess is a special education high school teacher trained who worked in various teaching and leadership roles across multiple states and education sectors in Australia. Her experience includes working with students of different abilities, needs and year levels in primary and secondary schools. She has presented at national and international education conferences, and led opportunities for networking, collaboration and support for educators across Australia.

Jess works as the senior officer literacy specialist and instructional coach in the Catholic Education Archdiocese of Canberra and Goulburn, contributing to the implementation of Catalyst, a system-wide education approach to teaching and learning across 56 schools. Part of her role consists of advising principals about scientifically-based reading instruction and coaching teachers to deliver high quality instruction to help every child become a competent reader.

Recipient of a 2019 Commonwealth Bank Teaching Award and a 2020 Churchill Fellow, Jess is a member of the Sharing Best Practice Steering Committee and the Literacy Advisory Group within the National Catholic Education Commission. Other affiliations include registered charities such as Think Forward Educators and Australian Schools Plus, aimed to promote equitable outcomes for all students. She is a current PhD candidate in the Australian Centre for the Advancement of Literacy, at the Australian Catholic University (NSW); researching about literacy among adolescent students.

Her website: https://jct-consultant.com/ and the Facebook page to read more about her Churchill Fellowship journey, including insights and resources: https://www.facebook.com/JessCF2020 Email: jessica.colleuterradas@cg.catholic.edu.au X: https://x.com/JessicaColleu

Conflict of interest

The author declares that there is no conflict of interest regarding the publication of this article. She did not receive funding from public, commercial, or not-for-profit sectors to write this piece. Copyrighted images have been reproduced with permission.

This report may be cited as: Colleu Terradas, J. (2023) To identify effective language and literacy screening and intervention practices for at-risk students.

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2 Full report available at: DPP-Year-3-Evaluation-and-Final-Report.pdf (decodingdyslexiaoh.org)

3 The Centre for Literacy and Learning website: https://www.readingscienceacademy.com/ and free download available at: https://www.readingscienceacademy.com/rsa-opt-in

4 Founded in 2005, 95 Percent Group supplies evidence-based instruction tools, resources, knowledge and support to teachers and school leaders, aligned with the Science of Reading, and promotes explicit and systematic literacy instruction. Available at: https://www.95percentgroup.com/

5 The standardised CAASPP test is administered to all California students in Year 3 through to Year 8 and Year 11. It provides an opportunity to measure the skills of all students against the academic standards (in English, Maths and Science) and shows whether students are on track to pursue further studies and career by the time they graduate from high school. More information is available at: https://www.caaspp.org/

No more students falling through the cracks: Adopt universal screening

Jessica Colleu Terradas

Background: In this article, I will be sharing aspects of my learnings, taken from the full report, To identify effective language and literacy screening and intervention practices for at-risk students (access here). This is an extract of my Churchill Fellowship report released in June 2023, discussing universal screening practices to identify older students who are in need of reading intervention (in Chapter 2, pages 29-49).

Early identification and prevention

Reading failure is the most preventable of health issues. It affects many areas of life, such as school performance, job opportunities, and even your physical health, if you fail to understand a medication's instructions, for example. It can be prevented in all but a small percentage of children with serious learning disorders. Most students can be taught to read if we start early and follow the significant body of research showing which practices are most effective.

In the opening keynote at the 2022 IDA Annual conference in San Antonio (Gaab, 2022) , Dr Nadine Gaab, Associate Professor at Harvard and researcher at Boston Children's Hospital (US), reported on scientific studies demonstrating that it is possible to identify children at risk for developing into struggling readers as early as preschool using screening methods. Using MRI imaging, Dr Gaab's team's research has shown that, as a group, babies as young as three months old have an underlying infrastructure that helps predict success in reading years later. However, common literacy issues, such as dyslexia, are generally diagnosed after the most effective time for intervention has passed. Students with dyslexia have an especially hard time learning to read because their brains are wired in a way that makes understanding the relationship between sounds and letters difficult[1].

In an interview, Dr Gaab refers to the 'Dyslexia Paradox' which describes the discrepancy between when we currently diagnose dyslexia and when research has shown the most optimal window for early reading intervention is. So currently we are diagnosing kids after repeated failure – we also call it the "wait-to-fail approach" – which is usually at the end of second grade at the earliest, maybe beginning of third grade. However, research has shown from several research labs that the most optimal window for early intervention is kindergarten and first grade — and most likely before that'.[2]

Figure 1 below shows that reading difficulty, such as dyslexia, is generally diagnosed after the most effective intervention window; typically from the end of Year 2 through to Year 4, after the child has repeatedly failed or not responded adequately to a reading intervention. 'It is like looking at cholesterol after a heart disease', said Dr Gaab. Reading difficulties are not being caught early. This means that many students who are not progressing as expected in reading all fail to get timely intervention and support. Delaying the identification of reading difficulties has direct implications for intervention

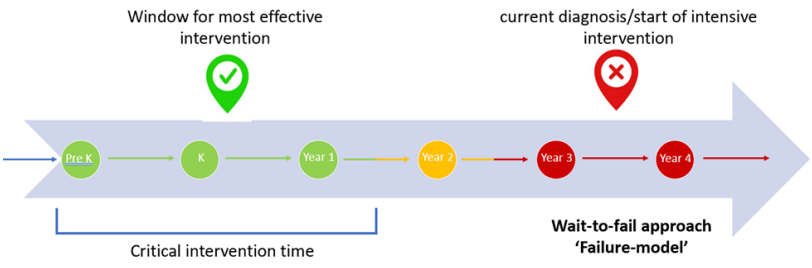

Figure 1. The timeline of typical diagnosis and when intervention strategies usually start

1 Dyslexia is a common reading disability. It involves difficulties with accurate and/or fluent word recognition, poor spelling and decoding abilities

2 See the interview 'Ask an Expert: Nadine Gaab - What is the dyslexia paradox?' by the National Center on Improving Literacy. Available at: https://www.youtube.com/watch?v=kPA3EsEFL0I

and later, reading development of students. As a result of the Matthew Effect, children who get off to a poor start in reading rarely catch up. As several studies have now documented, the poor first-grade reader almost invariably continues on to be a poor reader (Torgesen & Burgess, 1998).

These quotes illustrate the matter with reading trajectories:

1. **Trajectories predict reading success** 'Good (fluent) readers in first grade have an 88% chance of being good readers in fourth grade.' (Juel, 1988)
2. **Trajectories predict reading failure** 'Seventy-four percent of children who are poor readers in the third grade remain poor readers in the ninth grade.' (Francis et al., 1996)
3. **Trajectories take a significant amount of work to alter** 'It takes four times as many resources to resolve a literacy problem by Year 4 than it does in Year 1.' (Pfeiffer et al., 2001)

The Snow Report by Dr Pamela Snow, Senior Professor of Cognitive Psychology at La Trobe University (Victoria) argues that early identification and intervention are crucial for children with reading difficulties, as the brain is more malleable during early childhood and is more responsive to targeted intervention. This is also supported by Gaab's research, which found that age four to seven is a critical window of opportunity for teaching children foundational word reading skills and is when intervention will be most effective. Gaab recommends the adoption of a preventive model that is 'something we embrace a lot in medicine but for some reason, we have not yet done so in education'. She says, 'Instead, we are focusing on a reactive deficit driven, wait-to-fail model.' (Gaab, 2019).

Thus, the best solution to the problem of reading failure is to allocate resources for early identification and prevention. However, few schools in Australia have in place a mechanism to identify and help children before failure takes place. In most cases, there is no systematic identification process until Year 3 (when the first NAPLAN results are released in Australia), by at which time successful intervention remediation is more difficult and more costly. Many states and territories in Australia do not currently have universal, systematic, evidence-based early screening to identify at-risk students who need additional instruction and immediate interventions. The current approach is inconsistent and relies mostly on non evidence-based reading assessments, such as Running Records. This leads to many at-risk students not being identified and not receiving intervention even close to early enough. Running Records are based on the now-discredited multi-cueing model of reading. It focuses on language meaning much more than language structure (speech sounds, spelling and meaningful parts in words). Running Records do not attempt to assess children's phonological awareness, whereas research informed by Rowe (2005) shows phonological skills are strong predictors of later reading success or difficulty, especially in Kindergarten and Year 1. During my international travels, the preventive model was identified as the most effective approach across the UK, France, and the US with several successful initiatives to improve screening procedures. The window of administration of screening procedures might vary in length and the timing change across countries, but the most effective practices involved the systematic use of an early universal screener to identify students at risk for reading difficulty and assess their learning gaps, as early as preschool all the way to Year 8, in secondary schools.

Australian school systems lack a systematic and effective approach to screening older students for reading difficulties.

Typically, there are broad processes for identifying older students who struggle with reading and they usually rely on standardised achievement tests, parent feedback, teachers observations, and individual education plans. Secondary schools and teachers in Australia currently do not have systematic, accurate, and efficient methods for identifying students at risk of reading difficulty and there is limited practical guidance about how they can provide evidence-based interventions to help these students ever catch up and experience academic success in schools.

From my experience working with secondary schools, most tools currently in use are not sensitive enough to identify students at-risk or necessarily lead to instruction actions that are likely to improve outcomes for identified students. Some might be time consuming and do not adequately target and measure the skills that predict future reading difficulties. Others may be more suited for diagnostic assessment purposes than screening and lack the required characteristics for effective screening. What can be done?

How to assess and identify older students with reading difficulties

Relying on teachers' judgments of students' reading skills alone is insufficient to accurately identify students at risk with/experiencing reading difficulties. Therefore, it is crucial to have validated universal screening tools. Based on the Fellowship interviews conducted with literacy experts, the key areas for screening students in Year 3 and beyond were identified to include:

- Phonemic Awareness
- Rapid Automatised Naming (RAN)
- Decoding (Word) Fluency – Real and nonsense words
- Oral Reading Fluency
- Reading Comprehension
- Spelling error analysis

Throughout my Fellowship trip to the US, I noted that DIBELS 8th Edition and Acadience Reading (previously known as DIBELS Next) were the two universal screeners most used in schools to assess the acquisition of literacy skills, both are aligned to reading research. These screeners are designed to be short (one minute) fluency measures that can be used to regularly detect risk and monitor the development of early literacy and early reading skills in the first year of compulsory schooling through to Year 8. Each subtest (see Table 1) has been thoroughly researched and has been demonstrated to be reliable and a valid indicator of early literacy development. When implemented as recommended,

Acadience Reading[3] (previously known as DIBELS Next)	**DIBELS 8th Edition**[4] (Dynamic Indicators of Basic Early Literacy Skills)
Contains the following measures: • First Sound Fluency • Letter Naming Fluency • Phoneme Segmentation Fluency • Nonsense Word Fluency • Oral Reading Fluency (including a retell fluency component) x 3 passages for every testing period • MAZE (start at Year 3) **Extra** • Progress Monitoring resources • Diagnostic Screener • Dyslexia screening	Contains the following measures: • Letter Naming Fluency • Phoneme Segmentation Fluency • Nonsense Word Fluency • Word Reading Fluency • Oral Reading Fluency x 1 passage for every testing period only • MAZE (start at Year 2) **Extra** • Progress Monitoring resources • Dyslexia screening

Table 1. A brief outline of the measures for DIBELS 8th and Acadience screeners

these tools can be used to evaluate individual student development and help schools determine the instructional groupings for students who require additional support.

The measures used with each tool are designed to be employed frequently, up to three times a year, and are sensitive enough to detect student learning and growth over time. Both tools are suitable for secondary students up to Year 8 and include passage reading and comprehension measures that were developed specifically for higher grade levels. The advantage gained from extending testing into higher grade levels is that we can continue to track students and monitor the effectiveness of school systems through middle school.

In Australia, the Catholic Education Archdiocese of Canberra and Goulburn (ACT) started implementing DIBELS 8th Edition across 48 primary schools in 2021, and we require our teachers to universally screen all students from Kindergarten through to Year 6, with the option to screen Year 7 and 8 students in high schools.

The screener has proved to have been of great benefit to schools, and has provided much assistance at a system level for making significant instructional decisions. We can now track students' reading progress over time, accessing granular data, at multiple levels (individual, class, teacher, cohort, school and system). From the beginning of the school year in 2023 to the beginning of 2024, the percentage of Kindergarten to Year 6 students identified as below reading benchmarks using DIBELS decreased from 41% to 34%. This represents a significant improvement, showing that early identification with targeted intervention and high quality interventions, and high-quality instruction are critical to help teachers make instructional decisions that support these students, in particular. The data collected has been useful to inform teachers' practice and ensure students are on a trajectory of reading success, and no one is falling through the cracks. I like to think of DIBELS like a GPS for educators, telling us where we are, where we are going and when we have arrived. The implementation of a robust universal screening from K through to Year 6 (and up to 8) helped our system create a shared vision and commitment to ensuring all students become competent readers, which is our bold goal 1[5].

Schools should not solely rely on one source of data and must use a variety of assessments to measure different aspects of reading ability. When interviewed for this Fellowship, Dr Tolman, lead National LETRS trainer and co-author of the LETRS program[6], shared her personal suggestions about an effective and comprehensive reading assessment battery to identify deficit skills in older struggling readers. These included: 1) Gates-MacGinite Reading Tests 2) TOWRE-2 (Test of Word Reading Efficiency), 3) TOSWRF-2 (Test of Silent Word Reading Fluency) 4) LETRS spelling screeners (basic and/or advanced), 5) LETRS phonics and word-reading survey, and 6) Phonological Awareness Screening Test (PAST).

In my interview with fluency expert Dr Jan Hasbrouck, a researcher, educational consultant and author, she talked about fluency as having a crucial role in helping students progress from initial decoding to comprehending complex text. She explained how Oral Reading Fluency (ORF) assessments have consistently been found to have a high correlation with reading comprehension, and that they are a highly efficient way to identify those students who are the furthest behind in reading. ORF can be administered to all Year 7 students upon entry and enable secondary schools to quickly identify the most at-risk students in reading. It is a valid, reliable and objective measure which consists of measuring reading rate and accuracy and is expressed in words correct per minute (WCPM). It is also quick and simple to administer and score. There are ORF norms available for students from Year 1 through to Year 8, published by Hasbrouck and Tindal (2017), which can help teachers determine whether students require a fluency-building intervention when they score below grade-level expectations, or whether the student has deeper difficulty with lower order reading skills, such as phonemic awareness and decoding, letter knowledge, knowledge of alphabetic principles and concepts of print. It could also indicate difficulties with vocabulary. In brief, ORF is a more accurate measure than teacher judgement and can be used for both screening and progress monitoring and point to some practical applications for secondary school. It is best used in conjunction with reliable and valid diagnostic assessments to inform decision making about the implementation of reading interventions.

3 Free materials available for download at: *https://acadiencelearning.org/acadience-reading/k-grade6/* (Kindergarten to Year 6), and *https://acadiencelearning.org/acadience-reading/acadience-reading-7-8/* (Years 7-8).

4 Free materials available for download at: *https://dibels.uoregon.edu/materials* (Kindergarten to Year 8). In 2023, DIBELS 8th Ed. released Australasian version of the materials.

5 To learn more about the Catholic Education of Canberra and Goulburn: *https://catalyst.cg.catholic.edu.au/*

6 The LETRS (Language Essentials for Teachers of Reading and Spelling) Suite is comprehensive professional learning designed to provide early childhood and elementary educators and administrators with deep knowledge to be literacy and language experts in the Science of Reading. The course is now available in Australia as a two-year course of study, see *https://dsf.net.au/our-services/workshops-and-events/letrs*

Additionally, there are tools available to detect and prevent language difficulties which are suitable for older struggling readers. These include the following:

- **Sentence Repetition Tasks (SRTs):** A test in which the participant is required to repeat sentences of increasing difficulty and complexity directly after the examiner reads them. The test is sensitive to underlying difficulties in grammar and comprehension.
- **Acadience Reading Diagnostic Comprehension, Fluency and Oral Language (CFOL):** This is specially recommended for older readers with very low language comprehension skills. The tool assesses story coherence and text structure, listening and reading comprehension, vocabulary and oral language (e.g. formal definitions, morphological awareness, figurative language, syntax), and fluency with expository and narrative texts. The interviewees noted the importance of the retelling component, especially when assessing fluency in older students (from Year 4 and above). By asking questions about what the student has read, it can tell us about their comprehension and help change the way they approach reading.

In summary, when assessing reading difficulties in adolescents, the recommendation is to take a comprehensive approach – one that considers all aspects of reading, including decoding, fluency, vocabulary and comprehension. In addition to measuring word reading skills, educators must also determine whether older students have sufficient lexical development (knowing the meaning of words and the ability to learn new words) and syntactic development (rules and patterns governing the ways in which words can be combined into phrases, clauses and sentences to express meaning). Building vocabulary and background knowledge are also critical because middle and secondary school students are expected to be able to read more complex texts to learn the content of the curriculum and gain the necessary topic knowledge. Interventions to remediate reading difficulties should address all areas of reading and target each student's underlying weaknesses.

Universal screening in secondary schools

There are no mandatory screening procedures in secondary schools in Australia. However, without identification of students' reading needs in primary schools (and targeted additional teaching), students who arrive in secondary school as poor readers are likely to continue to struggle. There are still students entering secondary school unable to read, including 40% of 15-year-old Australians, who still cannot read at a proficient level according to PISA (2018). Next is an example of assessment methods used across a network of secondary schools in England.

Case study: The Right to Succeed in Blackpool (England)

One in 4 children in England still cannot read well by the age of 11. This figure rises to 2 in 5 among children from low-income families, according to the Literacy Trust (2014). The research shows that children living in poverty will be four months behind their peers when they start school, and this gap widens over time. On average, these children are up to two years behind their peers by the time they leave secondary school, and the cycle of disadvantage can continue into future generations.

Over two days, visits were conducted in three secondary schools located in Blackpool (North of England); one of the most deprived areas in England, in which a higher-than-expected proportion of students were below national reading benchmarks. This substantial group of students faced challenges that limit access to the curriculum and they did not engage well with reading (except for social media and other less traditional forms of reading).

A network of secondary schools took on the challenge of lifting adolescent literacy outcomes, joining the Key Stage 3 Literacy (KS3) project; a 10-year education strategy launched in 2018, and led by a not-for-profit organisation, Right to Succeed (Right to succeed, n.d.). This is a unique initiative, underpinned by a robust use of research evidence, aimed at enhancing the literacy skills of all 11–14 year-olds in Blackpool. As a former special education teacher in secondary school, I found the project's objective of closing the literacy gap for struggling adolescents aligned with my own beliefs. According to Sarah Smith, the project director: *"literacy is a crucial skill that enables students to progress successfully through school and transition to adulthood and employment"*. Right to Succeed, established in 2015, spearheads the project, which is mainly supported by philanthropists. Its mission is to empower communities in disadvantaged areas to collaborate in providing children and youth with the best possible start in life. The KS3 project placed great emphasis on implementing valid and reliable assessments to identify the needs of young learners. In pursuit of this goal, all eight participating secondary schools have committed to screen all their Years 7, 8 and 9 students twice a year using the GL Assessment New Group Reading Test (NGRT) (New Group Test Reading Archives, n.d.). The initial assessments showed that of the eight schools taking part in the Blackpool Key Stage 3 Literacy Project, seven had NGRT scores below the national average, and that 16% of pupils were in the lowest NGRT performance band (Stanine 1), which is four times the national average (4%).

NGRT is an online group-administered reading assessment which is fully adaptive and standardised, providing teachers with insights about students' reading abilities to pinpoint areas of difficulty. The test is made up of two parts: sentence completion, which measures decoding with some element of comprehension; and passage comprehension, which measures a range of comprehension skills of increasing difficulty. It provides norm-referenced scores that indicate whether a particular student is reading below the average range for their age. Scores are measured on a scale between 1 and 9 (5 being the average, 1 being the lowest), and students who scored between 1–5 were provided with targeted instructional support, either in small group interventions or one-on-one tutoring. To encourage schools to follow a step-by-step approach for identifying students' reading needs, a decision tree was developed and introduced by Dr Jessie Ricketts (Royal Holloway, University of London) as part of the project. It provides specific guidance about how to align needs with appropriate support and interventions. *'Using the full decision tree enables schools to establish whether there is a word reading need and a reading*

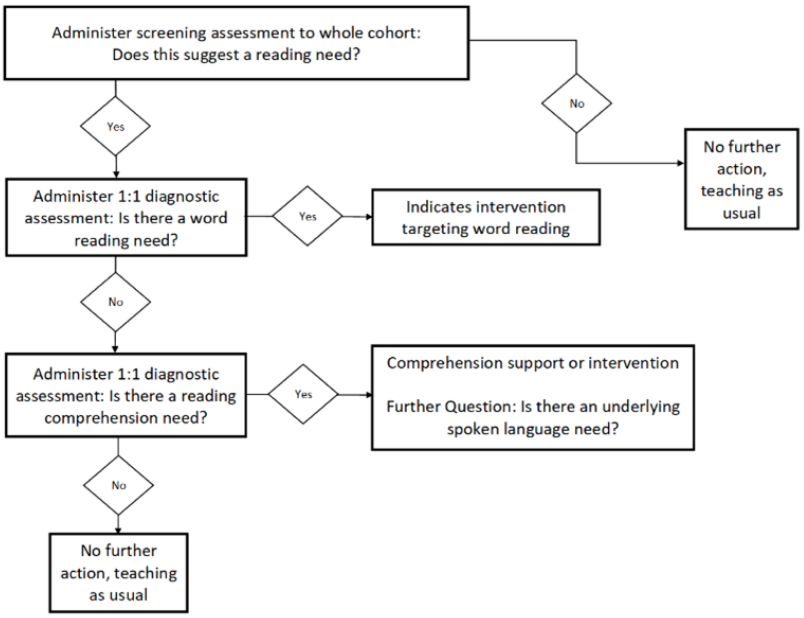

Figure 2. A decision tree to support Blackpool secondary schools in identifying reading needs and aligning these needs with appropriate support and interventions (Ricketts et al., 2022)

comprehension need so that they can classify students in relation to the four quadrants of the Simple View.' (Ricketts et al., 2022).

After the initial NGRT screening, diagnostic testings were administered before instruction occurred to assist in identifying appropriate instruction and intervention programs. Then, student progress was closely monitored during the intervention. Schools' use of regular assessments meant that staff knew what progress pupils were making and could make timely and appropriate changes when pupils were not improving as quickly as expected.

Finally, the introduction of the universal screener across all participating schools helped to evaluate the impact of school-wide practices, including core instruction and intervention effectiveness. The results have been impressive: average reading scores increased from 96.7 in 2018 to 99.6 in 2021, bringing them more in line with the national average (100). This change of +2.9 points means that students have progressed more than expected for their age. Of all the Blackpool schools involved in the KS3 Literacy Project, South Shore witnessed some of the biggest improvements in reading in Years 7 and 9, with students improving by the equivalent of almost half a GCSE[7] grade in a single year. To learn more about their initiatives, read chapter 3 in my Churchill Report pages 64-68.

Challenges when adopting universal screening in secondary schools

Establishing universal screening procedures to identify older struggling readers in secondary schools can be challenging for several reasons. The following information is a reflection drawn from my interviews and my work dealing with Australian secondary schools across states and sectors.

- The process of identifying at risk students can be time-consuming and resource-intensive. Secondary schools typically have larger student populations, which can make it more difficult to assess each student's reading abilities individually.
- Screening requires specialised expertise and training. Not all teachers may have the secondary skills to accurately identify reading difficulties in older students, particularly if the teachers have not received specific training in literacy assessment and instruction.
- There may be a lack of consensus among educators and administrators about which screening tools and methods are most effective in identifying struggling readers in secondary schools. This can lead to confusion and variabilities in the types of assessment used, which can make it difficult to establish a universal screening process.
- There may be logistical challenges in implementing universal screening procedures, such as scheduling conflicts, limited resources, and student absenteeism. Schools may need to allocate additional resources and support to ensure that the screening process is conducted efficiently and effectively.

When establishing a screening protocol consider:

- The scope of assessment, reliability and validity of scores.
- When and how the screening assessment(s) will be administered at frequent intervals.
- Who is responsible to enter the data into a database, where to store the data, who has access to it and how often it is been reviewed by all stakeholders.
- How to engage teachers with the data collected to inform future adjustments with instructional practices. Ideally data should be readily available to individual teachers, schools and systems to assist with instructional planning, program evaluation and student tracking.
- How to design a school assessment schedule, a decision-making process and a targeted plan of action that take into account school logistical challenges (e.g. resources, purchase of material, funding, training for administration, data analysis, space, risk of over-identification).
- How to communicate and explain the results to parents as well as provide training for them so they can support their child at home with their reading.

In summary, universal screening is the most effective and cost-efficient way to ensure any student falling behind in reading is identified early and can be given the help they need to catch up. Not only do schools need to have a robust and cost-effective assessment regime in place for early identification, but teachers also need to be trained to administer these tests, analyse the data accurately with confidence and know what to do with the results. Thus, screening alone is not sufficient. School leaders must follow up with a strategic and systematic

7 GCSE stands for General Certificate of Secondary Education. It is an academic qualification in a particular subject, taken in England, Wales, and Northern Ireland. An equivalent in Australia is the Australian Tertiary Admission Rank (ATAR).

approach, employing a multi-tiered system of supports, high-quality reading instruction and intervention, and close progress monitoring.

Key recommendations for teachers

- It is considered best practice to screen all students in their first year of compulsory schooling through to Year 6 with a universal screener up to three times a year to guide instruction.
- Align assessments to proven theoretical frameworks like the Simple View of Reading, covering both word recognition and language comprehension.
- If a significant number of students are at risk upon universal screening, this is a strong indicator that structured literacy instruction and targeted interventions is required
- Universal screening measures are available to use in secondary schools and serve to identify older struggling readers.
- Oral Reading Fluency can be a highly efficient way for schools to identify older struggling students who are falling further behind in reading.
- Use frequent data collection to make real-time adjustments to instruction, rather than waiting months for the results of summative assessments.

Acknowledgements

I wish to acknowledge the Winston Churchill Trust and my sponsors, Dr Dorothy and Brian Wilson OAM. This incredible experience would not have been possible without their contributions and ongoing support. I also thank all the individuals I met during my trip who generously shared their insights and experience.

About the author

Jess is a special education high school teacher trained who worked in various teaching and leadership roles across multiple states and education sectors in Australia. Her experience includes working with students of different abilities, needs and year levels in primary and secondary schools. She has presented at national and international education conferences, and led opportunities for networking, collaboration and support for educators across Australia.

Jess works as the senior officer literacy specialist and instructional coach in the Catholic Education Archdiocese of Canberra and Goulburn, contributing to the implementation of Catalyst, a system-wide education approach to teaching and learning across 56 schools. Part of her role consists of advising principals about scientifically-based reading instruction and coaching teachers to deliver high quality instruction to help every child become a competent reader.

Recipient of a 2019 Commonwealth Bank Teaching Award and a 2020 Churchill Fellow, Jess is a member of the Sharing Best Practice Steering Committee and the Literacy Advisory Group within the National Catholic Education Commission. Other affiliations include registered charities such as Think Forward Educators and Australian Schools Plus, aimed to promote equitable outcomes for all students. She is a current PhD candidate in the Australian Centre for the Advancement of Literacy, at the Australian Catholic University (NSW); researching about literacy among adolescent students.

Her website: https://jct-consultant.com/ and the Facebook page to read more about her Churchill Fellowship journey, including insights and resources: https://www.facebook.com/JessCF2020 Email: jessica.colleuterradas@cg.catholic.edu.au X: https://x.com/JessicaColleu

Conflict of interest

The author declares that there is no conflict of interest regarding the publication of this article. She did not receive funding from public, commercial, or not-for-profit sectors to write this piece. Copyrighted images have been reproduced with permission.

This report may be cited as: Colleu Terradas, J. (2023) To identify effective language and literacy screening and intervention practices for at-risk students.

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MTSS to support secondary students:

New resources for leaders and teachers

Adam Inder

Currently, 1 in 5 students across Australia starts secondary school at or below the minimum standards for literacy and numeracy. Students struggling with these foundational skills often become disengaged and fall further behind their peers, making it difficult for them to catch up. Identifying these students early and providing them with targeted intervention using instruction backed by evidence is key in helping them to acquire the skills they need to set them up for future success, reducing the risk of widening gaps in achievement.

The Australian Education Research Organisation (AERO) recommends the use of a multi-tiered system of supports (MTSS) to better assist Years 7 to 9 students struggling with foundational literacy and numeracy skills. MTSS has been widely recognised as an effective approach for supporting these students by allowing early identification, intervention and the tracking of progress. Using a data-driven approach that provides varying levels of instructional support based on student needs, MTSS allows for universal screening of all students, followed by increasing tiers of intervention, as needed.

- Tier 1 delivers high-quality classroom instruction for the entire class.
- Tier 2 provides a higher intensity of high-quality instruction for students not yet mastering skills required to fully engage with their year-level curriculum.
- Tier 3 offers intensive support, often one-on-one, for those who require the greatest amount of support.

Student progress is then continuously monitored, and interventions are adjusted accordingly, ensuring timely and appropriate support.

New suite of MTSS resources

AERO has developed a comprehensive suite of resources aimed at supporting school leaders and teachers in delivering or enhancing MTSS, including:

- **evidence explainers** covering the research behind important topics and concepts related to supporting students struggling with foundational skills
- **practice guides** explaining effective evidence-based practices when delivering MTSS, and helping schools to identify next steps in effectively delivering MTSS
- **practice resources** providing practical

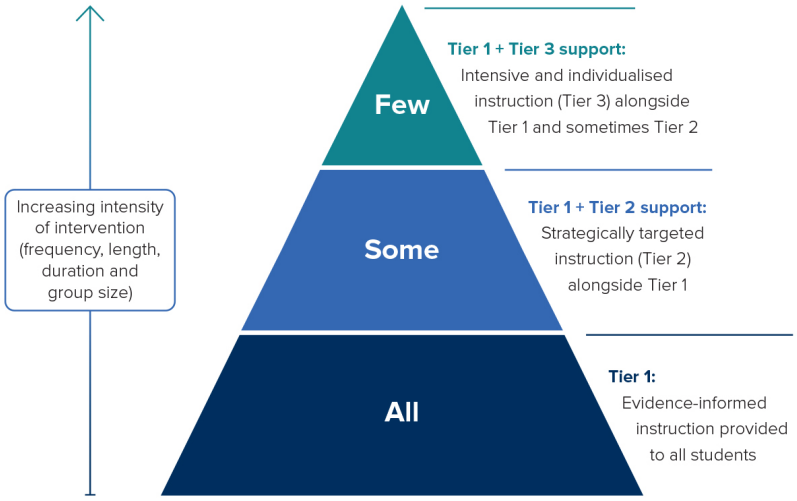

Figure 1. How tiers of support work in MTSS

Image sourced from https://www.edresearch.edu.au/summaries-explainers/explainers/introduction-multi-tiered-system-supports

applications for implementing and building proficiency in delivering MTSS in schools

- **video snapshots of practice** showing 7 schools across Australia that have implemented MTSS, along with themed video snapshots showing how best practice can be delivered across multiple school contexts
- **a research report** outlining practical design considerations for a tiered interventions approach including setting up and resourcing MTSS (staffing, timetabling and intensity of intervention).

Depending on a leader's or teacher's familiarity with an MTSS framework, the suite of resources can be curated – whether it's to help decide if MTSS is suitable for their school's context or if they are ready to implement an MTSS framework and want guidance on next steps. The Multi-tiered System of Supports: User Guide (*https://www.edresearch.edu.au/guides-resources/practice-resources/mtss-user-guide*) provides an ideal starting point with comprehensive lists of the most relevant MTSS resources and how best to use them. Some suggested approaches for effectively using these resources are discussed below.

An introduction to MTSS

For those curious about MTSS or wishing to deepen their understanding of the framework's key components, the Introduction to a Multi-tiered System of Supports: Explainer unpacks the key principles of MTSS, outlines the characteristics of MTSS for addressing gaps in literacy and numeracy and details the effective delivery of the 3 tiers of intervention. The content draws on a review of evidence-based approaches for supporting students who are struggling with foundational skills conducted by Kate de Bruin and her team at Monash University, as well as guidance developed in partnership with the Dyslexia-SPELD Foundation (DSF).

In addition to the Explainer, those new to MTSS can get a broader understanding of the types of assessments available in MTSS, as well as guidance on supporting the wellbeing and engagement of students receiving intervention. AERO's suite of short MTSS videos capturing 7 schools across Australia helps to demonstrate how this framework can be applied in a range of contexts. A complete list of these introductory resources can be found in the section 'To introduce MTSS' in the User Guide.

Leading and operationalising MTSS

School and educational leaders who are already familiar with MTSS who may be ready to implement a framework in their schools should look at our research report on Designing an intervention approach: Making staffing and timetabling decisions.

This will help to make practical school decisions concerning important topics such as:

- **Timetabling:** how schools should make time for tiered interventions in their regular timetable.
- **Staffing:** how school staff can support the delivery of intervention instruction.
- **Intensity:** how 'intensely' students experience interventions including group size, frequency, length and intervention duration.

While intensity and timetabling are essential to the design approach, research shows that understanding the value of a dedicated team of educators and teachers with a committed leadership group is what ultimately ensures the program's long-term success and overall effectiveness.

Whole-school approach

MTSS delivery must be a whole-school approach with buy-in from all staff, whether or not they are leading or delivering interventions. Those teaching subjects outside of English/literacy and mathematics/numeracy especially need to recognise how literacy and numeracy difficulties can affect student outcomes – across the curriculum, across different subjects, and in their future academic and occupational success. This shared understanding supports staff in negotiating timetabling arrangements – for instance, where students may need to be withdrawn from elective subjects to participate in intervention.

Cross-tier collaboration between staff delivering Tier 1 instruction and those delivering Tier 2 and 3 interventions is also necessary. This helps to support careful screening and flexible movement of students across tiers based on data and teacher judgement, as well as strengthening connections between in-class and out-of-class learning coherence and effectiveness. Regular case management meetings between literacy and numeracy specialists, leadership, and teaching staff across all tiers will help to support and sustain this whole-school approach.

'There's a massive group of us that all work really closely together to make our tiered intervention happen. My role as the English coordinator looks at the systems and structures, the staffing, timetabling. Then we have our literacy lead teacher, who plans the actual curriculum and lesson planning. Our senior speech pathologist and her work really closely on that together. Our inclusive education assistant principal helps in identifying those students and making sure that they're getting what they need. Then we obviously have a lot of support from our deputy and our principal in running programs like this.'

Beth Pontifex, English Coordinator, Parafield Gardens High School, SA

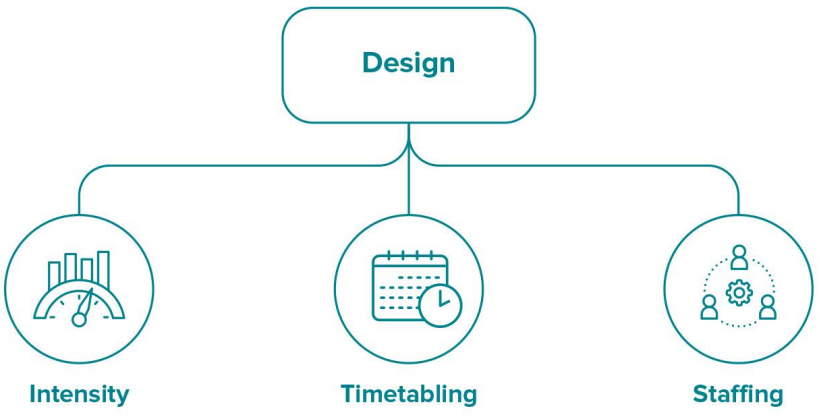

Figure 2. Design considerations for organising interventions in schools

Leadership to champion MTSS

For MTSS to be successful, school leaders must prioritise and champion its use and implementation. The most effective cases of successful implementation have been when leaders have:

- set a vision for effective MTSS delivery,
- fostered an environment that encourages communication and collaboration,
- been the 'gatekeepers' of student and staff time, physical space and budget, and
- continually encouraged support from staff, students and the school community (including parents or caregivers).

Building an effective MTSS team

Schools implementing an MTSS framework will need to set up dedicated teams to provide intervention support. They may vary depending on school context but should comprise of:

- trained teachers – this might include staff with expertise such as special education teachers, and teachers who are primary education-trained (the most effective at providing Tier 2 and 3 instruction to raise outcomes),
- literacy and numeracy specialists,
- paraprofessionals such as teaching assistants (TAs), and
- specialists such as speech pathologists and psychologists.

Currently, 1 in 5 students across Australia starts secondary school at or below the minimum standards for literacy and numeracy.

Providing dedicated space and time for intervention beyond the general education classroom strengthens learning and teaching processes. Overall, an interdisciplinary team comprised of trained teachers, literacy and numeracy experts, paraprofessionals, speech pathologists and educational psychologists, helps to maximise a school's ability to deliver the best results for students.

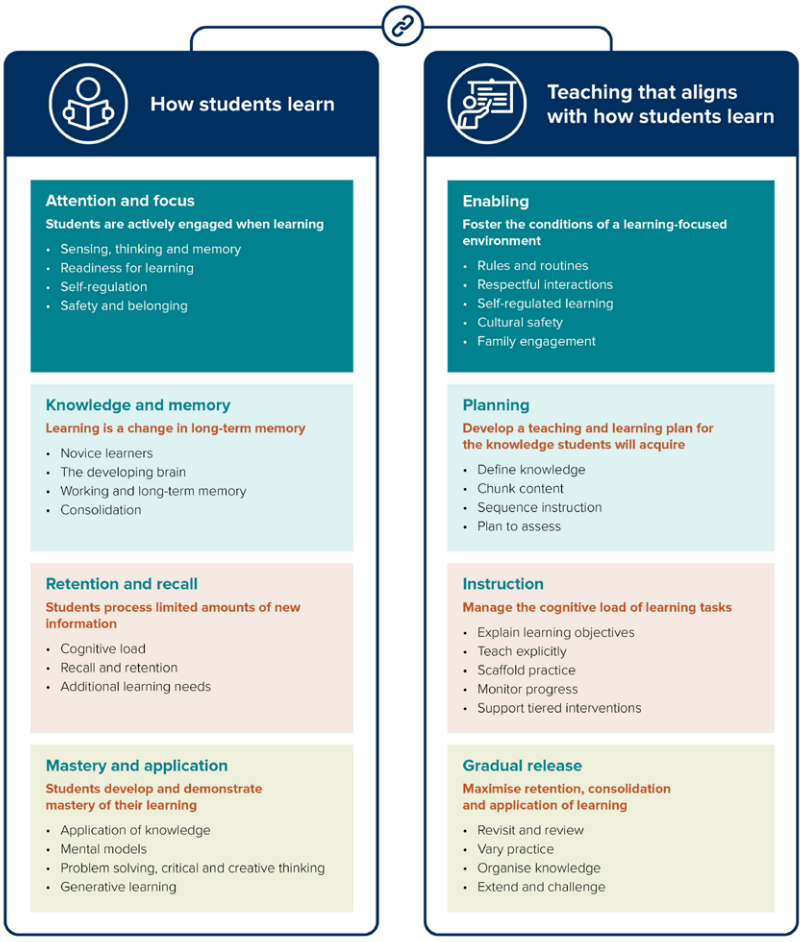

Figure 4. AERO's model of learning and teaching

Professional development and support

Staff across all tiers need to be supported to carry out an MTSS approach, and this involves support in delivering effective teaching practices. AERO's model of learning and teaching (*https://www.edresearch.edu.au/guides-resources/practice-resources/teaching-how-students-learn-model-learning-and-teaching*) describes what these practices involve. In the early stages of intervention implementation, schools should focus their professional development on developing a tiered model and how they might plan for the appropriate infrastructure to support ongoing implementation. All staff involved in leading and delivering the interventions need to be well-trained in the program they are delivering, to enable staff to deliver interventions with fidelity.

'We are a literacy intervention team. It doesn't matter who you are, if you are the speech pathologist, the literacy leader, the literacy SSO [school services officer] or the teacher. We've all done the same training. It means that there is always someone in our intervention classes who is properly trained. The students feel really supported, that they have a team around them, and staff also feel supported that they have a range of people who they can come to and ask detailed questions.'

Janette Bandjak, Senior Leader, Literacy, Craigmore High School (SA)

AERO's reading intervention work would not have been possible without the partnership of the team at the Dyslexia-SPELD Foundation (DSF). AERO is also grateful to its Panel of Educators, Teachers and Leaders (PETL (*https://www.edresearch.edu.au/about-us/advisory-groups*)), as well as a range of reading experts and system/sector leaders who reviewed the work during its development.

Further reading

AERO's resources are free under Creative Commons and include further information on topics mentioned above such as timetabling and intervention intensity. There are also many resources around using reading intervention in secondary schools, developed in partnership with DSF.

To access the range of resources available and how they should be used, see our MTSS user guide: *https://www.edresearch.edu.au/guides-resources/practice-resources/mtss-user-guide*

About the author

Adam Inder is a Senior Researcher at the Australian Education Research Organisation (AERO), Australia's independent education evidence body. He has recently led work developing research and guidance for secondary schools to support students lacking foundational literacy and numeracy skills, and is currently developing guidance for more evidence-based practices in schools. Starting out as a maths and science teacher, Adam went on to become a secondary school deputy principal in socioeconomically disadvantaged Perth schools. He has been a School Board Deputy Chair, a TEDx speaker, and is currently a Board Director of The Mathematical Association of Western Australia and an Editorial Board Member at the Australian Council for Educational Leaders. In 2023, Adam was awarded the Australian Council for Educational Leaders' "WA Certificate of Excellence in Educational Leadership Award".

Conflict of interest

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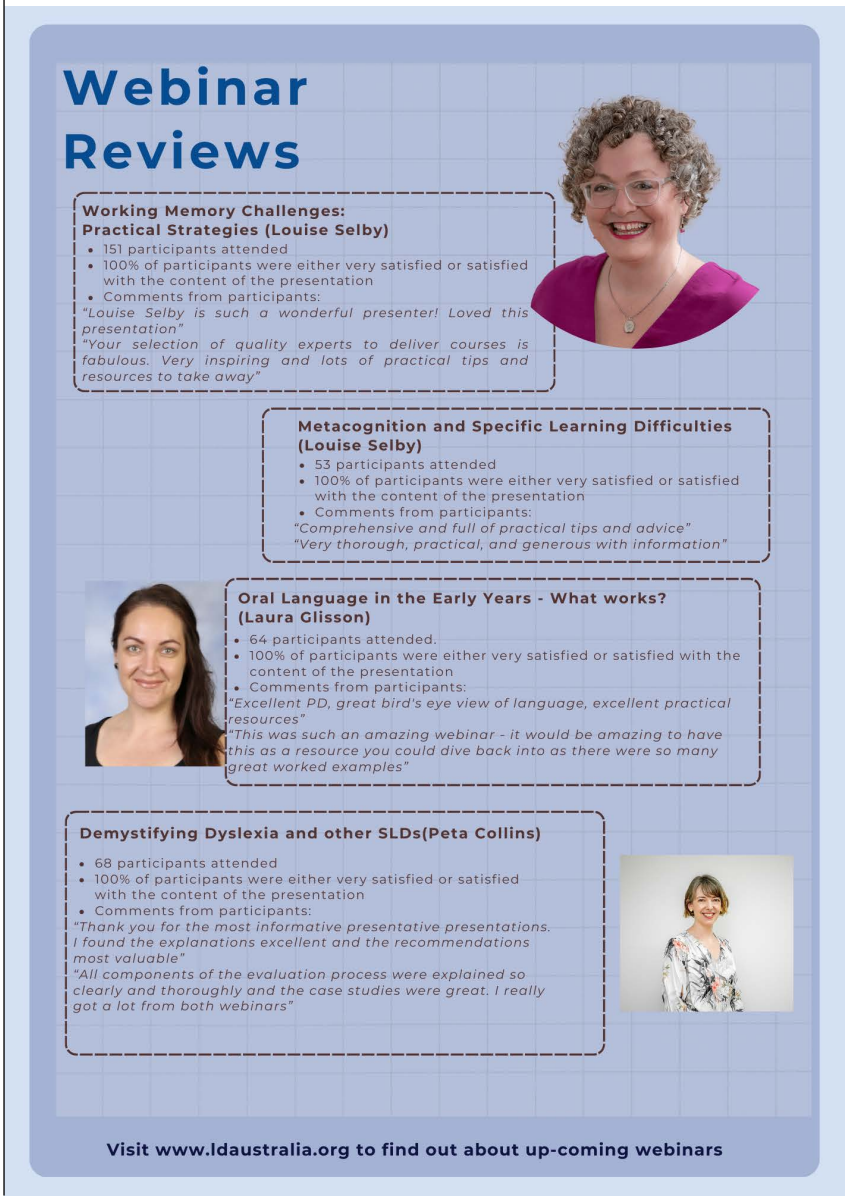

Evidence-based practices, AI and me: How technology is contributing to a cornerstone of our teaching

Dahmen Higgs and the team at Elastik

The integration of evidence-based practices has become a cornerstone for enhancing both teaching effectiveness and student outcomes. As educational demands continue to grow, teachers are increasingly turning to innovative technologies to support their instructional strategies. We truly have entered the age of digital teaching and learning.

Evidence-based practices in education

Evidence-based practices refers to teaching practices that research has shown will have the greatest impact on student learning (AERO, 2021). Such practices are crucial to ensure that teaching methods are effective in promoting student learning. Implementing evidence-based practices in education involves using the best available evidence to inform teaching decisions, closely monitoring student progress and making adjustments to our teaching in response to this. In return, this leads to improved student outcomes and more efficient use of resources (Masters, 2018; Slavin, 2008). Formative assessment has a well-documented evidence base that suggests a positive impact on student outcomes in schools (Australian Education Research Organisation, 2022).

Formative assessment

Formative assessment refers to methods used by teachers to gather information about student learning while that learning occurs. Dylan Wiliam and Siobhan Leahy (2011) have detailed five key formative assessment strategies, including:

1. Clarifying, sharing and understanding learning intentions and success criteria.
2. Engineering effective discussions, tasks, and activities that elicit evidence of learning.
3. Providing feedback that moves learners forward on an individual basis.
4. Activating students as learning resources for one another.
5. Activating students as owners of their own learning as they explore new ways of learning that work best for them.

Providing individualised feedback is particularly important to allow us to tailor our teaching to meet the individual needs of students. Good formative assessment helps us set individual learning goals for and with students and achieve truly personalised learning at the pace that suits the learner (Australian Education Research Organisation, 2022; Education Endowment Foundation, 2021).

Writing and writing assessment

Learning how to write is as important as learning how to read. Not only does writing improve reading comprehension and retention of knowledge, students are arguably writing more today than any generation before, according to Andrea Lunsford, Professor of Writing and Rhetoric at Stanford University; We are in a 'writing revolution'!

As teachers ourselves at Elastik, we are well aware of the subjectivity that comes with the assessment of writing, which invariably impacts on teaching. It can also be extremely time consuming to mark and provide detailed feedback to individual students, particularly as we approach the middle to upper primary years and students' writing becomes longer and more complex. Writemark ensures that teachers have time back to focus on key strategies associated with the formative assessment of writing skills.

Enhancing formative assessment with Writemark

Formative assessment and its importance go beyond a simple test at the end of a topic. Formatively assessing

student knowledge gives teachers a signpost for every student for every crossroads of their curriculum progress. Everything from assigning or setting a type of formative assessment to tailoring our feedback to the individual student, formative assessments work. Dylan William, aptly concludes on formative assessment that, "much research in formative assessment has recognised that a consideration of the role of the learners, and their peers, is absolutely essential for productive understandings of the potential of classroom formative assessment to improve learning" (William, 2014).

Figure 1. Narrative and persuasive prompts in Writemark

Writemark streamlines the process of formative assessment by automatically marking and providing feedback on student assignments. Equipped with artificial intelligence, this platform saves teachers' valuable time and ensures consistent and objective evaluation. It's an amusing statement to see that phrase used so regularly in our world; 'Saves teachers time'. "How much time?" is always the immediate follow-up. The team behind Writemark embarked on a series of measurements throughout their users to determine exactly how much time was being saved. This is what we found:

Within the released Grattan Report (2022), we get a sense of the real time being spent by teachers on tasks that take their attention away from the classroom, and see the importance placed on formative assessments. For instance, "Used well, assessment data allow teachers to monitor each student's learning, identify learning barriers, target their teaching, and evaluate the effectiveness of their teaching practice. But if teachers do not have the time or skills to collect, interpret, and respond to student assessments, teachers can feel like they are 'drowning' in data and therefore are too overwhelmed to teach well." (Hunter, 2022).

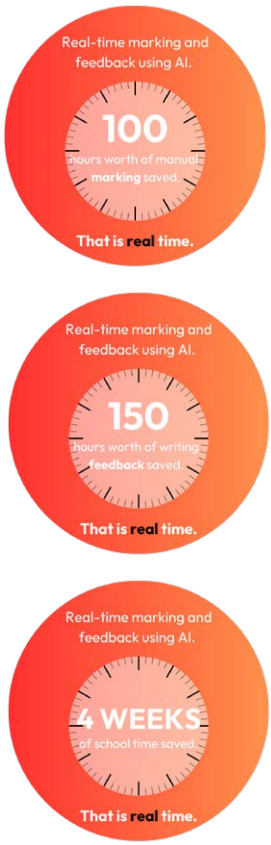

Figure 2. Time saved by teachers using Writemark

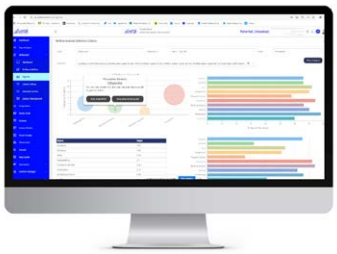

Figure 3. Analytics to guide explicit teaching

Aside from the time saved, teachers are now able to jump to the 'what next', following a formative assessment, far quicker than before. As Writemark highlights learning gaps according to a developed rubric (in this case, the NAPLAN writing dimensions) teachers can deliver targeted, explicit instruction and support. Hattie and Timperley (2007) assert that effective feedback is a critical component of formative assessment that significantly influences student achievement. When we're looking at quality feedback to students, Black and William (1998) are consistent in their belief that feedback should lead to greater confidence and a boost in self-belief rather than necessarily critiquing the ins and outs of a student response. For example, feedback that emphasises to the student that learning is the important component of assessment rather than an individual isolated score or how a peer(s) has performed compared to the student. Similarly, if feedback does detail the right and wrong elements of a student response, it's crucial to get the balance right. Pointing out where the strengths in a student's ability lie is vital to maintaining their positive attitude to continuous learning. This approach will also improve their relationship with their learning and promote ownership leading to improve outcomes in the long-term (Stiggins, 2007).

Supporting differentiated instruction using artificial intelligence

Differentiated instruction requires teachers to address the unique needs of each student, which can be time-consuming and challenging. Writemark aids in this process by offering personalised feedback based on individual student performance. Every writing response, marked to every NAPLAN rubric dimension and assessed with contextual feedback. This allows teachers to quickly identify students who may require additional support or enrichment, enabling them to tailor their instruction more precisely.

Writemark in action

To illustrate the impact of Writemark, consider the following comments from educators across Australia. These responses come from a recent school survey carried out in Western Australia and Victoria.

> *"Excellent resource for pre and post testing of our students in narrative and persuasive writing"*
>
> *Jacobs, Victorian Government School*

> *"I like how when it marks student writing it provides good feedback and specific feedback, taking things the students have actually written and used in their writing."*
>
> *S.Munday, Victorian Government School*

"The AI support for creating prompts makes it almost effortless to create targeted and specific prompts that meet the needs of our students. The capacity to upload handwriting has increased the number of students that we are able to assess."

D. Wragg, Victorian Government School

"The speed with which you can create a prompt and then have the platform analyse the strengths and areas for development is amazing."

M.Pinkard, Western Australian Government School

The future of evidence-based practices with artificial intelligence

As schools continue to embrace evidence-based practices, the role of technology will undoubtedly become more prominent. Who knows what our classrooms may look like in the next 10 years. Tools like Writemark exemplify how AI can support and enhance the implementation of EBPs, ultimately leading to better educational outcomes for students and more efficient use of teacher time. By leveraging the power of AI, educators can focus on what they do best: teaching and inspiring the next generation.

About the author

Dahmen is currently the Regional Manager of Elastik for WA/NT, partnering with more than half of all WA public schools, in addition to CEWA and Independent institutions. A trained primary school educator, Dahmen has worked across primary, secondary and district high school campuses. His leadership journey saw him move into a foundation Associate Principal position at a large metropolitan school which went on to become one of 20 Quality Teaching Strategy (QTS) schools in WA.

Conflict of interest

Dahmen Higgs is an employee of Elastik who receives funding from partnering schools, and sales of products created and owned by Elastik mentioned in this article. The author did not receive funding from public, commercial, or not-for-profit sectors to write this article. Copyrighted images have been reproduced with permission.

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What happens when we compare handwriting and typing in the correlation between NAPLAN data and Comparative Judgement?

Jeanette Breen

Comparative Judgement

Comparative Judgement is an innovative new writing assessment that has recently become available in Australia. Traditional marking involves the use of a rubric; whereas Comparative Judgement relies on many educators comparing one script to another in a holistic judgement. To understand if Comparative Judgement can be a useful predictor for intervention, next steps, and national writing assessment, research from No More Marking (*https://www.nomoremarking.com/?countryCode=AU*) can be used to make some interesting correlations.

NAPLAN

When considering the typed NAPLAN Writing test for Year 5, there are reasonable concerns from Australian teachers who question if we are measuring writing or typing skills. Inequitable IT resourcing and minimal typing instruction may disadvantage many students and impact NAPLAN data. If measuring outcomes is how we rate the success of our instruction – what does this typing test actually measure? From a social standpoint, the arguments for and against students typing, range from strong agreement to disagreement. It is well documented that there are cognitive connections between handwriting and brain activity assisting with the letter processing known to underlie successful reading. Therefore, handwriting may assist reading acquisition in young children (James & Engelhardt, 2012).

Typing vs handwriting

Despite the arguments behind typing versus handwriting and the contrasting benefits and pitfalls of each, typing is often seen as the most useful medium for students with persistent writing challenges. For some young writers, for a range of reasons, the act of holding pen to paper is so physically challenging that it consumes enormous cognitive load. Despite this, in education, we advocate handwriting as a necessary precursor to reading, but then we often advocate for typing as the medium that may best support students who struggle with literacy. Is there any way we can test and provide evidence for the 'when' and 'how' in the typing debate?

There is a body of evidence about the scientific benefits of supporting students to build fluency and legibility in handwriting (Hempenstall, 2021). Even for university students, it has been shown that taking notes feels quicker on a laptop, but has been proven to be better remembered when handwritten (Ihara et al., 2021). The comparison between novice and expert (and how mastery is built) is important for educators to understand. For many who feel competent with their writing skills, often we would elect to draft and write using technology as opposed to handwriting; the main arguments to do so include the fact that typing allows the author to easily modify and share their writing; some find it to be more efficient and for most it is considerably neater than handwriting would be.

Returning to the novice – the tools we provide at this point in the journey are

quite different. The physical demands on handwriting fluency highlight that not all writing issues are the same. We do know that confident handwriters take more risks. When we think about when and how to use a medium, we should treat it as we do other instructional processes – start with foundational skills, then build fluency and then onto mastery.

Trial results

At No More Marking we tested the correlation between typing and handwriting. In Figure 1 we compared a cohort of 60 Year 5 students. We used their NAPLAN data from 2021 and 2023 and their averaged Comparative Judgement data from 2021, 2022 and 2023. This data is a balance of handwritten and typed scripts, and we are comparing the correlation in their scores between both mediums.

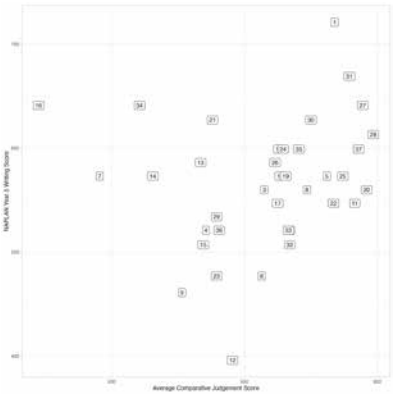

Figure 1. Correlation between NAPLAN Writing score and average Comparative Judgement score for year 5 students

Here is what we found:

- If Comparative Judgement is using the same construct as NAPLAN writing, then we would expect to see students tracking toward the top right-hand quadrant where alignment for both NAPLAN and Comparative Judgement is positive. 90% of the students are doing exactly this, as expected.
- There are no students in the bottom right-hand quadrant. This is good news. It shows that there are no students with high Comparative Judgement scores and low NAPLAN scores, allowing us confidence that the data is comparable.
- Having two different standardised data sets showed that typing had less of an effect than predicted. Student performance for most of this cohort does not appear to be impacted by typing or handwriting.

There are three distinct outliers in this data set – Student 16, 7 and 34 have relatively high NAPLAN results, yet the lowest Comparative Judgement scaled averages for the cohort. Let's shed some light on these figures.

What do we know about the outlying students?

Students 16, 7 and 34 are funded students accessing tutoring and Tier 3 instruction. The challenges faced

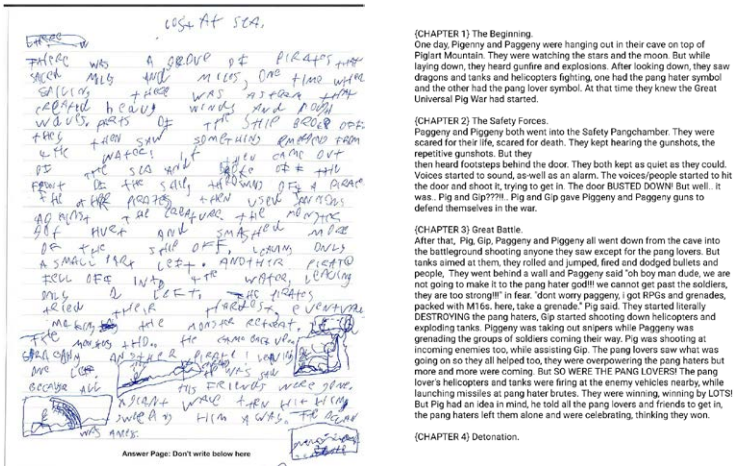

Figure 2. Student 16 Year 4 handwritten comparative judgement sample (score = 463) vs Year 5 typed custom task sample (score - 597)

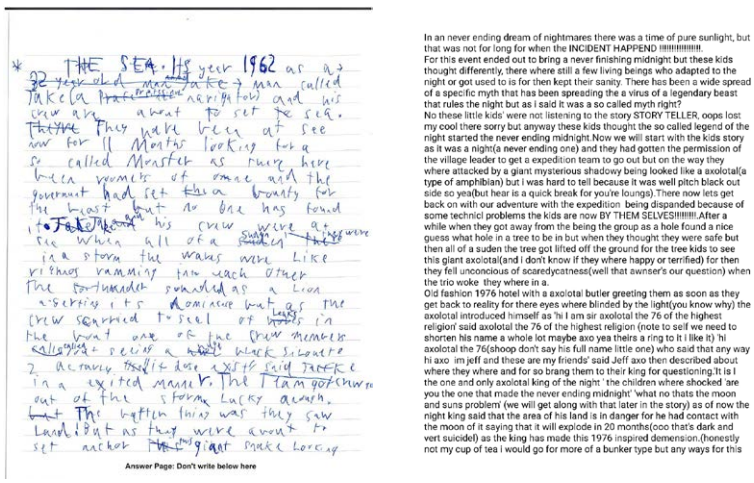

Figure 3. Student 7 Year 4 handwritten comparative judgement sample (score = 494) vs Student 7 Year 5 typed custom task (score = 542)

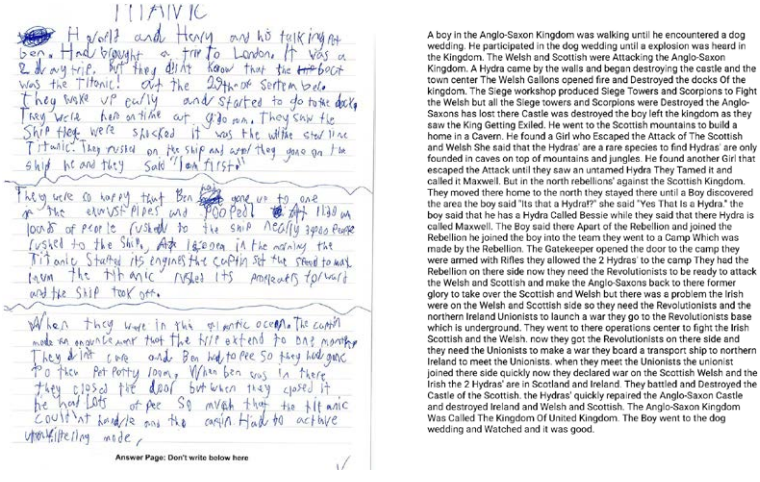

Figure 4. Student 34 Year 4 handwritten comparative judgement sample (score = 508) vs Student 34 Year 5 typed custom task (score = 565)

by all three are physical, amongst other things.

When we put a sample from each student side by side (Figure 2-4), we can see the evidence for the significant growth in scores between handwriting and typing.

- The readability of the writing has significantly improved. Typing scripts for these students provides the equaliser and perhaps explains why they may engage better with a keyboard writing task.
- There is very little syntax, punctuation, or sentence structure present in the handwriting samples from a year prior when compared with the typed tasks. This could be due to instruction in sentence level work accessed by students across a year. It could also be surmised that when typing, cognitive load is released by removing the physical challenges linked to handwriting difficulties.

Left are the comparative samples to demonstrate this.

How does the judging affect this?

When judging a Comparative Judgement task, we ask teachers to 'choose the better script'. Therefore holistically, a more entertaining script will impact choice. These writing samples are quite entertaining! Arguably cognitive load is also released for the reader when making decisions because judges don't have to work so hard to decipher the writing.

Judges are notoriously unreliable and often do not agree with themselves when judging a piece again over time, or with each other. Yet this bias is cancelled out when we know that multiple people have judged these scripts (in both handwriting and typing). We can feel assured that the scaled scores received are not the unfair scores of a one-off teacher with handwriting bias, because the samples have been seen and judged multiple times which makes their scaled score more valid (Wheadon, 2020).

Concluding remarks

As we continue to track cohorts across time, we hope to share more about the correlations in student writing from large data sets. From this small sample, we can interpret the following:

- typing and handwriting are equally impacted by sentence level knowledge – it is recommended to keep this skill at the centre of novice instruction.
- typing provides equity to outlier students because they can showcase their skills and knowledge in a more measurable way despite handwriting challenges.
- Writing isn't taught with technology. We teach it at a foundation level using paper as the medium. Before introducing computers for writing, students should have fluency and mastery over foundational transcription and writing skills such as spelling, punctuation, grammar, and syntax.
- For students with specific learning difficulties, a potential way to bridge the gap in their skills can be to encourage the use of technology so that they are better able to show their knowledge; if handwriting is an identified area of difficulty.

Just as it is unhelpful to have students writing extended text without direction or correction, typing needs strict parameters that help students construct the building blocks of an accurate sentence. How quick are we to recommend using a computer without setting useful, practical tasks? It's a little like asking students to research something using Google – without background knowledge they will have very little direction on the purpose behind what they are being asked to do; and the teacher, very little control of where a google search will take them.

Word processing needs explicit instruction at the point where some handwriting skills have been mastered. Research is needed on where this effective point might lie, and we are yet to understand if typing would actually result in improvement on impaired skills. We do know, however, that it is a question worth exploring.

About the author

Jeanette is an experienced education practitioner from Victoria, Australia. Recently joining UK based company No More Marking in 2022, she is the bridge for schools using innovative writing assessment techniques, including Comparative Judgement. Jeanette is a practitioner and founding member of Sharing Best Practice and co-leads a Writing Network with Think Forward Educators. She holds a Professional Certificate in Clinical Teaching and Masters in Instructional Leadership and can be contacted on jeanette.breen@education.vic.gov.au or jeanette@nomoremarking.com or via X - Jeanette Breen - @jettybe3

Conflict of interest

Jeanette Breen works for No More Marking who receive funding from schools participating in National and International comparative judgement assessments. The data included in this article was collected as part of No More Marking's Australian National comparative judgement assessments. Copyrighted images and participant samples have been reproduced with permission.

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Assessment of written narrative elements; How a close analysis of discourse features can inform goal selection for a whole-class writing program

Jenny Baker

Introduction

Discourse level assessment plays a pivotal role in both oral and written communication by providing insights into the overall coherence, organisation, and effectiveness of the message being conveyed (Brown, & Yule, 2015). It delivers a functional assessment that allows for a deeper understanding of communicative competence and promotes targeted feedback to enhance overall communication skills across both oral as well as written modalities (Biber 2016). Discourse level assessment allows educators and speech pathologists to target the development of skills that are essential across various social and academic contexts. By enhancing discourse skills in both oral and written language, individuals are better equipped to navigate academic, professional, and social interactions successfully (Paltridge, 2017).

Discourse level assessment is essential for evaluating the overall flow, coherence, and organisation of a written text (Biber, 2016). It goes beyond simply assessing grammar and vocabulary to examine how well ideas are sequenced, transitions are used, and arguments are developed (Ferris, 2011). By analysing discourse at this level, we can identify structural weaknesses, such as disjointed paragraphs or inconsistent argumentation, that may hinder the reader's comprehension and engagement with the text. Additionally, discourse level assessment in writing allows educators to provide targeted feedback on areas such as logical progression, clarity of expression, and overall effectiveness in achieving communicative goals (Ferris, 2011).

Assessment of written text

Some standardised measures of written discourse include:

1. **The Oral Written language Scales-OWLS The Written Expression subtest** (Carrow-Woolfolk, 1996). The OWLS is suitable for students from 5-21; it includes several text level items designed to evaluate text structure (organisation, details, cohesion).
2. **The Weschler Individual Achievement Test-WIAT 111 Essay Composition Subtest** (Pearson, 2013). This subtest is designed to measure spontaneous writing fluency at the discourse level. Students are asked to write a descriptive expository essay within a 10-minute time limit; texts are scored for semantics, grammar, and mechanics.

Standardised assessments do not, however, offer the depth of analysis required for the establishment of

specific targeted goals; it is therefore beneficial to conduct a close analysis of a student's written expression using a framework (or rubric) as a reference (Moskal, 2000).

A well-designed rubric provides clear criteria for evaluating written text; it must address both the macrostructures as well as the microstructures of the genre under investigation to evaluate the text at word, phrase, sentence and text levels. See Appendix 1 for rubrics designed and trialled by Fremantle Speech Pathology Services. These have been used extensively in clinical and classroom settings to establish goals for intervention.

Macrostructure and microstructure

Macrostructure pertains to the overall organisation, coherence, and structural elements of a written text. It encompasses the larger-scale features that shape the text's overall meaning and readability. This includes components such as the introduction, body paragraphs, conclusion for expository texts and the orientation, problem, solution, resolution for narrative texts. Macrostructure focuses on how the text is organised and structured to effectively convey the writer's intended message or argument. Assessing macrostructure involves evaluating the clarity of the main thesis or purpose, the logical progression of ideas, the coherence of paragraphs, and the overall organisation of the text (Halliday & Matthiessen, 2014).

Microstructure refers to the smaller-scale linguistic and grammatical features within a written text. It involves the analysis of individual words, phrases, sentences, and grammatical structures that contribute to the text's clarity, precision, and readability. Microstructure encompasses aspects such as vocabulary choice, sentence structure, grammar, punctuation, and stylistic elements. Assessing microstructure involves examining the accuracy and appropriateness of language use, identifying errors in grammar or syntax, evaluating the effectiveness of sentence construction, and considering the impact of stylistic devices on the overall tone and style of the text (Halliday & Matthiessen, 2014).

Case study

This article is based on a case study of Lilly*, a Year 5 student at a metropolitan school in Western Australia. The aim is to illustrate how close analyses of written narratives provide us with a clear understanding of a student's strengths and weaknesses, and as a result, inform us about what goals to work on.

Lilly was in Term 1 of Year 5 when she wrote a story in response to the prompt, "Up up and away". She was in a class that was using the 'Formulas for Frames' program (Baker, 2022) as part of their writing instruction; cold tasks were required for the whole class as well as individual student's goal setting. Lilly was required to plan for five minutes and write for a further 30 minutes. Three samples were obtained across the year from all class members: 1) Beginning of year baseline sample (March 2023), 2) Middle of year progress sample (August 2023), and 3) End of year outcome sample (December 2023).

Lilly's beginning of year baseline

The following sample was produced by Lilly at the beginning of the year.

> One cold and thunderous night where the sky is filled with lightning Olivia and her kitten Nala was walking in horrible weather. The wind was as strong as a push of a hurricane it blew across the trees. BANG! The cat hit the ground with a big thud at that very second the umbrella went up up and away with Oliva. The cat jumped on to Olivia's leg the umbrella went up and up now she could reach the clouds. But then she starts panicking there is no oxygen in space this will mean that she will never see her family and friends again. She had no idea what she should do should she let go and hope for the best or she could hold on and avoid getting hurt she finally decied that she should hope for the best and let go. As quick as a cheetah she let go.

Closer analysis of Lilly's sample revealed strong language skills and a well-developed spelling system, however there were gaps in her written texts that were difficult to identify at first glance. Hence, it was felt that her sample provided the opportunity to evaluate what a deep dive into text analysis could offer the teaching and learning processes.

Her writing was a complex mixture of strengths and weaknesses – at both the macro and micro level, so it was decided to conduct a thorough analysis of her sample to identify what was contributing to her difficulties.

Lilly's sample was analysed using three different methodologies:

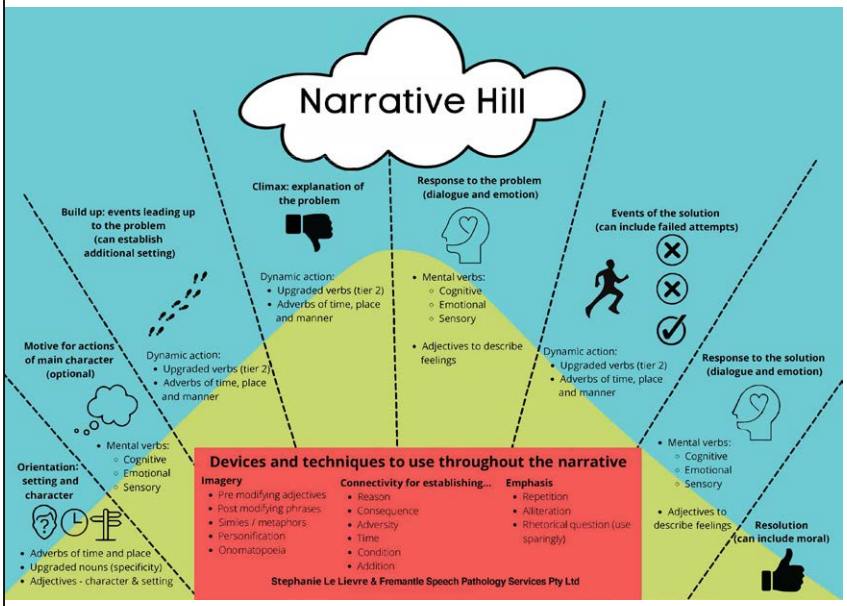

Image 1. The Narrative Hill

Orientation	*One cold and thunderous night where the sky is filled with lightning Olivia and her kitten Nala was walking in horrible weather. The wind was as strong as a push of a hurricane it blew across the trees..*	Who – 2/3 When – 3/3 Where – 3/3
Problem	*BANG! The cat hit the ground with a big thud at that very second the umbrella went up up and away with Oliva. The cat jumped on to Olivia's leg the umbrella went up and up now she could reach the clouds.*	Problem – 3/3
Internal Response to Problem	*But then she starts panicking there is no oxygen in space this will mean that she will never see her family and friends again. She had no idea what she and avoid getting hurt*	Internal Response – 3/3
Plan	*should she let go and hope for the best or she could hold on and avoid getting hurt*	Plan – 1/3
Actions		Actions – 0/3
Solution	*she finally decied that she should hope for the best and let go. As quick as a cheetah she let go*	Solution – 1/3
Internal Response to Problem		Internal Response – 0/3
Consequence		Consequence – 0/3
	TOTAL	**16/30**

Table 1. Lilly's beginning of year Narrative Macrostructure Rubric Analysis

1. Analysis of macrostructures and microstructures using a Narrative Analysis Rubric
2. Identification of word usage via Sketch Engine (*www.sketchengine.eu*)
3. Analysis of verbs, adverbs, nouns and adjectives using Immersive Reader (www.microsoft.com/en-us/education/products/learning-tools)

Results of the macrostructure analysis

Table 1 provides a breakdown of the macrostructure elements (characteristics of the narrative genre) that Lilly included in her sample. The corresponding sections of the story have been provided to illustrate where she either adhered to (or conversely overlooked) parts of story grammar (Baker, 2022) related to the Narrative Hill (see image 1).

The first half of Lilly's story, including the orientation, problem and response to problem were all well-developed, but thereafter, her content weakened. Her solution did not solve the problem and there was no further commitment to the latter elements of the Narrative Hill – such as response to solution or resolution - despite being provided with sufficient time to complete the story.

She achieved a score of 16 on the Narrative Analysis Rubric with high scores for the first three sections and low scores across the remaining ones. (Note: 16 is considered to be at the lowest level of "Adequate" (16 – 22)).

Results of the microstructure analysis

Analysis of her written language at word, phrase and sentence level revealed strengths in vocabulary and imagery but weaknesses in verb agreement and tense as well as punctuation and more advanced connectivity. It was clear that Lilly was attempting a number of more sophisticated language devices however there was a significant trade-off with structure and form.

Table 2 outlines the language devices Lilly used to write her story.

Strengths and weaknesses

Examination of the language employed revealed strengths in adverbs of time, adverbs of place, adjectival usage, similes and upgraded nouns.

Run-on sentences

The concerns related to Lilly's written language centred predominantly around her weak understanding of punctuation, resulting in a significant number of run-on sentences where independent clauses were incorrectly connected, e.g., "The wind was as strong as a push of a hurricane it blew across the tree.".

In addition, it was interesting to note that her use of connectors was limited to:

- "and" twice for coordinating clauses
- "or" once as a connector of addition
- "but" used once at the commencement of a sentence.

It seemed clear that she was running clauses together. If full stops and capital letters had been employed correctly, there should have been a total of 16 sentences in the sample, however Lilly's underuse of full stops reduced the number of complete sentences to eight, resulting in an additional eight run-on sentences. She also failed to use commas after fronted adverbials of time. Of real interest is that her under representation of connectors was also contributing to a lack of explicit relationships between clauses.

Consider this sentence: *"But then she starts panicking there is no oxygen in space this will mean that she will never see her family and friends again."*

If full stops are added into the above sentence, the ensuing short sentences sound abrupt and lack connectivity, e.g., *"But then she starts panicking. There is no oxygen in space. This will mean that she will never see her family and friends again."*

It is viable to use a connector of reason (because) and one of consequence (so) to express the nature of the relationship

Language Device	Examples
Adverbs of Place	in horrible weather across the trees up up and away on to olivia's leg
Adverbs of Time	one cold and thunderous night at that very second now again finally
Adverbs of Manner	with a big thud
Adverbs of Degree	never
Dynamic Verbs	walking blew filled hit went jumped let go hold on
Cognitive Verbs	decided hope mean
Adjectives	big best cold and thunderous quick horrible strong hurt
Post Modifying Clause	where the sky is filled with lightning
Simile	strong as a push of a hurricane as quick as a cheetah
Onomatopoeia	BANG
Personification	thunderous night wind was as strong as…
Repetition	up up
Alliteration	family and friends
Rhetorical Question	should she let go and hope for the best
Lexical Cohesion	kitten / cat
Theme Related Words	cold, thunderous, lightning horrible weather, wind was strong, push of a hurricane, blew
Proper Nouns	Olivia Nala
Upgraded Nouns	oxygen, lightning, weather, hurricane
Pronouns	third person point of view
Connectors	and, or, but

Table 2. Lilly's beginning of year Narrative Microstructure Rubric Analysis

between the clauses in the sentence. With the inclusion of those connectors, the sentence would read as, *"But then she starts panicking because there is no oxygen in space so this will mean that she will never see her family and friends again."*

It was hypothesised Lilly would benefit from learning how to use a range of connectors rather than full stops and capital letters in order to take control of her sentence structuring.

Verbs

Lilly's verb system was relatively weak. Verb usage was dominated by Tier 1 words (Beck, McKeown & Kucan 2002) such as, *walking, hit, went, jumped, let go, hold on*. In addition, there were examples of discord surrounding noun-verb agreements, *"Olivia and her kitten Nala **was** walking"* and repeated changes of verb tense (past, present and future), for example:

- *the sky **is filled** with* (present)
- *it **blew** across the trees* (past)
- *the cat **hit** the ground* (past)
- *the cat **jumped*** (past)
- *the umbrella **went** up* (past)
- *now she **could reach** the clouds* (past)
- *she **starts panicking*** (present)
- *this **will mean** that* (future)
- *she finally **decied** (**decided**) that* (past)

Finally, Lilly did not employ any conventional adverbs of manner (words ending in "ly" such as quickly) in her beginning of year writing sample.

Advantages and disadvantages of conducting a close analysis

The upside of conducting a close analysis of the macrostructure and microstructure of an individual student's written sample is that you become acutely aware of what factors are contributing to the success or otherwise of the student's writing. In Lilly's case, it was vital to understand that run-on sentences could be resolved by teaching her how to use a variety of connectors, and this in turn would result in more complex sentence constructions. It was also important to address her verb usage, which was underdeveloped (particularly when compared to her

usage of nouns and adjectives) and inconsistently conjugated.

The downside is of course the amount of time it takes to conduct a close evaluation. Analysis of Lilly's macrostructure and microstructure elements required approximately 90 minutes to complete, making it impossible for a classroom teacher to conduct this on a whole-class basis. It is also a considerable amount of time for a speech pathologist to engage in the analytical process – however if it only needs to be conducted once a term, the investment of time makes the arduous process worth engaging in; goals and outcomes can be clearly defined and altered across the year.

Computer-based language analyses

There are some less precise systems for analysis – they provide a method for analysing grammatical elements with relatively high precision (sometimes mistaking a word like "hurt" when used as an adjective rather than a verb in a sentence such as, "His arm was hurt.").

The first is the Immersive Reader feature in Microsoft Word. (See *https://youtu.be/wHJJCLV-DNg* for a tutorial about Immersive Reader features and function.) When Lilly's story was analysed with Immersive Reader, it provided a breakdown of verbs and adverbs as well as nouns and adjectives. This was useful to obtain a snapshot of her word usage. Figure 2 shows how verbs and adverbs were identified and labelled.

A second program that is designed to analyse text is, "Sketch Engine" (*https://www.sketchengine.eu/*). Sketch Engine requires a subscription but is excellent for conducting whole-class analyses. It can perform co-occurrence analysis, term extraction or generate frequency lists that take advantage of morphological analysis and part-of-speech tagging. When Lilly's story was analysed with Sketch Engine, it provided a breakdown of parts of speech with frequency counts. See Figures 4-8 for the results of the Sketch Engine analyses for nouns, adjectives, verbs, conjunctions and adverbs.

Goal selection

Table 3 summarises the goals selected based on the results of the analyses for macrostructure and microstructure elements evident in the "cold" task. Not all were targeted explicitly as the "Formulas for Frames" program (Baker, 2022) was delivered to the whole class – however, if Lilly was to receive Tier 2 or 3 services, these could be tailored to her specific needs.

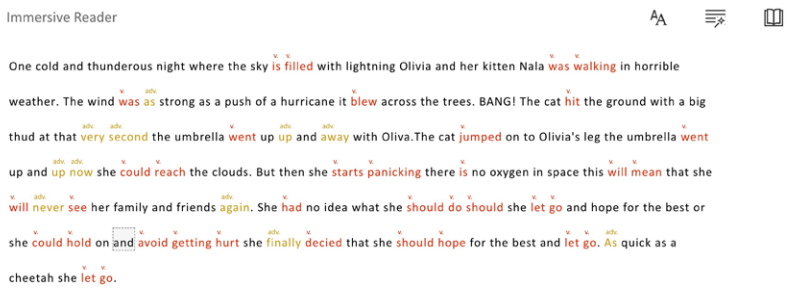

Figure 2. Verbs and adverbs identified in Immersive Reader analysis

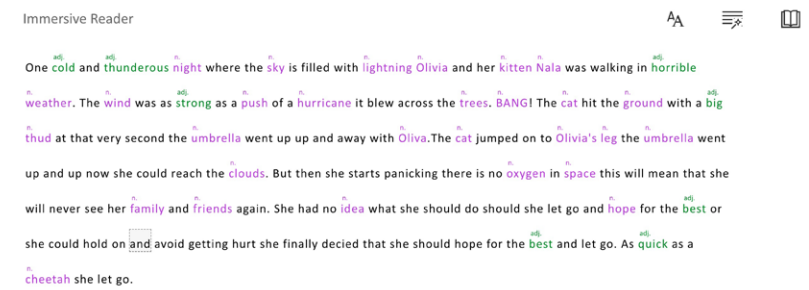

Figure 3. Nouns and adjectives identified in Immersive Reader analysis

Progress monitoring and outcomes

Following the beginning of year assessment in March 2023, a mid-year assessment was obtained in August 2023 and then the final assessment in December 2023. It was important that

	Noun	Frequency
1	cat	2
2	olivia	2
3	umbrella	2
4	hurricane	1
5	oliva	1
6	hurt	1
7	kitten	1
8	idea	1
9	family	1
10	cloud	1

	Noun	Frequency
11	leg	1
12	lightning	1
13	friend	1
14	oxygen	1
15	push	1
16	sky	1
17	space	1
18	thud	1
19	tree	1
20	nala	1

	Noun	Frequency
21	weather	1
22	wind	1
23	night	1
24	ground	1
25	cheetah	1
26	bang	1

Figure 4. Nouns identified in Sketch Engine analysis

	Adjective	Frequency
1	good	2
2	quick	1
3	horrible	1
4	cold	1
5	thunderous	1
6	strong	1
7	second	1
8	big	1

Figure 5. Adjectives identified in Sketch Engine analysis

	Verb	Frequency
1	go	5
2	be	4
3	let	3
4	hope	2
5	see	1
6	panick	1
7	have	1
8	hit	1
9	hold	1
10	do	1

	Verb	Frequency
11	decied	1
12	jump	1
13	fill	1
14	reach	1
15	start	1
16	walk	1
17	mean	1
18	get	1
19	blow	1
20	avoid	1

Figure 6. Verbs identified in Sketch Engine analysis

	Conjunction	Frequency ? ↓	
1	and	8	•••
2	or	1	•••
3	but	1	•••

Figure 7. Conjunctions identified in Sketch Engine analysis

	Adverb	Frequency ? ↓	
1	up	3	•••
2	as	2	•••
3	very	1	•••
4	never	1	•••
5	finally	1	•••
6	now	1	•••
7	then	1	•••
8	away	1	•••
9	again	1	•••

Figure 8. Adverbs identified in Sketch Engine analysis

the prompts be consistent and provide the students with the opportunity to plan a story that could adhere to the Narrative Hill; it was essential to offer them a problem to base their stories upon.

Table 4 outlines the progress Lilly made over the year; her final story has also been included for comparative purposes.

Microstructure analysis

Evaluation of Lilly's progress revealed significant improvement in connectivity and verb concordance.

Connectivity

The explicit and repeated teaching of connectors solved the problem of run-on sentences. Lilly employed a range of connectors (so, but, and, when, for, or & because etc) all of which contributed to more effective sentence construction. The number of run-on sentences reduced from 8 to 2 to 1 across the three samples.

Verbs

Lilly demonstrated much greater control over subject-verb agreement and consistency of verb tense. She still selected many Tier 1 verbs (go, made, have and went) but there was a higher percentage of Tier 2 verbs used when the three samples were compared (albeit small increases).

Adverbs of manner

Lilly demonstrated no usage of these language devices; as such, these will be a goal for 2024.

Macrostructure analysis

There was no change in macrostructure use from beginning to middle of year assessment, however, the end of year story adhered to all elements of the Narrative Hill.

Even though the end of year sample was 38% longer than the beginning of year task (255 words vs 159 words); Lilly did not finish the story, so did not include the remaining story elements. This suggests that there exists a trade-off between macrostructures and microstructures; as students learn more about sentence construction, embedded adverbs, stronger imagery, greater emphasis etc they deploy time and effort into writing better quality sentences at the price of content. It would be better to provide students with additional time to really showcase their abilities both at text as well as sentence level.

This trade-off was not evident in the end of year assessment, possibly because Lilly had gained strong automatic control over the microstructures, and they did not require the same degree of conscious employment and planning as in previous sampling – therefore allowing her the space to complete all sections of the Narrative Hill in the final task.

Below is Lilly's end of year sample.

Goal: To teach Lilly…	Method	Measurement
to include two failed attempts prior to the successful attempt to solve the problem	Provide model texts that illustrate how the 2 failed attempts prior to the successful one crate drama and suspense. Practice with oral storytelling.	Provide a problem and ask Lilly to think of two failed attempts + one successful attempt. Have her write that part of the story.
to use dialogue and emotions following the solution as well as the problem	Teach a lesson on direct and indirect speech. Teach her that emotions provide an excellent opportunity to attach a connector of reason + the reason for the emotion. "He was desperate because…"	Provide a model story with these sections omitted and have Lilly write two lines of dialogue as well as emotions + reasons for the solution Have her add to the "Up Up and Away" story
to "wrap up" the story with a resolution	Teach about morals of the story – use model texts.	Have Lilly write a resolution to the "Up Up and Away" story
how to use connectors of reason, consequence, adversity and time.	Sentence combining PowerPoints and Guides because but so exercises	Sentence combining assessment Evaluation of "hot" task
about the difference between simple, compound and complex sentences and how to construct each type	PowerPoints and Guides	Evaluation of "hot" task

Table 3. Lilly's goals

	Beginning of year	Middle of year	End of year
Macrostructures	No development after problem	No development after problem	Completed all sections of the Narrative Hill
Number of words	159	255	281
Upgraded verb usage	3/20 (15%) panicking, avoid, decided	8/28 (28%) earning, babysitting, coaching, seemed, arrived, gasped, decided, thought	8/31 (26%) sipping, knows, thought, sobbed, experienced, supposed, except) accept, agreed
Run on sentences	8	2	1
Connectors	and, or, but	so, but, and, when, because	while, so, but, and, if, for, or, until, when, also, cause (because)
Adverbs of manner	0	0	0
Subject:Verb disagreement	1	0	0
Verb tense error	5	1	1

Table 4. Comparison of macro and microstructure analysis for beginning, middle and end of year samples

One sunny evening Nina and her grandmother Elizabeth were sitting on the porch sipping tea while dreaming about italy. Her grandmother had been 3 times before.

So she had lots of stories about it. But Nina wanted to see it all for herself, and she knows the language of by heart. So she thought it would be the perfect time to ask her grandmother if she could go with her next time she goes, and her grand mother said yes. She was so elated this would be the biggest moment of her life. But she just couldnt stop thinking about it for three straight weeks whenever she was at school, or brushing her teeth, or hanging out with friends. Until one afernoon the week she was going to italy she found out her grandmother had passed away. She could not believe it.''HOW WHEN WHERE'' she sobbed. "In a car crash when she was walking to her apartment this morning'' dad said also sobbing. Nina was heartbroken she has never exprinedied loss before. But not only she would never get to see her grandmother ever again she would not go to italy.

It was weeks of crying in bedrooms and not talking to a single person cause she felt lost she was supposed to be having an amazing joruney in Italy. NOT CRYING IN HER ROOM. Suddenly her mom walked into the room gave her a big hug and said it is important to except grief. But not forget about her grandma. But her mum said that Nina could stilll go to italy but with her mum. Nina agreed and they had a amazing time. But she would never forget her grandmother.

Conclusion

The process of closely analysing a students' writing sample is time-consuming but vital for understanding their strengths and weaknesses. The evaluation needs to target both macrostructures (genre elements) as well as microstructures (language devices). The rubrics and checklists in the appendix offer a detailed and comprehensive framework for close analysis to occur. This, in turn, informs goal selection for the term, semester or year. Detailed assessments, effective methodologies, sound teaching practices, evidence-based resources and regular formative assessments are all essential for written expression to be taught effectively and learned successfully.

About the author

Jenny Baker is a Speech Pathologist who has been working in the area of written expression for over 30 years. She is Co-Director of Fremantle Speech Pathology Services, a private practice in Perth.

Conflict of interest

Jenny Baker is an author of a commercialised writing program and receives financial benefits related to its sale. Copyrighted images have been reproduced with permission. The author did not receive funding from public, commercial, or not-for-profit sectors to write this article.

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Narrative Analysis – Macrostructure and Microstructure

	Macrostructure Component	0	1	2	3
SET UP/ ORIENTATION	☐ **Who**	No main character is used in the Set Up	Includes the main character in the Set Up using nonspecific labels such as "the boy" or pronouns such as "she"	Includes at least one main character in the Set Up using the name of the character (plus additional minor characters – optional)	Includes more than one main character in the Set Up using specific names (plus additional minor characters – optional
	☐ **When**	No reference to time is made in the Set Up	Includes one reference to time in the Set Up such as, "Once upon a time"	Includes two to three references to specific times in the story – but one must be in the Set Up	Includes four or more references to specific times in the story - but one must be in the Set Up
	☐ **Where**	No reference to place is made in Set Up	Includes one reference to place in the Set Up	Includes two to three references to specific places in the story - but one must be in the Set Up	Includes four or more references to specific places in the story - but one must be in the Set Up
PROBLEM / RESPONSE	☐ **Problem**	No problem is included	Includes one event that indirectly implies the presence of a problem	Includes one event that clearly acts as the problem	Includes two or more events that clearly act as the problem
	☐ **Internal response to problem (emotions or dialogue)**	No feelings or thoughts are explicitly stated in response to the problem	Actions, thoughts or dialogue are included that imply feelings related to the problem but are not stated explicitly	A feeling or thought is explicitly stated that relates directly to how the character feels about the problem; this can be achieved via dialogue	two or more feelings or thoughts are explicitly stated that relate directly to how the character feels about the problem; this can be achieved via dialogue
PLAN	☐ **Plan**	No statement is provided about how the character intends to solve the problem	There is a weak or ambiguous statement about how the character intends to solve the problem	There is a statement that clearly indicates how the character intends to solve the problem	There are two or more statements that clearly indicate how the character intends to solve the problem

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Narrative Analysis – Macrostructure and Microstructure

ATTEMPTS	☐ **Action / Attempts (Events)**	No action is taken by the character to solve the problem	Actions are taken by the character that are not directly related to solving the problem	one to two actions are taken by the character that directly relate to solving the problem	three or more actions are taken by the character that directly relate to solving the problem
SOLUTION / RESPONSE	☐ **Conclusion / Solution**	No action is taken by the character that resolves the problem	Final action is taken by the character but does not resolve the problem	Final action is taken by the character that directly solves the problem, but the link is not explicitly stated	Final action is taken by the character that directly solves the problem and the link is explicitly stated
	☐ **Internal response to solution (emotions or dialogue)**	No feelings or thoughts are explicitly stated in response to the solution	Actions, thoughts or dialogue are included that imply feelings related to the solution but are not stated explicitly	A feeling or thought is explicitly stated that relates directly to how the character feels about the solution; this can be achieved via dialogue	two or more feelings or thoughts are explicitly stated that relate directly to how the character feels about the solution; this can be achieved via Dialogue
CONSEQUENSE	☐ **Consequence / Wrap up**	No consequence of the resolution is stated	one consequence is included that is not linked with the problem or the resolution	one consequence is included that is linked with the problem and the resolution	two or more clear consequences are included that are directly linked to the problem and the resolution or A comment about the moral of the story may be stated (if applicable)

Score	Classification
0-5	Significantly Weak
6-10	Weak
11-15	Emerging
16-22	Adequate
23-30	Established
Macrostructure Score	**/30**

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Narrative Analysis – Macrostructure and Microstructure

NARRATIVE MICROSTRUCTURE: LANGUAGE DEVICES				
Verbs		**Adverbs of Manner**	**Tense**	**Sentence Structure**
Static Verbs ☐ Cognitive e.g. decided ☐ Sensory e.g. heard ☐ Emotional e.g. hated	**Dynamic Verbs**		☐ Simple past tense verbs (regular and irregular) ☐ Continuous past tense verbs (was verb+ing) ☐ Present tense ☐ Others	☐ Simple sentences ☐ Compound sentences (joined with coordinating conjunctions such as - and, so, but) ☐ Complex sentences (using a range of subordinating conjunctions such as – because, while, although) ☐ Complex / Compound (contains elements of both)
Adjectives	**Post-modifying Clauses**	**Other Forms of Imagery**	**Specificity**	
☐ Before the noun – e.g., **happy** girl ☐ In a **subject** (she) + **verb** (was) + **adjective** (happy) sentence		☐ Simile ☐ Metaphor ☐ Personification ☐ Onomatopoeia ☐ Idiom	☐ Proper Nouns ☐ Upgraded nouns ☐ Appositives ☐ Adverbs of Degree ☐ Adverbs of Frequency **Pronouns:** ☐ First person ☐ Third person	

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Narrative Analysis – Macrostructure and Microstructure

<table>
<tr><th>Adverbs of Place</th><th>Adverbs of Time</th><th>Connectors</th><th>Emphasis</th></tr>
<tr><td></td><td></td><td>☐ Additive
☐ Temporal
☐ Consequential
☐ Adversative
☐ Conditional
☐ Reason
☐ Others:</td><td>☐ Repetition
☐ Rule of threes
☐ Alliteration
☐ Rhetorical Questions
☐ Others:</td></tr>
<tr><th>Character Speech</th><th>Cohesion</th><th colspan="2">Other</th></tr>
<tr><td>☐ Internal dialogue
He wondered, “if I jump up to the window, someone might see me.”

☐ Dialogue (direct)
He yelled, “Help me!”

☐ Dialogue (indirect)
He told the policeman that he needed help</td><td>☐ Lexical Cohesion

☐ Theme-related words
Others:</td><td colspan="2">☐ Evidence of planning?
☐ Run-on sentences?
☐ Punctuation errors?
☐ Grammatical errors?
☐ Vocabulary errors?
☐ Spelling errors?
☐ Evidence of editing?
☐ Other?</td></tr>
</table>

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10 tips for supporting written expression in school-aged students

Sara Chong

"Words do not express thoughts very well. They always become a little different immediately after they are expressed, a little distorted, a little foolish."

Hermann Hesse

I often work with primary and secondary students on their written expression skills. These students have a range of language and literacy related difficulties which impact on their academic success. In this article I present my Top 10 Tips for supporting written expression in school-aged students. This list was developed with careful consideration of what has worked best for my clients over the years, within the context of the broader evidence base for writing development, instruction and intervention.

1. The cogs in the writing machine

Writing a paragraph or an essay is a large-scale operation (The Complex Task of Teaching Writing | Australian Education Research Organisation, 2021). The student must self-monitor many aspects of their writing process, including but not limited to:

- idea generation
- sequencing and organising information
- sentence structure and use of morphology
- selection of specific vocabulary
- ongoing editing of sentences in relation to previous content and intended meaning
- spelling
- punctuation
- handwriting/ typing

Let's not add to this list the intentional use of literary techniques or the development of voice, which are requirements in high school English. Writing is akin to walking 7 dogs at a time, while trying to get each of them back to the correct kennel at the end. It is something we do with relative ease so often in our own lives that we seldom stop to admire the effort that goes into making this process successfully.

When we meet someone struggling with written expression, we are given insight into their unique difficulties that make this complex operation challenging. For me, this is often evident when I present a writing prompt and watch how the student naturally tackles the task. Take some time to observe how the student's writing machine is working and you will gain insight into the specific difficulties that make the writing process difficult. Make a list and ask follow-up questions. You may like to reorder the list depending on which difficulties have the most significant impact.

Some helpful questions to ask a student include:

- Which part of this task felt scariest or hardest?
- Were there any parts of this task you liked or felt good about?
- On a scale of 1-10, how stressed do you feel right now?

- Describe your thoughts to me as you completed the task. What were you thinking at the start, the middle and at the end?
- Did you find it hard or easy to pay attention to the task as you are going along?

These observations and reflections from the student, coupled with standardised assessment results, can help create a detailed profile of the student's writing strengths and difficulties in order to inform intervention planning.

2. Cognitive Load Theory

Now that you have identified some areas of writing that require support, you may like to choose a range of tasks that focus on specific areas of writing instruction while reducing extraneous load so that students are freed up to pursue the discrete learning goal you have set with more ease. This is analogous to focusing on one part of the writing machine in detail while compensating for other parts. For a deeper insight into cognitive load, I recommend Oliver Lovell's LDA article at *https://www.ldaustralia.org/wp-content/uploads/2021/03/Lovell-Cognitive-Load-Theory-in-action.pdf?*. His book on Cognitive Load Theory has

been useful for my daily practice (Lovell & Sherrington, 2020).

Examples include:

- Spelling tasks that are completed at a single word level, focusing on a systematic, synthetic phonics approach that is implemented away from sentence and paragraph level demands.
- Teaching the meaning of conjunction words explicitly, then providing sentence starters for the student to use to reduce the load around idea generation. To reduce the load even more, students who are used to shape-coding may find shape prompts help them understand what type of word comes next (SHAPE CODINGTM, n.d.). (For more on shape-coding: *https://shapecoding.com/*)
- When teaching explicit grammar or punctuation rules, reduce cognitive load by offering multiple choice, sentence level questions to work through a student's understanding of the concept (this takes away the sentence generation and idea generation load while the student is trying to focus on grammar and punctuation). You can later add sentence generation back in but still reduce the load around idea generation by acting out the sentence (using a figurine or your own body), focusing on the student's ability to create an accurate sentence based on your actions (Hochman & Wexler, 2017).
- If you are developing a visual prompt to support the student, ensure it is as concise as possible and is on a separate sheet of paper. Colour can also help students use the visuals more intuitively if this is carefully planned; thoughtfully consider the layout, ordering and formatting of your visual (Rahmat, 2018). Once you have trialled the visual and made relevant changes based on feedback and observation, try to keep this visual the same until the student internalises it.
- Allowing students to use spellcheck or to dictate their writing (Microsoft Word can scribe, and so can you) can be a welcome relief for times that you wish to focus on idea generation, cohesion, and sentence generation (Matre & Cameron, 2022).

In between watching the student use their whole writing machine, take time to design smaller tasks that allow students to breathe easy in all the areas of writing except the one aspect you are focusing on. Often, students struggle to juggle the entirety of the writing process. Helping them increase competence with discrete aspects of writing supports their learning more quickly in focus areas and helps reduce the overall load of the writing process in the long term.

3. Visual structure

Provide visual structure at the conceptualisation (idea) stage to model to students how to break down a writing task. This is often the first scaffold I provide. Some examples include offering a planning grid, providing specific headings, offering a set paragraph structure like the famous TEEL, or showing a story mountain.

I prefer to offer this in a systematic way with as few words as possible. Here is an example for a simple recount. On the left, the big idea for the paragraph is stated. On the right, individualised prompts target key elements this student often misses in their recounts. If I wish to wean them off sentence starters, I might say, "Think of the most relevant 'thing word' (noun). Start your sentence with that."

Individualise the structure offered based on the student's preferences and needs. I try to keep it loose enough to be useful across a range of tasks, but tight enough that it captures the student's areas of weaknesses to get them to eventually learn to self-correct once the structure becomes internalised and automatic. At once, you can see that the template below could be used to write a letter to Nanna describing recent events, recount a historical event or develop a story.

Introduction	• Name/s • Time • Place
Problem	• Write place phrases/ time phrases clearly if they change
Thoughts and feelings	• Felt/ thought/ wondered/ pondered/ considered • Because • So
Attempts solution	• Write place phrases/ time phrases clearly if they change
Ending	• Felt • In the end/ finally/ at last/

These headings are similar to StoryChamps Level A Headings (Story Champs, n.d.).

4. Bite-sized explicit teaching

Offer learning around punctuation or grammar rules in bite sized pieces. It pays to bed down a concept with a range of tasks from simple to difficult before expecting the concept to generalise to larger pieces of writing.

When teaching the rules, provide a visual summary of the rule being taught. This may be something I laminate, and we use over and over until the student finds it easy to use the rule with ease. I sometimes eliminate elements and add them back in slowly if the student cannot manage all the content at once. On the next page is an example I used to support a Year 4 student with choosing which tense to use in response to a question. First, they have to identify the question type, then decide which tense to use in the written response. Keep in mind that the amount of content I have here was built up over a period of 6 months. This child has begun to generalise tense use in written expression depending on the task demands (science paragraph on a fox's habitat using present tense, or imaginative story using past tense).

5. Self-monitoring

"Half my life is an act of revision."

John Irving

Self-monitoring refers to a student's ability to check that what they have written is clear, conveys the meaning they want, and connects sufficiently with the reader to ensure that their written communication minimises misunderstanding. There are students who struggle with this skill for various reasons: They dislike writing, writing is so fatiguing that this skill is deprioritised, or they struggle to have confidence that

TENSE	Past (finished) i.e. Yesterday	Present i.e. Today	Future i.eg. Tomorrow
Type 1	**Regular** • -ed • (sounds like /t/, /d/, /ted/) • (Additional spelling rules must be considered for how to add '-ed' endings) • (subject) (verb)-ed… • e.g. jumped, closed	**Happening now** • sentence structures: – subject+is+verb+ing – subject+are+verb+ing I am +verb+ing • E.g., *The bird is flying. The children are playing. I am swimming.*	**Going to happen** • sentence structure: subject+will+verb • E.g., *They will go to the store.*
Type 2	**Irregular** • sentence structure: subject+past tense verb • E.g., She swam.	**Happens all the time** • sentence structures: – many subject+verb – 1 subject+verb+s • E.g., *Birds fly. The bird flies*	-
Question Type	Words to look for in the question: DID E.g., • Where ***did*** she go • What ***did*** he do? • When ***did*** they do that?	Words to look for in the question: IS/ARE/AM _____ING E.g., • What ***is*** Susie do***ing***? • What ***are*** the kids do***ing***? • What ***am*** I do***ing***? DO E.g., • What ***do*** birds eat?	Words to look for in the question: WILL E.g., • Where ***will*** Sally live? • What ***will*** Billy do?

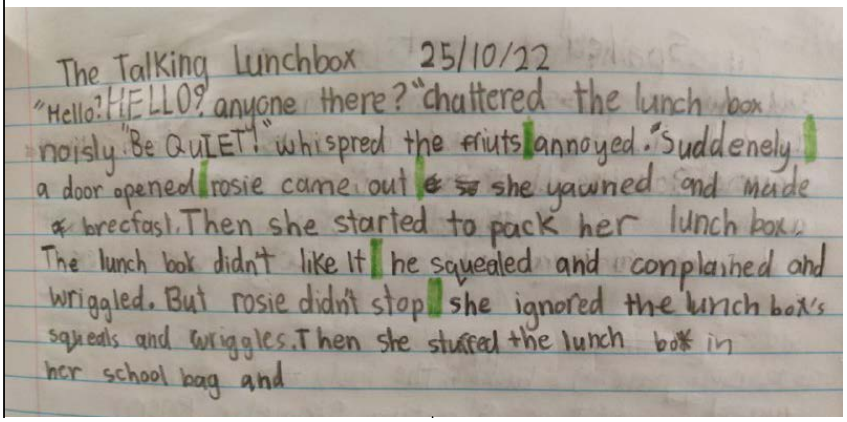
they will be successful editors of their own work (Cresswell, 2000).

When the student is focusing on sentence generation and getting their words onto paper, I do not interrupt them to correct spelling, punctuation, and grammar. When they reach a natural stop point, or the end of a paragraph, I encourage them to take a break, then have a read over what they have written to correct mistakes on their own. This gives them a chance to make self-corrections (Piamsai, 2020).

When correcting mistakes, try not to focus on correcting all possible mistakes in a paragraph if there are a large variety and number. Tell the student that we will focus only on correcting a selected type of mistake (pick one you have done explicit teaching on!). This can keep them focused and reduces the dread around editing for that session.

Once a student has sufficient learning, you may be able to highlight errors (where explicit teaching has already occurred!) and ask the student to think about that part of the sentence. This will give you a good idea on whether they are able to apply your explicit teaching and is one way of reducing the support around error correction. In short, one should also consider the amount of support you are providing within error correction, since the goal is for the student to become independent in this area.

In the image below, I have ignored the student's spelling errors in favour of pursuing her ability to self-correct comma use and comma splicing. Several lessons of explicit teaching on how to avoid comma splicing and how to fix this type of error were provided. I marked problem areas in green, for the student to correct. The student is aware that spelling is an issue, but that we are putting it aside for the time being.


The Talking lunchbox 25/10/22
"Hello? HELLO? anyone there?" chattered the lunch box noisly. "Be QuIET!" whispred the friuts annoyed. Suddenely a door openedrosie came out & so she yawned and made breafast. Then she started to pack her lunch box. The lunch box didn't like it he squealed and complained and wriggled. But rosie didn't stop she ignored the lunch box's squeals and wriggles. Then she stuffed the lunch box in her school bag and

6. Specific feedback

Some students may not have the insight to understand the functional impact that writing intervention may have. They may rely on you as a guide through a dense forest, while struggling through the tasks at hand. Specific feedback encourages students that they are making progress, but also alerts them to the direction you want them to keep going in. Specific feedback should support a student's self-monitoring and editing abilities by noticing

aloud when they are actively trying to use something they have learnt, even if they have not perfected it. In this way, specific feedback values not just the outcome of the writing, but the self-monitoring and editing process that is so essential to its success as well. Dawson et al. (2018) points out that students seek and benefit from feedback that is personal, explicable, criteria-referenced, objective, and applicable to further improvement.

Some examples include:

- I noticed your pen hovered extra-long over that word. I was very pleased to see you were thinking about the spelling since we have been working through the /ow/ sound together.
- I see how you have been thinking lots about apostrophes since we talked. These two are correct and you have marked the owners in these sentences, which is wonderful. Can you look at this third apostrophe for me and tell me why you chose it?
- I can see you rehearsing the rules we discussed to try to avoid comma splicing and I'm impressed that you have stopped to check your sentence. That is something new you are doing which you were not doing before.

7. Motivation and practice

Many students I have met struggle with anxiety and poor confidence around writing. This naturally leads to poor motivation, which explains why writing practice often goes uncompleted between intervention sessions. External motivation (rewards) may work to some extent, but fostering internal motivation is longer lasting and more productive (Lan, 2012).

Some quick thoughts on the matter:

- It is good to acknowledge that the student dislikes writing and that you are accepting of these feelings. I have noticed many students visibly calm down when I say, "I can see you dislike writing. I am ok with that and I don't feel any need to judge that. Writing is hard. Let's go slow together." Students often want to please us and feel the need to hide their anxiety in sessions, which often leads to them feeling more exhausted after the session and even less motivated. Knowing they can come to the session and acknowledge their feelings can lighten the load a little.
- Ask the student to rate their anxiety/ irritability/ distress at the start of the session and at the end of the session. Oftentimes, if well supported, students end up with a better rating at the end of the session and report feeling more confident. Reflecting on this helps them realise that the task was not as awful as they predicted. It can also be a valuable checkpoint for us to evaluate if tasks have been designed to be too hard!
- Choose topics that are of great interest to the student. If possible, allow them to self-select. I don't like cars, football or Pokémon, but many of my students speak knowledgeably and with great passion on these subjects.
- Choose formats that favour shorter written responses if the student struggles with stamina.
- The sessions must necessarily feel good to the student; otherwise, we risk reinforcing the connection between negative feelings and writing.
- Choose funny and sometimes outrageous writing prompts that support healthy venting: How my dog ate my homework/ why students should not have homework/ why handwriting is obsolete. The below example shows that children of speech pathologists (mine, at least!) are not exempt from homework angst.

8. Chat GPT

Chat GPT is a great way to reduce your preparation time. You can ask it to generate model essays or stories or provide writing prompts. For more examples, this ChatGPT prompt guide aligned with CESE NSW's "What Works Best" may be helpful: *https://usergeneratededucation.files.wordpress.com/2023/01/a-teachers-prompt-guide-to-chatgpt-aligned-with-what-works-best.pdf*

Examples of customisation include:

- You can ask it to generate text at a specific grade level
- You can specify the structure of the text
- You can specify the number of paragraphs
- You can ask it to produce sentences with specific grammatical elements you are teaching.

An example:

- Write a 5-paragraph persuasive essay at a Year 8 level with an introduction, 3 body paragraphs and a conclusion explaining why Batman is better than Ironman. Each body paragraph must have a topic sentence, an explanation, an example and a linking sentence.

9. Automaticity

Automaticity occurs when you have repeated something so often that you can do it without really thinking about it. For example, when you first learned to drive, it was clumsy and you had too much to think about (mirrors, gears, footwork). Right now, you probably chat or listen to music while barely considering when to do these things. Writing is also a complex process. The students you work with are like learner drivers who are trying to integrate a range of skills into a smooth process that varies with each use. That is to say: Students will need lots of practice at the small tasks before they can begin to integrate that learning into the entirety of the writing process. Give them time and support plenty of practice within their zone of proximal development to ensure that they have adequate opportunities to develop some automaticity around many individual skills (Bodrova & Leong, 1998).

Some evidence of automaticity developing:

- The student doesn't look up as often to use the visual grammar rule chart I have taught. Eventually, I can remove it.
- The student uses a spelling rule (k or

ck at the end of a word) with less time taken to decide which is correct.

- The student begins to use the punctuation rules I have taught in dictation.
- The student begins to use new rules/learning at a paragraph or essay level.
- The student is able to follow the visual structure of a persuasive essay in their head and can tell me which part comes next without looking at a visual.
- The student participates in the note-taking part of breaking down a task and planning with the intentional reduction of my support after many models and co-creation events.
- The student generalises something they have learned into a new context.

10. Pie Corbett was right: If you can't say it, you can't write it

Students who have difficulties with writing often don't enjoy writing practice. Yet, many of them need to get as much in as possible. I often encourage my high school students to go through the process of dissecting their ATAR English questions on paper, but once their planning grid is developed and they have a clear idea of what their essay might entail, I encourage them to say their paragraphs aloud instead of writing them. In one sense, I am asking them to replay and re-edit sentences at the thought/spoken word level. In another sense, I am asking them to consider how much clarity they can achieve quickly and efficiently in their heads before writing things down.

Many of my students write in streams of consciousness and lose clarity in their content because of this. Learning to say what you want to write can be a helpful exercise to practice saying things clearly, which can flow on to writing things clearly (Talk for Writing, 2021). It can also be an alternative method of getting enough sentence construction practice in. It helps students to rehearse following a process and structure in their heads without the labour of writing everything down, which is time consuming. It provides a chance to build automaticity around the use of essay structure. I find this practice particularly helpful for high school students who have tired hands, and who can be very time poor with multiple assignment deadlines.

To end, I leave you with no truer words than Thomas Mann's:

"A writer is someone for whom writing is more difficult than it is for other people."

There really is hope for us all.

About the author

Sara is a practicing speech pathologist of 15 years who enjoys working with school-aged children and adults to support their comprehension, reading and oral and written expression. She feels incredibly lucky to support people with learning difficulties in her private practice. She finds noticing misplaced punctuation on street signage is an occupational hazard.

Conflict of interest

The author declares that there is no conflict of interest regarding the publication of this article. She did not receive funding from public, commercial, or not-for-profit sectors to write this piece. Images have been used with permission.

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LDS 1203 07/24