



Irlen Syndrome Toolkit

What Educators Need to Know About Irlen Syndrome





Prepared by Empowered Learning Trust 2017, with information from the
Irlen Syndrome Foundation

Contents

How to use this toolkit.....	4
What is Irlen Syndrome?	5
How can you Identify Students at Risk?	6
Symptom Triggers	7
Impacts on the body	9
Solutions: Coloured overlays/tinted lenses	11
Classroom Modifications.....	13
Who has Irlen Syndrome?	14
The Research	15
About Empowered Learning Trust.....	16
Our Irlen Screening work.....	17
References.....	18

How to use this toolkit

This toolkit is intended for anyone working or assisting children in academic environments. The kit includes:

- ❖ Background information you need as educators to understand and assist students with Irlen Syndrome
- ❖ A pre-screening questionnaire to quickly identify students at risk
- ❖ Tips for the classroom and at-home modifications
- ❖ Tools to explain Irlen Syndrome to other students or educators in your school

Quick Facts:

1

Irlen Syndrome affects around 15% of the population and up to 46% of students with learning and reading difficulties

2

Slow or inefficient reading, poor comprehension, light sensitivity, or expression of strain or discomfort when looking at print are all key indicators

3

Irlen Syndrome is not remediated through reading intervention, reading practice, or other standard methods of teaching

What is Irlen Syndrome?

Irlen Syndrome is a perceptual processing difficulty. A perceptual processing difficulty when the brain has a problem making sense of information taken in through the eyes.

This is different from problems involving sight or vision. Perceptual processing difficulties affect how visual information is interpreted by the brain.

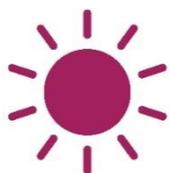
Irlen Syndrome is hereditary and runs in families, affecting males and females equally.

However, an individual can acquire Irlen Syndrome as a result of illness, medical procedures, or head injury.

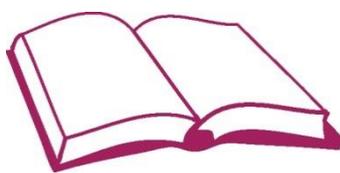
Like Autism, Irlen Syndrome is a spectrum disorder, falling on a continuum from slight to severe. Individuals who can read or perform visually intensive activities for 40-60 minutes before any Irlen Symptoms appear are on the slight end of the spectrum. These individuals can manage most academic tasks without difficulty

But when endurance is required their performance may deteriorate. Individuals with severe Irlen Syndrome will experience symptoms within 20 minutes of beginning to read. For some, symptoms may not begin immediately; however, symptoms will get worse the longer the student continues to read.

There are a variety of different symptoms that students with Irlen Syndrome experience. The most common are:



Light Sensitivity



Reading problems



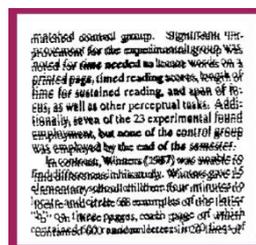
Attention and concentration problems



Strain & fatigue



Problems with depth perception



Print or environmental distortions



Headaches & Migraines

How can you Identify Students at Risk?

A simple self-test can be administered to individuals or groups of students. Any students answering “yes” to 3 or more questions may be at risk for Irlen Syndrome and should have a formal screening by a certified Irlen Screener.

Short Self-Test for Irlen Syndrome

	YES	NO
Do you skip words or lines when reading?		
Do you reread lines?		
Do you lose your place when reading?		
Are you easily distracted when reading?		
Do you need to take breaks often?		
Do you find it harder to read the longer you read?		
Do you get headaches when you read?		
Do your eyes get red and watery while reading?		
Does reading make you tired?		
Do you blink or squint?		
Do you prefer to read in dim light?		
Do you read close to the page?		
Do you use your finger or other markers to read?		
Do you get restless, active. Or fidgety when reading?		

Three or more “yes” answers suggest a student should be screened for Irlen Syndrome. You can find an Irlen screener by contacting Empowered Learning Trust at empoweredlearning@xtra.co.nz or visiting, www.irlen.com

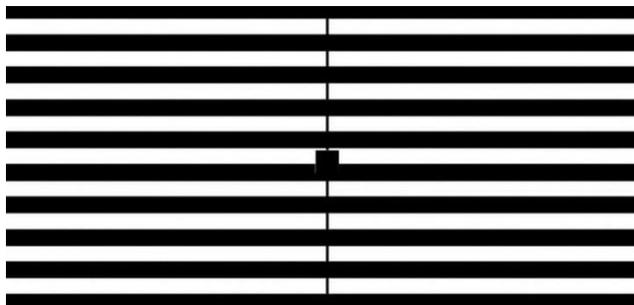
Symptom Triggers

Irlen Syndrome symptoms are triggered by the environment. Here are some of the things that can cause problems for individuals with Irlen Syndrome.



Bright or fluorescent lighting

Bright lights, and particularly fluorescent lights (like the ones used in classrooms), are particularly problematic. Individuals with Irlen Syndrome will often prefer to read in dim or low-light conditions. Bright lights will trigger symptoms to appear sooner and task the brain more, making academic tasks more difficult.



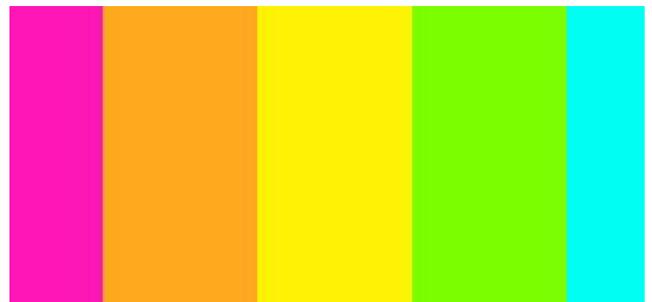
Patterns and stripes

These items often become distorted for individuals with Irlen Syndrome, moving and changing as the individual looks. The distortions that often accompany patterns and stripes can create physical symptoms, such as stomach aches and nausea.



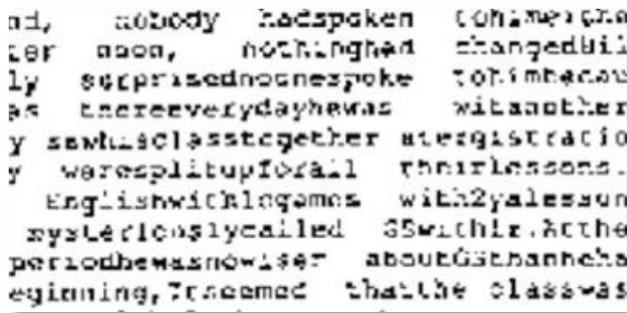
Glare

Glare off of glossy, white textbook pages, whiteboards, computer screens, and ipads is often painful for individuals with Irlen Syndrome



Bright or fluorescent colours

These colours tend to be particularly offensive to individuals with Irlen Syndrome. Looking at these items can cause physical pain or discomfort. Printing important assignments on brightly coloured paper can ensure that students won't read them!



Details

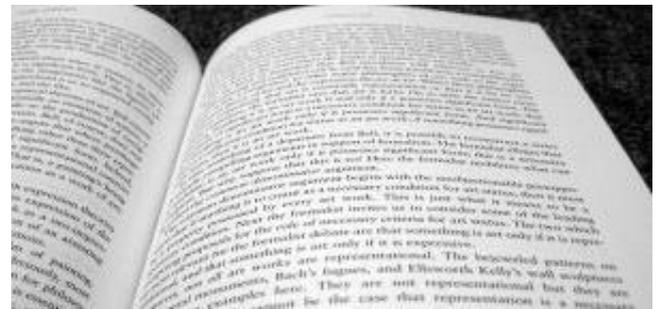
As with patterns and stripes, images with lots of details can often become distorted, and then become uncomfortable to look at, and difficult to decipher.



Sustained attention

The longer the individual tries to read or attend to material, the worse symptoms get and the more difficult and more painful things become.

A variety of activities can trigger symptoms of Irlen Syndrome. Looking, listening, reading, math, writing, copying, computer, TV, movies, and other visually-intensive activities place demands on the brain that it cannot accommodate successfully. Depending on how severely the student suffers from Irlen Syndrome, symptoms may begin to immediately or may take a period of time to build.



Lots of print on the page

The more print that appears on the page, the more difficult the page is to read, and the more likely it is to cause distortions.

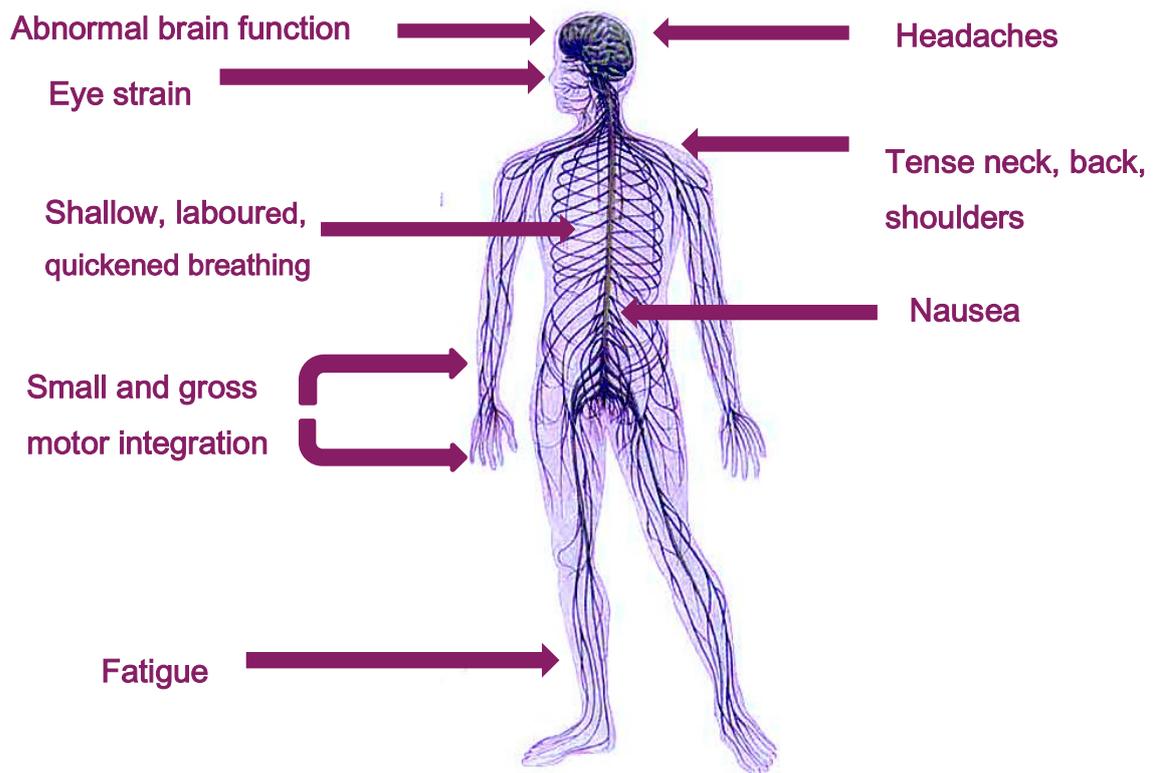


Print size, Style and format

Fancy fonts may look good to the average student, but to a student with Irlen Syndrome, ornate fonts, serif fonts, and small text make reading infinitely more difficult.

When either the environment or visually-intensive activities put stress on the brain, it results in changes in the brain chemistry and changes to the nervous system. These changes impact cortisol, serotonin, dopamine, and hormone levels that lead to the learning, reading, emotional, and behavioural issues often associated with Irlen Syndrome.

Impacts on the body



Systemic Impact:

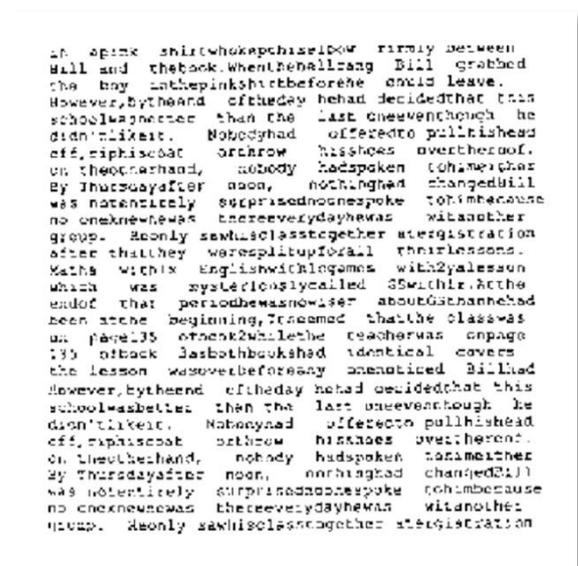
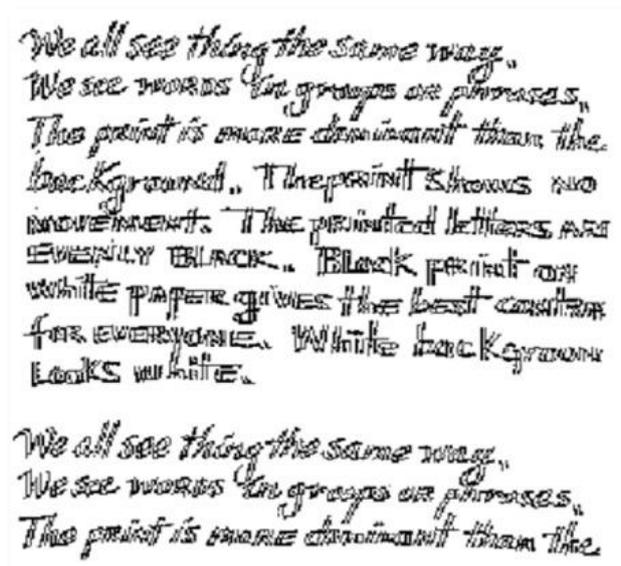
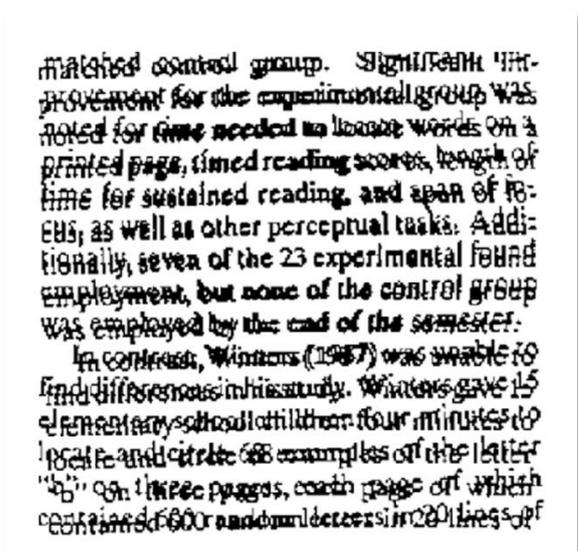
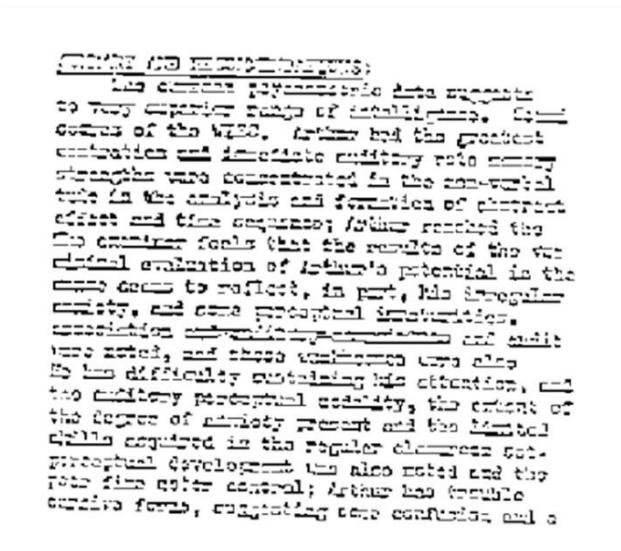
- ❖ Autonomic Nervous system imbalance
- ❖ Immune system suppressed
- ❖ Endocrine system imbalance
- ❖ Emotional, behavioural, psychological implications
- ❖ ADHD
- ❖ Depth perception & sensory integration affected
- ❖ Sleeping difficulties
- ❖ Visual fragmentation



In Summary, Irlen Syndrome is.....

- ❖ A problem with the brain, not the eye
- ❖ Difficulty processing visual information
- ❖ Usually hereditary
- ❖ Sometimes acquired via injury, illness, medical procedures (e.g. concussion)
- ❖ Not gender biased
- ❖ A spectrum disorder, falls on a continuum from slight to severe
- ❖ Recognised by a variety of symptoms including light sensitivity, difficulty reading and attending, strain and fatigue, headaches and migraines, poor depth perception, and print or environmental distortions
- ❖ The result of stress on the brain that causes changes in brain chemistry resulting in learning, reading, emotional, and behavioural issues.

What do print distortions look like?



Solutions: Coloured overlays/tinted lenses

Irlen Syndrome is not identified by current educational, medical, optometric, or psychological tests, so educators need to be informed and aware of the signs, symptoms, and available solutions. The Irlen method, which utilises coloured overlays and tinted lenses to address Irlen Syndrome, does not replace the need for reading instruction and remediation, but is one piece of the puzzle that can help struggling readers.

Any teacher or educational professional can be trained in the Irlen method to identify Irlen Syndrome and facilitate the proper overlay colour selection for maximum benefit. Self-selection of overlay colour is not encouraged, as it can either render the overlays useless or make problems worse.

For individuals with Irlen Syndrome, using either Coloured Overlays (placed over paper), or Spectral filters (worn as glasses), filter out the specific wavelengths of light that create stress on the brain. This leads to significant improvement in physical comfort and print clarity.

Coloured overlays are a low-cost, non-invasive intervention that is easy to implement and can be highly effective specifically for reading.

Coloured overlays are a wonderful tool, and work well for many students who have Irlen Syndrome. However, for many students experiencing physical symptoms such as headaches, stomach aches, issues with depth perception, anxiety or fidgeting, coloured lenses worn as glasses will provide a more optimal solution.

Professional trained in the Irlen method are able to determine the specific colour required for each individual's brain.



Demonstrated to be an effective accommodation

Irlen coloured overlays and Irlen filters are used by millions of children and adults in more than 45 countries around the world.

In the United States, coloured overlays and/or filters are recognised as a standard accommodation for standardised testing in many states.

During our screening work in New Zealand, we have observed that around 15 – 20 percent of children that we screen have some form of Irlen symptoms and that they benefit from the wearing of tinted lenses fitted by our trust. For more information visit: www.empoweredlearningtrust.co.nz



Classroom Modifications

An Irlen friendly classroom - There are a number of modifications educators and schools can make in the classroom environment to assist students who suffer from Irlen Syndrome.

Lighting:

- ❖ Turn off fluorescent lights – seat children with Irlen Syndrome near windows and turn off the bank of fluorescent lights closest to windows.
- ❖ Place coloured gels over your fluorescent lights:
<http://www.rosco.com/us/filters/cinegel.asp>
- ❖ Allow the child to wear a dark brimmed hat to protect from overhead lighting.

Whiteboards:

- ❖ Minimise copying from the board
- ❖ Use a brown or grey board instead
- ❖ Avoid coloured markers (red and yellow are hard to see)
- ❖ Write in columns

Computers/overhead projector/interactive whiteboards:

- ❖ Use coloured overlays to change screen colour
- ❖ Change the background colour of your computer screen to grey or brown instead of white when using an interactive whiteboard.

Contrast:

- ❖ Avoid bright or fluorescent colours both on paper and colours you wear.
- ❖ Avoid wearing stripes, plaids, polka dots
- ❖ Avoid wearing glitter or sparkling jewellery



Reading modifications:

- ❖ Irlen filters
- ❖ Coloured overlays
- ❖ Magnifying bar
- ❖ Brimmed hat
- ❖ Bookstands

Paper:

- ❖ Use recycled, off-white non-glare paper
- ❖ Avoid white, high-gloss paper
- ❖ Print assignments on coloured paper (different colours for different children)

Testing modifications:

- ❖ Tests duplicated on coloured paper
- ❖ Coloured overlays
- ❖ Use dim or natural lighting

Who has Irlen Syndrome? And how can it be helped?



Students with good reading skills

- Spend longer doing homework
- Complain of headaches, strain, tiredness when reading
- Avoids reading for pleasure
- does poorly in timed tests
- reads summaries rather than the entire chapter.
- finds it easier to learn from discussion than reading.
- works hard but you feel that s/he is brighter than grades indicate.
- 12-14% can be helped with Irlen method



Reading problems, dyslexia & learning difficulties

- Reading is difficult and cannot use their reading skills
- Problems with decoding, fluency and comprehension
- 46% of this population can be helped by the Irlen method
- other problems may exist and instruction and remediation may be necessary



Attention Deficit Disorder

Some children may be mis-labelled with ADD symptoms. The characteristics of those that can be helped by Irlen method are:

- problems with concentrating when reading
- easily distracted when reading or writing
- distracted when under fluorescent lights
- daydreams in class
- problems staying on task with academic work



Headaches, migraines, other physical symptoms

Headaches, migraines, stomach aches and fatigue are a few of the physical symptoms that may be alleviated by the Irlen method.

These symptoms can have a variety of triggers, and those that may benefit from Irlen filters may demonstrate the following problems:

- discomfort in sunlight
- discomfort under bright lights
- prefer dim lighting
- bothered by headlights at night
- bothered by glare
- difficulty looking at stripes or patterns



Autism and Asperger Syndrome

Approx. 30% of those with Autism and Aspergers have problems with sensory modulation. These can be helped:

- looks away from visual targets
- squints or looks down
- poor small or gross motor coordination
- poor eye contact
- mesmerised by colour, patterns or light
- behaviour changes in bright lights
- difficulties with escalators/stairs



Traumatic brain injury, head injuries, concussion

Many students experience lingering effects from concussion or other head injuries. Many are acquired Irlen symptoms and may be helped by Irlen filters:

- problems reading because of clarity and stability of print
- sustained concentration
- light sensitivity
- physical symptoms such as headaches, nausea, dizziness, anxiety
- depth perception
- fatigue
- neurological problems such as seizures, tremors, or similar problems.

The Research

The Irlen method and the efficacy of coloured filters and overlays has been the subject of over 200 research studies in education, psychology, and medicine.

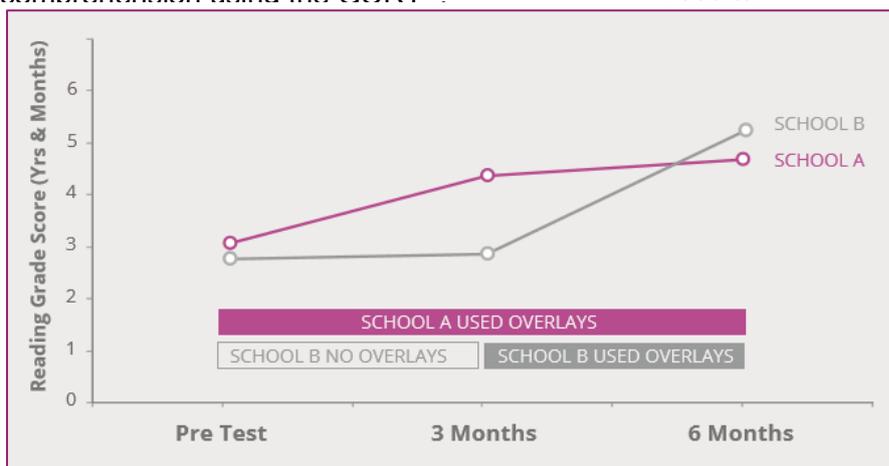
This research has established a hereditary component to the disorder¹⁻² a number of biochemical markers for problems associated with Irlen Syndrome³, and differences between both the anatomy and functioning of brains of individuals with Irlen Syndrome⁴⁻⁷. The research has repeatedly documented improvements in a variety of reading skills, reduction in physical symptoms, and improved functioning and success in academia with Irlen

In 2004, two teachers in the USA began a mission to show their school district how much Irlen Coloured overlays helped students who were struggling to read, and to quantify the improvements in a way that would stand up against academic scrutiny.

They screened all grade 3 students for Irlen Syndrome at two different elementary schools. They identified 31 students at School A and 40 students at School B. The 31 students at School A were given their preferred coloured overlay to use for 3 months, while the 40 children at School B received only regular instruction during this time. At the end of the 3 month period, all 71 Irlen students were assessed on reading rate, accuracy, fluency and comprehension using the GORT⁴.

Research on Irlen Syndrome has also documented co-morbidity with a variety of other disorders, including chronic fatigue syndrome¹, ADHD¹⁵, and autism¹⁶. A review of 62 studies published in peer reviewed journals found 56 studies with positive findings, 45 with positive results for particular reading skills, and 11 showing improvements in accommodation facility, eye movements when reading, and reduced headaches/miagraines.

The students from School A demonstrated a significant improvement in reading achievement with average gains in grade equivalence scores of 1 year 3 months, allowing most students in this group to reach grade level performance. In contrast, students at School B showed only negligible gains in reading achievement during this time. At the 3 month mark, the teachers at School B gave their students their preferred overlay colour to use in months 3-6. The graph below shows the results.



“Students using coloured overlays improved reading scores by more than 1 year in just 3 months.”

About Empowered Learning Trust

The Empowered Learning Trust is a community led charitable trust formed in 2011 by a group of parents, educationalists and community members with their common concern for the achievement of young people in our schools. They saw a significant group of learners who were consistently underachieving, suffering from poor self-esteem, and becoming disengaged with their education.

In recognising that key areas of education and health are under-resourced and under-staffed, the vision of the Empowered Learning Trust is to support schools to help these students, by designing and delivering programs that identify and support young people with visual, auditory, and learning processing issues. Once identified the Trust provides corrective lenses and Irlen tints, therapy for Auditory Processing Disorder, and work with schools to help students that require special learning support with extra assessments and support that is outside the regular spectrum of services provided by the Ministry of Education or Ministry of Health services.

We feel that a person's ability to succeed should not be limited by their inability to access information or education. Our aim is to remove any such barriers to success so that every member of our community has the chance to succeed in the way they choose.

Long term, we hope that by assisting these young people with learning difficulties, we will improve their confidence, self-esteem and employability. Ultimately, this will lead to individuals more likely to engage positively in the community, and possibly reduce crime, unemployment, and other social issues associated with poor education outcomes.

Our Irlen Screening work



The Empowered Learning Trust has been screening students in schools for 5 years, and during this time our staff have observed the significant improvements that Irlen coloured filters can make in a child's life and learning.

"Charlotte didn't like to read and was just under the average for age. Following the glasses she now reads at 2 and a half years above her reading age and reads every night prior to bed." – Christine, Charlotte's Mum

"Luke was diagnosed with Irlen Syndrome earlier this year. He now has had his glasses for a few months and the improvements in his reading have been quite amazing- up two reading years, (to above his age), in just three months." – Anne, Luke's Mum

"Kate said she saw orange flashes of light dancing all over the page. In her words she describes her new glasses as fixing everything. Within an hour of getting her new glasses she was missing in the book section of the Warehouse, not the toy section!" – Vicky, Kate's Mum



References

1. Loew, S.J., & Watson, K. (2012). A prospective genetic marker of the visual perception disorder Meares-Irlen syndrome. *Perceptual and Motor Skills*, 114(3), 870-882.
2. Robinson, G.L., Foreman, P.J., Dear, K.G.B., and Sparkes, D. (2004). *The Family Incidence of a Visual-Perceptual Subtype of Dyslexia*. Nova Science Publishers, 27-40.
3. Robinson, G.L., Roberts, T.K., McGregor, N.R., Dunstan, R.H., & Butt, H. (1999). Understanding the causal mechanisms of visual processing problems: a possible biochemical basis for Irlen Syndrome? *Australian Journal of Learning Disabilities*, 4(4), 21-29.
4. Chouinard, B.D., Zhou, C.I., Hrybousky, S., Kim, E.S., Cummine, J. (2012). A functional neuroimaging case study of Meares-Irlen syndrome/visual stress (MISViS). *Brain Topography*, 25(3):293-307.
5. Huang, J., Zong, X., Wilkins, A., Jenkins, B., Bozoki, A., Cao, Y. (2011). fMRI evidence that precision ophthalmic tints reduce cortical hyperactivation in migraine. *Cephalgia*, 31(8):925-36.
6. Lewine, J.D., Davis, J., Provencal, S., Edgar, J., Orrison, W. (1997). A magnetoencephalographic investigation of visual information processing in Irlen's Scotopic Sensitivity Syndrome. Conducted at The Center for Advanced Medical Technologies, The University of Utah School of Medicine, Salt Lake City, Utah, and Department of Psychology, The University of New Mexico, Albuquerque, New Mexico.
7. Yellen, A. & Schweller, T. (2009). The Yellen-Schweller Effect: Visual Evoked Responses and Irlen Syndrome.
8. Noble, J., Orton, M., Irlen, S., Robinson, G. (2004). A controlled field study of the use of colored overlays on reading achievement. *Australian Journal of Learning Disabilities*, 9, 14-22.
9. Park, S.H., Kim, S., Cho, Y.A., Joo, C. (2012). The Effect of Colored Filters in Patients with Meares-Irlen Syndrome. *J Korean Ophthalmol Soc.*, 53(3):452-459. Korean. Published online 2012 March 15. <http://dx.doi.org/10.3341/jkos.2012.53.3.452>
10. Robinson, G.L., & Foreman, P.J. (1999). Scotopic sensitivity/Irlen syndrome and the use of colored filters: A long-term placebo controlled study of reading strategies using analysis of miscue. *Perceptual & Motor Skills*, 88, 35-52.
11. Irlen, H., & Robinson, G.L. (1996). The effect of Irlen coloured filters on adult perception of workplace performance: a preliminary survey. *Australian Journal of Remedial Education*, 1, 7-17.
12. Robinson, G.L., & Conway, R.N.F. (2000). Irlen lenses and adults: a small scale study of reading speed, accuracy, comprehension and self-image. *Australian Journal of Learning Disabilities*, 5, 4-13.
13. Whiting, P., Robinson, G.L., & Parrot, C.F. (1994). Irlen colored filters for reading: a six year follow up. *Australian Journal of Remedial Education*, 26, 13-19.
14. Loew, S.J., Marsh, N.V. & Watson, K (2014). Symptoms of Meares-Irlen/Visual Stress Syndrome in subjects diagnosed with Chronic Fatigue Syndrome. *International Journal of Clinical and Health Psychology*, 14(2), 87-92.
15. Loew, S.J. & Watson, K. (2013). The prevalence of symptoms of scotopic sensitivity/Meares-Irlen syndrome in subjects diagnosed with ADHD: Does misdiagnosis play a significant role? *Croatian Review of Rehabilitation Research*, Vol.49. Supplement, str. 50-58.
16. Irlen, H. (2012). A sensory intervention for visual processing deficits using precision colored filters. *Autism Science Digest: The Journal of AutismOne*, 04, 94-102.