

EDUCATION, ARTIFICIAL INTELLIGENCE AND DYSLEXIA

Dyslexia affects 1 in 5 children. Yet, despite its prevalence, schools in Australia are largely unprepared to meet the needs of these students. Many children start showing signs of dyslexia in preschool but without teacher knowledge, proper screening, and early intervention these kids can struggle with reading well into adulthood. Our present education system is failing these dyslexic students. And if we continue to fail these students, we will be failing the country. The Orton-Gillingham approach is a method of literacy instruction invented in the 1930s. It employs a multisensory focus that caters to each child's unique needs. By engaging a student's senses – auditory, visual and kinesthetic – these kinds of structured, sequential literacy programs help readers make meaningful connections between letters and sounds. When teachers are empowered with the right tools, students thrive. Teaching dyslexic students requires more than just following the curriculum. It's about making ongoing adjustments and understanding each child's unique needs. Dyslexia isn't going away – it's something children and adults will live with for their entire lives. But schools can ensure every child learns to read by adopting early screening and equipping teachers with the right tools to help their students. The sooner educators intervene, the more successful kids will be – not just in reading, but in life!

Education has always been a cornerstone of societal progress, yet achieving inclusivity remains a challenge. Inclusive education ensures that every student, regardless of ability, background, or learning style has equal access to learning opportunities. It's about recognising and celebrating diversity in the classroom, fostering an environment where all students feel valued and empowered to succeed. However, traditional methods often fall short. Educators struggle with large class sizes, limited resources, and a lack of specialised training. This is where AI tools step in, bridging the gap between diverse student needs and effective teaching practices. AI tools are revolutionising accessibility in education for students with disabilities. These tools leverage AI to provide support in areas like speech-to-text, text-to-speech, visual recognition, and personal learning, making education more inclusive and effective. AI-Powered tools can:

- generate customised learning resources
- adapt the difficulty of tasks based on student performance
- provide tailored feedback and support.

Governments have an obligation/responsibility to provide good quality education, facilities and services to all their people, including people who have dyslexia.

Human rights are a set of principles concerned with equality and fairness. It includes the rights to health, education and an adequate standard of living. And Governments are required to establish and maintain laws and services that enable all people to enjoy a life in which their rights are respected and protected.

Literacy is the foundation in our modern western society for success in education, work, and daily life. It encompasses the ability to read, write, listen, speak, and seek critical skills, that allow individuals to communicate, process information, and engage with the world around them. And employment ensures an adequate standard of living. For students with dyslexia, acquiring literacy skills can be particularly challenging and this will probably greatly impact their learning in various subjects, depending on their individual strengths and needs. These challenges can affect their confidence, engagement, academic progress and life outcomes. Understanding the specific difficulties that students with dyslexia face in literacy and implementing effective instructional strategies and support is essential for helping students reaching their full potential. A commitment to recognising neurodiversity and supporting inclusive, accessible and equitable education and employment for all is essential to improving productivity and Australia becoming the lucky country for all! Currently in Australian schools, dyslexia is usually not recognised, and this disproportionately impacts students who are Indigenous and/or live in poverty, as they go undiagnosed and without help. In fact, being illiterate and not knowing why, causes trauma which exacerbates the disorder and increases poor life outcomes. In Australia there is –

- Intergenerational illiteracy
- Intergenerational unemployment
- Intergenerational poverty
- Intergenerational trauma
- Intergenerational incarceration and
- Intergenerational suicide/Indigenous deaths in custody

What is the societal impact of dyslexia?

The struggles dyslexic students have with learning to read and write not only impacts them, but their parents, their schools and their communities. They also impact society, and they do so significantly. Learning disabilities are common but dyslexia is estimated to make up 80% of those students in learning support. It is thought that there are currently 824,000 dyslexic students in Years 1-12 in Australia. And it is estimated that there are currently 5.4 million people living with dyslexia in Australia. These figures should not be surprising, as 44% of Australian adults do not have the literacy skills needed for everyday life. Addressing the issue of dyslexia would not only give those people living with dyslexia a better life, but also create a better and more productive country.

The human cost of not addressing the issue of dyslexia is not simply a concern for the education system, as studies indicate a strong connection between dyslexia, illiteracy, academic under-achievement, substance abuse, unemployment, homelessness, mental health issues, incarceration and suicide.

In June 2025, there were approximately 985,000 Australians living in poverty on unemployment payments, including Jobseeker and Youth Allowance Jobseeker. This equates to 6.4% of the Australian Labour Force. ABS statistics puts the unemployment rate in Australia at 4.3% or 639,500 Australians, but this does not include youth unemployment (16-21year-olds). There has been an 8.5% increase in the number of Australians on unemployment benefits in the past 12 months.

The economic cost of not addressing the issue of dyslexia is significant and can be measured in Australia's lost labour and productivity and increased costs in education, mental health services, social services, unemployment benefits, public safety and the criminal justice system. Over a lifetime this can add up to millions of dollars per individual with very little positive outcomes.

Countries from around the world following current research have been making good progress with dyslexia reforms in both schools and communities. But I have not generally found the same in Australia. While some schools/institutions appear to be doing better than others, I have found that many dyslexia myths, scepticism and attached stigma, are still prevalent.

The most common reason for illiteracy in Australia is dyslexia. And the most common cause of unemployment, poverty and incarceration is illiteracy.

Dyslexia was first proposed by Dr Rudolf Berlin in 1887 as a reading and language disorder, which is characterised by an impaired ability to understand written or printed words. As a Nation, we in Australia have not come very far in engaging with dyslexic students, as a priority. We do not routinely screen for dyslexia in schools, so we do not know who has dyslexia and how best we can serve them. In other English-speaking countries (USA, Canada, UK), where children are routinely screened for dyslexia at school, it has been found to be approximately 20% of the population. Unlike other countries, the term dyslexia is not used in Australia, unless you happen to be born into a dyslexic family, which has informed and critical knowledge of how to overcome the difficulties of dyslexia and succeed in life.

In Canada screening has found that 45% of the Indigenous Inuit population has dyslexia. In Australia figures are not available, but I suspect the number of Indigenous Australians with dyslexia would be similar.

- Their ancient languages were not written down and being dyslexic had no adverse consequences and the condition was simply inherited and multiplied.
- For over 200,000 years humans communicated only through speech and memory. They have only been using symbols and written language to communicate for the past five thousand years, and in Australia only the last 200 years.
- Traditionally, before European arrival, Aboriginal languages were passed down through oral traditions, including storytelling, songs and ceremonies.
- Dyslexia did not pose a real problem until written language was widely used. Increasingly people with dyslexia are being discriminated against in the modern world as the use of written communication is becoming ever-increasingly dominant.

What is Dyslexia?

- Dyslexia is the most common cause of reading, writing and spelling difficulties. In Canada, where students are screened for dyslexia, they found that 80-90% of children in learning support had dyslexia. It generally affects 10-20% of the population, although this differs within and between countries. Today dyslexia is estimated to affect approximately 1 billion people worldwide.
- Australia's estimated population (2025) is 27 million, and we would therefore expect 20% of that number (5.4 million) people living in Australia, to have mild to severe dyslexia. This number is surprising, as in Australia there is often a general expectation that people can read and write without problem.
- Unfortunately in Australia, children with dyslexia who perform badly in written testing at school are categorised as having **SLD** (Specific/Significant Learning Difficulty/Disability) or **LD** (Learning Difficulty). This umbrella term is used for all students who experience literacy difficulties, despite the fact that dyslexic children have average or above average intelligence.
- Dyslexia is an inherited neurobiological condition which makes learning to read and write very difficult. It is inherited via a dominant gene on the X chromosome and multiple other genes. If one parent has dyslexia, then we would expect 50% of their children to inherit dyslexia.
- The brain in dyslexic children is structured differently from birth, and thus functions differently from non-dyslexic children. In most dyslexics the right side of the brain is used for language processing, unlike non-dyslexics who engage the left side of the brain. The left side of the brain is considered the dominant one for language processing and is usually responsible for reading, writing and maths.
- Whereas the right side of the brain plays a key role in visual-spatial processing, creativity and emotions. It's often associated with intuition, imagination and interpreting non-verbal cues. The right brain helps you decode the meaning behind someone's posture, facial expressions and other physical cues. It is also involved in recognising and appreciating musical rhythms and patterns.
- This creates learning difficulties at school for children who are dyslexic, as they learn best in multi-sensory ways, not written.
- Often with the aid of a behavioural optometrist and multi-sensory tuition, children with dyslexia can be taught to read and write. But unfortunately, it usually remains difficult for most.
- It is therefore no surprise that very few students with dyslexia manage to go to University, regardless of the fact that they are of average or above average intelligence, and have lots of abilities including creativity. This may change with improvements in technology and AI, helping people with neurodiversity.
- Many people with dyslexia, especially those from higher socioeconomic groups, go on to live very successful lives. 40% of all self-made millionaires are dyslexic. But usually dyslexia is associated with poor academic, economic, vocational, health and stress-behavioural problems and outcomes.
- Often people who have **dyslexia** also have **dyscalculia** (40% of dyslexics can't do maths and this affects their ability with money/finances) **dysgraphia** (a neurological learning disability that affects a person's ability to write and express ideas on paper) and **dyspraxia** (affects motor skills and co-ordination-developmental coordination disorder DCD) These conditions can also coincide with ADHD, ODD and Autism etc. Understanding and supporting individuals with the 4D's is essential for fostering an inclusive and effective learning environment.
- Dyslexia is recognised in Australia under the Disability Discrimination Act 1992 and under the Human Rights Commission. (It is not covered by NDIS and need not be)
- Prisons in the UK have found approximately 70% of inmates could not read or write and struggle with numeracy skills. In Australia it is estimated that 60-80% of prison inmates are unable to read or write.
- Globally people with dyslexia are being underserved - educationally, socially, economically and politically. Dyslexia is associated with poor academic, economic, vocational and health outcomes.
- Many dyslexic children experience low self-esteem due to constant struggles with academic performance. They can also often experience stress and anxiety over their academic struggles, leading to social isolation and loneliness.
- Dyslexia is not a developmental condition, although dyslexic children who suffer trauma in their early years will also usually have developmental issues, which will affect their learning outcomes.
- Some countries have passed a series of legislation to promote better identification of people with dyslexia and to protect their rights in education, employment and access to public services.

EARLY SCREENING/IDENTIFICATION, AND SUBSEQUENT INTERVENTIONS FOR CHILDREN WITH DYSLEXIA MITIGATES POOR OUTCOMES AND DRAMATICALLY IMPROVES POSITIVE LIFE RESULTS

1. Increase public awareness and acceptance of dyslexia, disseminate current knowledge of dyslexia to educators, policymakers, and especially parents of children with dyslexia

- Dyslexic students in Australia are generally not recognised as dyslexic in the education system and finding out your child may have dyslexia can be scary, but it's better to know when there's so much you can do about it.
- School halls are a great place to get started and engage the local community.
- Dyslexia brochures (these should also be in audio format for dyslexic parents).
- Material on school website should also be in audio format.

2. Screen all students in all schools for dyslexia (typically Year 1)

- Early identification and treatment are key to helping individuals with dyslexia achieve in school and in life.
- Dyslexia can easily be tested online for free on platforms like [lexercise.com](https://www.lexercise.com). It takes about 5-10 minutes on a computer and can easily be administered by a teacher's aide.
- In Germany students are genetically tested for dyslexia
- A more comprehensive/expensive educational psychologist report is usually not needed, as all dyslexic students can learn to read and write using a multi-sensory tutoring program. Some schools are already using these programs.

3. Provide interventions/support/accommodations for all dyslexic children

This would include -

a) Behavioural optometrists

- For students who are having vision problems. May be covered by Medicare?
- Some countries (Canada) offer tax deductions for dyslexia interventions/support and allowances for those on income support.

b) Psychologists for students who have experienced trauma

- Get mental health care plan from GP and use Medicare system

c) Multisensory tutoring programs (Easyread, Orton-Gillingham, Betsy Sewell, Davis etc)

- We already have literacy departments in schools who can facilitate this
- Easyread is a not-for-profit organisation and has an impressive 100% success rate in teaching literacy online. It can also diagnose some reading issues like tracking. It uses a new approach called trainertext, visual phonic cues which helps the child progress in 15 minutes per day. It is a neurological view of reading and spelling and amazing results can usually be seen in weeks.

d) Access to technology, internet, mobile phones, AI etc

- Using accommodations to bypass the writing weaknesses so that students can produce written assignments etc using voice dictation software, reading pens etc
- Students living in poverty will need special access to technology, phones, internet and AI etc
- AI can be a game changer for dyslexic students

4. Provide mentors and vocational/employment pathways at end of schooling

- Schools already have careers advisers who could facilitate/implement this at the community level.

Costs of interventions for dyslexia are minimal

\$1,000 if need behavioural optometrist

\$2,000 1 on 1 multisensory tutoring (most schools could accommodate this in their literacy support program)

\$1,000 for personal laptop

\$1,000 for internet plan/subscriptions to relevant AI

This \$5,000 could be tax deductible for parents who work and paid as an allowance to those on income support. It is a one-off payment except for annual \$1000 internet/subscriptions for those on income support

Costs of supports that are failing

In the USA, schools collectively spend over \$120 billion a year on special education (80% made up of dyslexic students) And the cost of educating a student in special education has been calculated at approximately \$40,000 per year and in general education at \$20,000.

In Australia dyslexia students are usually also located in special education classes, making little progress and they usually stay in special education classes until they drop out around year 10 (2024 School attendance rates in year 10 Indigenous 65% Non-Indigenous 85%)

If we calculate the additional special education costs to government for a dyslexic student at approximately 10 years x \$20,000 = \$200,000 additional costs to the Education Budget.

If we then go on to calculate unemployment costs of a person with dyslexia 50 years x \$20,000 = \$1,000,000.

Incarceration costs in ACT are approximately \$200,000 per inmate per year, and recidivism rates are 90%.

Even just 10 years x \$200,000 = \$2,000,000. And we haven't even started on mental health costs etc

AI's potential to transform education is boundless, making inclusivity not just a goal but a reality!

AI tools are revolutionising accessibility in education for students with disabilities. These tools leverage AI to provide support in areas like speech-to-text, text-to-speech, visual recognition, and personal learning, making education more inclusive and effective. AI-Powered tools can:

- generate customised learning resources
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Understanding dyslexia: why early diagnosis and intervention matter

Teaching dyslexic students requires more than a curriculum – it takes early school screenings and access to science-backed reading instruction.

In the USA 40 States are now enacting literacy and dyslexia bills mandating screening, evidence-based literacy strategies, interventions, and resources for young readers. In the USA a national network of parent-led movements has also been set up to raise dyslexia awareness and inform policymakers on best practices for identifying, remediating, and supporting students with dyslexia. It was clear that too many families were being left in the dark, unaware of the crucial importance of early identification and appropriate interventions, and how to advocate for their children effectively.

The biggest misconception about dyslexia is that it's rare. In fact, nearly 1 in 5 learners may have some degree of dyslexia. Yet, despite its prevalence, schools in Australia are largely unprepared to meet the needs of these students. The US National Council on Teacher Quality found 60% of Teacher Training Programs spend less than 2 hours total on dyslexia. Research shows that if students have access to scientifically backed reading instruction, over 90% of them could become proficient readers. Many children start showing signs of dyslexia in preschool but without teacher knowledge, proper screening, and early intervention these kids can struggle with reading well into adulthood.

How can AI contribute to creating inclusive education environments?

1. personalised learning
2. language translation and accessibility
3. assistive technologies
4. early intervention
5. reducing bias

Top AI Tools for Inclusive Education January 2025 autogpt.net

AI Tool	Key Features	Who It Helps
Kahoot!	Gamified learning platform with customizable quizzes for diverse learning styles	Students of all abilities
Microsoft Immersive Reader	Text-to-speech, translation, and simplified reading modes for accessibility	Students with reading difficulties
Grammarly	AI writing assistant for grammar and clarity	ESL students, students with learning disabilities
Speechify	Converts text to audio in natural voices	Visually impaired students, auditory learners
Classcraft	Behaviour management and engagement through gamification	Teachers managing diverse classrooms
Otter.ai	Real-time transcription for live classes	Hearing-impaired students
Duolingo	Language learning tailored to user proficiency	ESL students
Quizlet	Flashcards and quizzes with adaptive learning options	Students with varying learning speeds

How to select the right AI tool

1. Understand classroom needs
 - language barriers/learning disabilities?
2. Set clear goals
 - engagement, accessibility, or content mastery
3. Evaluate features
 - tools with functionalities that directly address your goals?
4. Consider budget
 - free/or subscription
5. Trial period
 - Many AI tools offer free trials/test with small group

By choosing the right tools, educators can unlock the full potential of their classrooms and create truly inclusive learning environments.

How to implement AI tools for inclusive education

Step 1. Identify student needs

Step 2. Choose the right tools

Step 3. Train staff

Step 4. Monitor and adjust

Step 5. Promote equity –ensure all students have access to the necessary devices and internet connectivity.