



# Vision Therapy

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# Why Some Children Struggle to Read, and How You Can Help Them

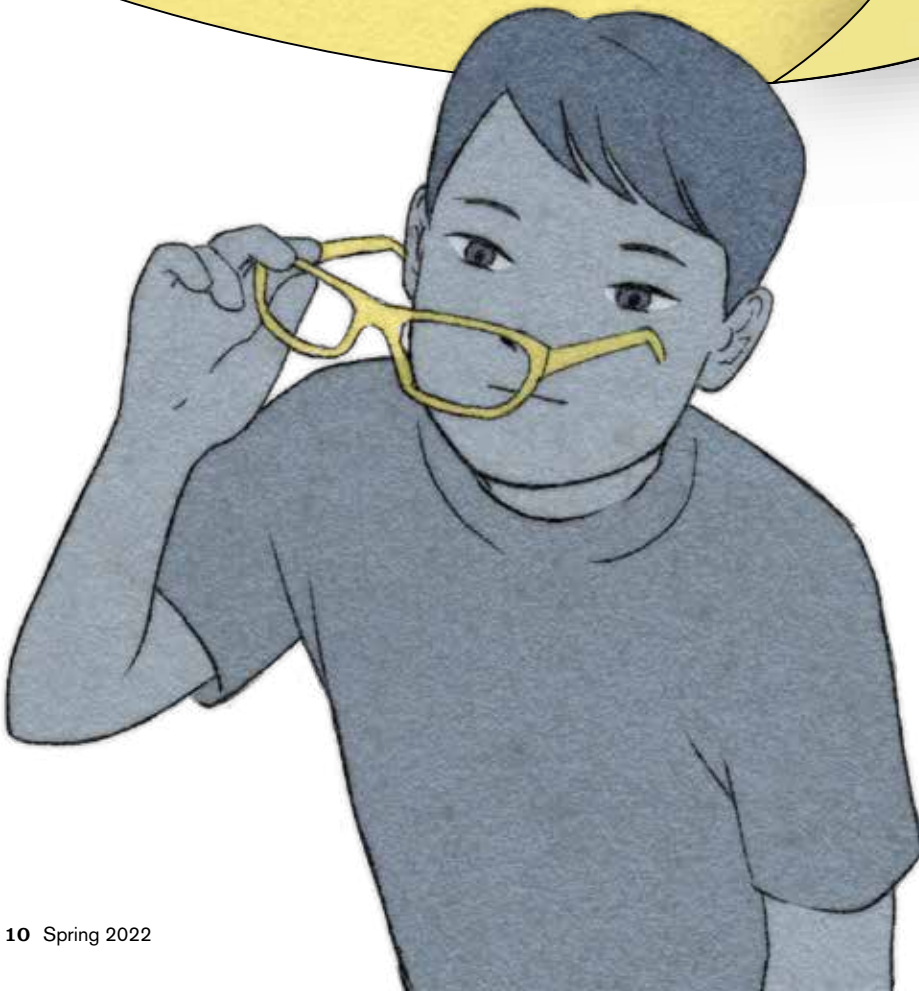
Guiding education leaders in the age of concussions and IEPs

By Dr. Patrick T. Quaid and Jenny Lee Fountain

Illustration by Taryn Gee

## Why do so many bright and articulate children struggle to read?

W.B. Yeats famously stated, “Education is not the filling of a pail, but the lighting of a fire.” Teachers and administrators understand that the development of strong literacy skills is necessary for all students. The ability to read and decode is a foundational skill for all subjects and disciplines. Education stakeholders continue to invest heavily in reading. We want our students to be confident and fluent decoders of the printed word. That is why school boards continue to invest financial resources in professional development opportunities for staff, while dedicated teaching professionals and administrators spend endless hours honing their craft with the latest research-based pedagogy and effective practices.





“Our brain’s neural machinery dedicates a full 40 to 50 per cent to visual processing alone.”

In the elementary years, primary and junior teachers are typically the first to notice that a student may struggle to concentrate and participate at grade level. When that happens, there is the usual checklist to consider. Do they need glasses? How is their hearing? Are they eating well? How is life at home? Are they making friends? We associate the challenges of reading with the need for glasses. Yet, some children may still despair when trying to read, even with their specs. How can this be? After all, we’ve corrected their eyesight.

We think of learning occurring by various combinations of seeing, hearing and doing. While our auditory and kinetic learning channels are certainly vital, our brain’s neural machinery dedicates a full [40 to 50 per cent to visual processing alone](#). That means, to process visual information, we need not only eyesight, but vision. Visual skills are more than just 20/20 vision. A student may have 20/20 vision, or wear glasses to successfully see a board or screen far away, or a book up close. But they still may not be able to read.

So, what is missing? Vision is a much more complex function in the body than most of us realize. It involves at least 17 visual skills that allow the brain to correctly interpret what it sees. One of these critical skills gives our eyes the ability to work together to focus on something up close and also to focus out to see at a distance. This process of our eyes moving together is called “eye teaming.” When eye teaming works, a student can read words on a page consistently and clearly. The brain then processes the information successfully, remembers it, and can recall it. When eyes do not synchronize well, the words may appear blurry or double, or even look as if they are jumping around.

All this may seem normal to children who are just learning to read. After all, how would they know words should not be blurry or appear to jump around the page? They may conclude that reading is hard, frustrating and even painful. It then becomes a task that they try to avoid. The joy of reading changes into the dread of words. Classroom reading and homework become a pitched battle. Children may become agitated and distracted, and their self-esteem tanks.

## Eye Exam Ages

- At six months of age, children should have their first eye exam.
- Between ages two and five (at a minimum), children should have a second eye exam and ideally annually after their first six-month exam.
- After the exam at age five, a registered Doctor of Optometry should check the child annually thereafter to ensure good eye health and appropriate developmental progress.
- Referral for an in-depth visual skills assessment and visual processing assessment can be made to a Doctor of Optometry with advanced training in Optometric Vision Therapy (i.e., FCOVD designation) at any age by the child’s regular eye doctor.
- FCOVD Fellowship-trained doctors can also be found directly by parents or educators through a search at [covd.org](http://covd.org).
- Similar to occupational therapy or physiotherapy, optometric vision therapy is not covered by OHIP, but it may be covered by private insurance; parents or guardians should check with their insurance plan.



## Supporting all Students and Families in Eye Care

- To find a general optometrist in your area, visit the [College of Optometrists](#) website and search by postal code.
- For more in-depth assessment and support for eye teaming and eye focusing, go to [COVD.org](#) and use the “Locate A Doctor” link (ensure you select the “board certified” check box).
- In Ontario, [OHIP](#) covers yearly eye exams for patients under 20 years of age, and major eye examinations for patients with medical conditions that affect the eye, such as diabetes.
- Students may take part in a vision screening program at some schools, but a routine eye exam done by a licensed Doctor of Optometry is recommended as a starting point.
- Parents and educators can review *Effectiveness of Vision Screening Programs for Children Aged One to Six Years*, published by Public Health Ontario.
- A study on [Canadian IEPs](#) speaks to how eye teaming and focusing issues are connected to reading difficulties.
- *Learning to See = Seeing to Learn*, a book written by both doctors and educators, discusses visual skills and how they pertain to reading success in children.



“Doctors show the child how to use their eyes properly as a team, helping them with tools such as lenses and prisms where appropriate, and reinforcing this program with home-based therapy.”

At this point, a child may be labelled with attention deficit disorder (ADD) or [attention-deficit/hyperactivity disorder \(ADHD\)](#). But take away the books, and many of these children may impress you with what they know on an oral test. Thankfully, with differentiated instruction, teachers are aware of the individual differences between students. The educator may even attribute the child’s challenges to developing a dominant auditory or kinetic learning channel over the visual pathway.

So, how can schools help? We know that one answer has been to create an individual education plan (IEP) for the student. An IEP process identifies the child’s strengths and challenges, then makes individualized accommodations or modifications to learning expectations to encourage success. But what if, rather than only developing an IEP, that child could successfully learn to use their visual learning channel as well? Over their lifetime, how would that child – and society – benefit if they could reach their full potential by reading well? How would that change their self-confidence and life journey?

To answer that, we begin with some of the causes. First, why do some children lack the visual skills that others seem to master quite quickly? What causes our eyes not to “team” well?

Among some of the possibilities are developmental risk factors, including prematurity over three weeks, or a [birth weight lower than five pounds five ounces](#), which is typically associated with gross motor, fine motor and/or other developmental delays. However, [research shows](#) that in children between ages six and 16 who have IEPs, up to half have no identifiable developmental risk factors but instead



have a history of at least [one significant reported concussion](#), and that [pediatric concussions](#) are chronically under-detected overall.

As a result, what may appear to be a drop in grades or a more frustrated child in the classroom may actually be a child struggling with a brain injury. As an example, children (and adults) who experience a concussion may lose that eye teaming skill. Following a stroke, individuals may need to relearn skills such as walking or fine motor activities. Likewise, when concussed, a person may need to relearn the skill co-ordinating their eyes as a team so they can read comfortably and successfully.

Educators familiar with training about concussions may already be aware that these may occur even if the individual does not lose consciousness. While some concussions are dismissed as mild traumatic brain injuries (mTBI), this does not mean that there is no injury. Mild means “no obvious positive findings on conventional neuroimaging” (for example, CT/MRI). This “normal result” does not measure the severity of potential neurological functional consequences of concussion. One can have significant functional problems such as ringing in the ears, double vision, blurred vision, neck pain and sleep disturbances, yet have a “clear MRI.” While superficial bruising on the skin is not usually a debilitating condition, the bruised brain tissue in any concussion can be devastating.

Assessing if a student needs glasses is critical, but it is not enough. Measuring a student’s visual acuity (eyesight) has been shown in research to be a poor predictive visual metric of academic performance. [Ontario-specific research](#) shows that testing dynamic visual skills (such as eye movements and eye focusing) is more predictive of academic performance. Since 82 per cent of IEPs are primarily for reading, it is essential that any eye teaming problem is resolved.

Testing is available to identify children heading for academic issues as early as Senior Kindergarten to Grade 1 in the form of a visual skills assessment (both an oculomotor and visual processing assessment). It would be helpful to add to the educator’s toolbox the recommendation for a visual skills assessment. These tests benefit students who consistently struggle with reading and writing, and can be done by optometry professionals certified by the College of Optometrists in Vision Development (COVD) who carry an FCOVD accreditation. More information can be found at [covid.org](#).

In eye care, optometrists use both subjective and objective tools that, when used properly, can be powerfully effective. One objective test observes how the child’s eyes move inward toward the nose (converging), a skill vital for all nearsighted tasks, including reading. Try taking a pen and ask a child to follow it toward their nose. This



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“Just as air, heat and fuel are vital for a fire to burn bright, the senses of hearing, speech and vision are building block components in education.”

exam can often show very quickly that the child’s eyes cannot team together. When reading, we should be able to comfortably move the eyes inward to within about three inches (eight centimetres) from the bridge of our nose (about the length of a credit card from the bridge of the nose). [This example](#) is one of some 15 different objective tests that can be done.

#### How Do We Train, or Retrain, the Eyes to Team Together?

Optometric neuro-visual rehabilitation, also known as “vision therapy” or VT, trains developing brains how to use eyes properly by using tools such as lenses, prisms and optometric biofeedback techniques using a variety of exciting approaches. This is explained more fully by a pediatric eye doctor in [Learning to See = Seeing to Learn](#) and by a pediatrician in [Vision and Learning](#). The main goal of VT is essentially to give control of the visual system back to the child. After all, concussion affects the brain, and if approximately half of the brain’s neural machinery is visual, it makes sense that there would be a “top-down” effect. In essence, the brain can lose the ability to control eye teaming and focusing in a manner that glasses cannot fix.

The saying “nerves that fire together wire together,” by Dr. Donald Hebb, a Canadian psychologist, is the primary underpinning of vision therapy. Doctors show the child how to use their

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eyes properly as a team, helping them with tools such as lenses and prisms where appropriate, and reinforcing this program with home-based therapy. Over time and using repetition with home therapy reinforcement, the child can reach the goal of becoming independent of the therapist/doctor. As the visual skills come online and improve, this usually moves the child's visual abilities and confidence in a positive direction – in fact, [studies funded by the National Institutes of Health \(NIH\)](#) have already shown this to be the case.

When executed by an appropriate team, VT can be highly effective, setting a child on a positive learning trajectory. A 2002 report funded by the [Learning Disabilities Association of Canada](#), written and researched by the Roeher Institute, estimated that in 2013, one in 10 students in Ontario would have an IEP in place, and this has now risen to about two in 10 – likely still a very conservative estimate. The report further estimated that children with IEPs will earn on average \$1.98 million less than their peers over their working careers, and that each IEP carries a cost to the family and the system of over \$500,000 from Grade 1 to the end of high school. Given these observations and the immense personal impact on the child, uncovering and solving any potential neurosensory issues underpinning IEP cases is an issue that deserves attention, regardless of the underlying cause.

W.B. Yeats was right; education is indeed the “lighting of a fire” – but we must ensure that all barriers to lighting this fire are removed. Just as air, heat and fuel are vital for a fire to burn bright, the senses of hearing, speech and vision are building block components in education. As such, for children with sight, we must ensure that vision – a significant sense – is thoroughly checked in terms of visual skills and visual processing abilities in children with IEPs. “Equality is everyone having shoes; equity is everyone having shoes that fit.” This same approach to vision is not only common sense, but highly justified, given the 2013 peer-reviewed [research by Quaid and Simpson](#) showing that at least 83 per cent of children ages 6 to 16 years old with IEPs, and at least [69 per cent of adolescents who have experienced concussions](#), have at least one central area of deficiency in visual skills abilities. The importance of vision in reading is further reinforced by the January 2022 Ontario Human Rights report entitled [The Right to Read](#), which states clearly that vision (not eyesight) must be assessed properly, a point which is often overlooked in the arena of visual skills and visual processing deficits. If you ask me, it is time to “see beyond 20/20” when it comes to education. ▲

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## Family/Student Support Programs for Eyeglasses

The [Eye See...Eye Learn® Program](#) provides one pair of glasses per child in any Junior or Senior Kindergarten program, courtesy of participating optometrists as well as corporate partners Essilor Vision Foundation Canada and Modern Optical Canada.

As a non-profit committed to eradicating the global vision care crisis, [OneSight](#) will provide free glasses through a voucher program, once a patient's visual and financial needs have been confirmed by a non-profit organization, such as a school.

Those receiving income support from the Ontario Disability Support Program may be able to receive assistance with the cost of prescription glasses through the [Vision Care](#) benefit. The individual's support program office can provide a form for an optometrist or optician to fill in when the individual gets glasses, frames or repairs.