

# Photosensitivity:

A seat up the back  
near the window, please.

Handbook for Australian students, parents and teachers.



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# Contents

## Student Pages

Introduction

1. Photosensitivity and Super Electric Brains
2. Photosensitivity and Exceptional Eyeballs
3. Top Ten Things to try at School
4. My Checklist of what helps (and what doesn't)

## Parent Pages

5. Introduction
6. Things to try at Home and School
7. Contacts

## Teacher Pages

8. Introduction
9. Background
10. Strategies
11. Diaries and Observation Records

## Reference Pages

12. Glossary
13. References

This book is not exhaustive, prescriptive or diagnostic for the traits of photosensitivity, visual sensitivity or photophobia. It has been created to assist in access to strategies, data and support networks in Australia.

## Introduction for Students

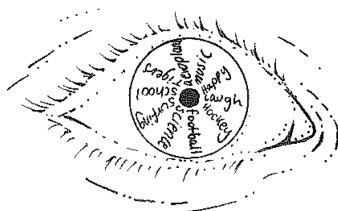
If you are reading this book, you may have been told you are photosensitive. So am I – I have a super electric brain. If you have a super electric brain too, then the first chapter of this book is for you. I also have a friend who is photosensitive. She has photophobia – a type of exceptional eyeballs. If you have exceptional eyeballs, then Chapter 2 is for you.

Photosensitivity, whatever its form, needs some support for you to keep doing everything you want to do at school (and at home). Both forms use similar tricks and tips. So, let's see what super electric brains and exceptional eyeballs do...



Super electric brain

Go to Chapter 1



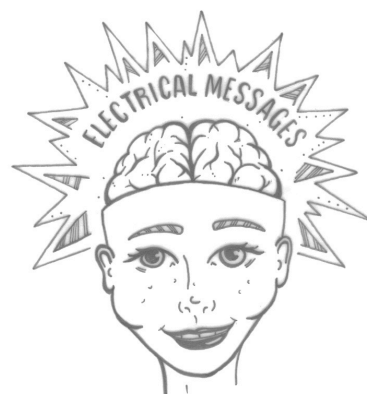
Exceptional eyeballs

Go to Chapter 2

## Chapter 1. Photosensitivity and Super Electric Brains

Photosensitivity takes a little time to get used to. You may have had times in class when you have felt sick, seen spots, felt wobbly or had headaches or seizures just from watching what everyone else was watching on the Interactive Whiteboard. Occasionally you may have tried to be 'brave' and stay in class even though it was uncomfortable – then fallen over on the way out to lunch (that's happened to me).

Falling over sometimes happens because it looks like the floor shifts (one of the posh words for this is *vertigo*). Maybe in the past you have turned on your computer to do some work – and then your brain turns off, your thoughts don't line up properly, and it is hard to finish the work set by your teacher (I've been there too!)



Your brain, like everyone else's on the planet is unique. Your brain has certain characteristics in common with everyone else's – it sends messages using tiny pulses of electricity. (Note: this does NOT mean you can play with power points – house electricity is FAR more forceful than what your body works with!) Your brain, my brain and everyone else's brains are also found securely protected within a bony skull, which allows it to grow, and form connections within itself at an amazing rate until reaching about 20 years old.



0 years



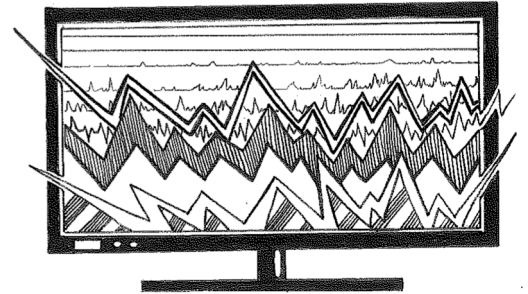
Major brain development and growth



20 years

Your brain and my brain also have certain characteristics in common – our brains both generate excess amounts of electricity when we see certain types of lights or screens.

Our brains both interpret the excess electricity in ways that can be painful (like a headache) or embarrassing (remember that comment about falling over on the way out of class?)



But just because your brain and my brain get super electric every now and then does not mean they are not excellent brains. Super electric



brains can be found in very excellent, very extraordinary people – although often they have had to find ways to work a little differently to those people with normal electric brains.

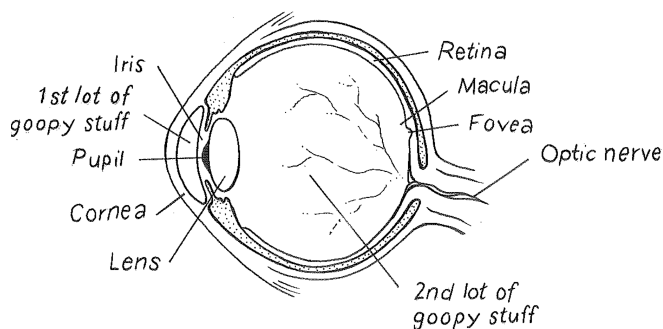
This book is to help you, your parents and your teachers find better ways to help you use your super electric brain. Different brains need different helps, so keep trying different things until you and the people you work with know what works best for your brain – and what doesn't! Once these are figured out, schoolwork can become a lot less painful – trust me, I've been working with my super electric brain in schools for a long, long time.

## Chapter 2. Photosensitivity and Exceptional Eyeballs

Photosensitivity takes a little time to get used to. You may have had times in class when you have felt sick, seen spots, felt wobbly or had headaches just from watching what everyone else was watching on the Interactive Whiteboard. Maybe in the past you have turned on your computer to do some work and your eyes have 'shut down'.

Your eyeballs, like everyone else's on the planet are made up of a few key ingredients. Most of them are shown here.

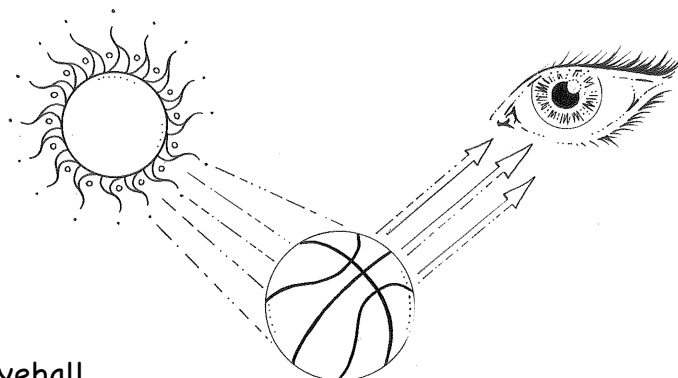
Eyeball Ingredients



Anything that you 'see' is actually what your brain decodes from light rays entering your eyeballs. Your brain has even learnt to tell how far away something is, just from decoding two slightly different messages.

Your right eye sends a slightly different message than your left eye. How cool is that!

Light rays originally come from a light source (like the sun, a lamp, a candle). Some of the light rays bounce off an object and enter your eyeball. After the light ray makes its way through the first lot of goopy stuff, the lens, then more goopy stuff, it is absorbed by some special cells at the back of the eye.



Light Entering Eyeball

These cells are part of the retina, and are very awesome. Some retinal cells respond to the light they absorb by sending an electrical signal coding for 'blue', others 'red', and other colours. Still more retinal cells send electrical signals for 'lots of light' or 'not much light'. Altogether these electrical signals are sent up a nerve cord to the brain where they are sorted out, and you react to them.

Exceptional eyeballs come in a few different varieties. Some people have their specialized retinal cells working overtime (sending too many messages), confused (send the wrong messages) or not working at all (sending no messages). Other exceptional eyeballs have very dense lenses, or even cataracts, which changes the way light gets to the retina – and glare can be painful!

Exceptional eyeballs can be found in very excellent, very extraordinary people – although often they have had to find ways to work a little differently to those people with unexceptional eyeballs.

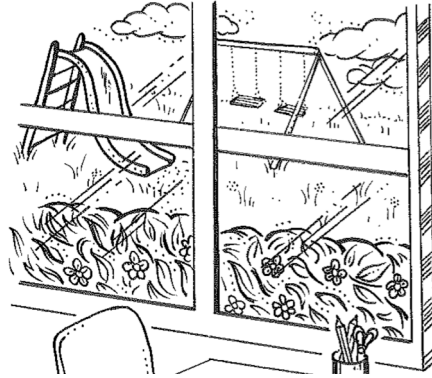
This book is to help you, your parents and your teachers find better ways to help you use your exceptional eyeballs. Different eyeballs need different helps, so keep trying different things until you and the people you work with know what works best for your eyeballs – and what doesn't! Once these are figured out, schoolwork can become a lot less painful – maybe even enjoyable. 😊



## Chapter 3. Top Ten Things to Try at School

- for super electric brains and exceptional eyeballs

1. Sit next to a window rather than under artificial light
  - sunlight doesn't flicker.



2. If your classroom uses an Interactive Whiteboard (IAW) then sit up the back
  - the IAW will look smaller. By making the image received by your eye smaller, it may not cause as much of a reaction in your brain.

(I like to use 1 & 2 together)

3. Use a pirate eyepatch when looking at computers or IAWs
  - if screens are only seen by one eye, then some people only have one half of their brain react.



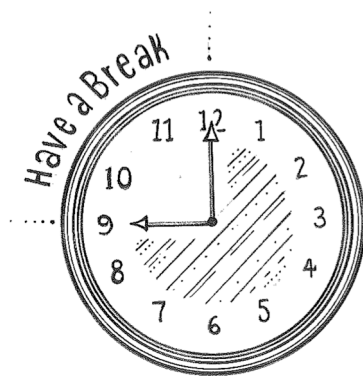
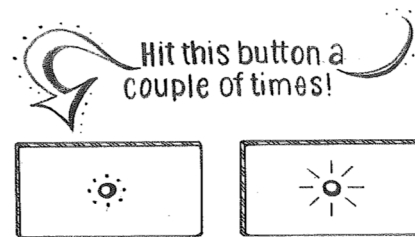
4. When using a computer:

a) turn down the **luminance**

(brightness) – brighter screens trigger more reactions

b) turn down the **contrast**

(ratio between lightest colour and darkest colour. Check your Settings or Preferences, or check computer manual) – increased contrast ratios trigger more reactions



5. When using a computer:

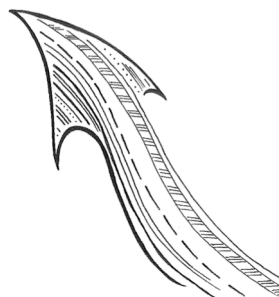
work in sessions of less than 45 minutes, then take a 15 minute break – this is suggested for everyone using a computer

6. When using a computer or IAW:

Avoid saturated red colours

(this is a really dark red colour)

– on screens this is the colour that sparks reactions in your brain more than any other colour.



7. When using a computer or IAW:

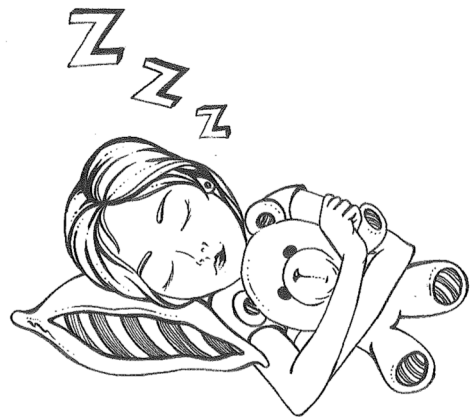
Avoid using stripey moving images in any presentation – they can cause reactions such as vertigo and nausea.

8. Wear a peaked cap inside  
- this can decrease the amount of  
artificial light directly entering  
your eyes.



9. Wear blue or grey tinted  
sunglasses inside - they can  
decrease the glare from LED lights.

10. Get enough sleep -  
as your brain becomes more tired  
it is less able to cope with light  
changes, flashes and glare.



Other suggestions...




































































































Edit work on a print out rather  
than on a screen.

Touch type to decrease changes in contrast and luminance.

Read printed textbooks rather than online textbooks wherever  
possible.

## Chapter 4. My Checklist of What Helps (and what doesn't)

Keeping track of what tips work and what tips don't and which ones you are unsure about can be really useful for you and the people you work with. This chart can be used to organize your reactions using different tips. Colour in a reaction each time you try a tip.

No	Tip	Help	Unsure	No Help
1	Window	  	  	  
2	Back	  	  	  
3	Eyepatch	  	  	  
4a	Luminance down	  	  	  
4b	Contrast down	  	  	  
5	45 min only	  	  	  
6	No dark red	  	  	  
7	No stripey moving patterns	  	  	  
8	Cap	  	  	  
9	Tinted sunglasses	  	  	  
10	Enough sleep	  	  	  

## Chapter 5. Introduction for Parents

Photosensitivity, Visual Sensitivity and Photophobia are phenomena that have been recognized for decades. Even so, questions still remain about who gets what and why. When it appears and how it manifests seems as individual as the children themselves, and is only partially understood. Some of the more high profile examples include the Pokemon Phenomenon in 1997 (which hospitalized over 600 children from a single televised cartoon), to the *Twilight Saga* birthing scene (which caused seizures in some cinema goers). Visual sensitivity to digital media is not new.

As digital technologies are used increasingly within the educational environment, students diagnosed with one of these traits may find certain tasks at school more difficult or even painful. The aim of schools is to facilitate learning for students, and to allow equitable access to that learning. Access is preferable when it does not induce fear, pain or embarrassment. The path to finding the best learning environment, and optimal processes for your child may seem slow and frustrating at times. However, the relief for a student being able to enter a classroom with confidence at the beginning of a day is worth the journey.

What can you do? The best thing is to ask questions and document any details you can. Ask questions of your child, the teacher/s and medical professionals. Keep notes on environmental conditions (what it is like around your child, for example the type of lighting) that may have triggered an adverse reaction. Some examples are given below.

Questions for  
Students

What time was it? Where were you?  
What were you doing? How did you feel?

Questions for  
Teachers

How did (*student's*) behaviour change?  
What made you notice (*student's*) behaviour?  
What was (*student*) doing prior to incident?  
Could you please record any more episodes you observe?

Questions  
for Medical  
Professionals

Optometrist: Is there a mechanical/physical reason for the way  
(*student*) reacts to light/computers?  
Doctor: Here are the notes from home and school –  
who can I see about making school a safer place for my child?

Follow the advice of your medical professionals - they are trained and experienced. If a student comments about continued headaches, blurred vision or other symptoms then the medical professionals will also ask general health and injury questions. These will probably include

- Has the student been eating and drinking enough?
- Is the discomfort related to posture?
- Is the discomfort due to vision problems like longsighted/shortsighted?
- Has there been any recent injury?

These questions help to establish baseline information that can be worked through, and possibly modified to alleviate the irritation. However, if none of these seem to rectify the problem, then other avenues are investigated with the assistance of your health professional.

In the meantime as a parent, if you have identified some of the parameters which assist or hinder your child's activity, you can work within them. At school a partnership with the teacher/s can be beneficial in many ways. Teachers can assist with the production of an Individual Learning Programs (ILP – Western Australia), or its equivalent. This would ensure that in each classroom, with every teacher (permanent or relief) there is a record of what helps your child, and why it is necessary.

To fellow teachers, I apologise for the oversimplification of the job description that follows – but the point is that different teachers and education assistants spend differing amounts of time with your child. Teachers and Education Assistants, as you can imagine, have diverse workloads and areas of responsibility. Primary classroom teachers may spend the majority of their 'in class' time working with one class of students, as much as 5 hours in one day. Primary specialist teachers however have more in common with high school teachers, as far as class time is concerned. Primary specialists and high school teachers may only work with your child for 80 minutes, 2 times per week.

Naturally this time difference will impact each teacher's knowledge of your child's 'baseline' behaviours and reactions. Please be patient with the teachers and education assistants, especially at the start of the school year

(differentiating between 120 students at the end of the first day is rather challenging). Also, it is not the teacher's responsibility to diagnose your child's trait – but they potentially hold a wealth of information that is valuable to clinicians. The experience and knowledge of educators may suggest certain actions or behaviours should be followed up. This knowledge and their continuing observations are data that help diagnosticians, just as your observations at home are fundamental to specifying causes or triggers.

Different schools and diverse students require individual strategies – but some of the official forms are similar. To streamline some of the processes required by schools and teachers in referring students, there are forms in this book and online to help you gather the necessary information.

Seeking advice from any medical professional about something that happens 'every now and then' with symptoms that may be difficult to describe and don't happen every day, is difficult. If you have identified that working with digital media is an issue, then there is an Introductory Letter to Medical Professional that may help on the next page and the website ([www.photosensitivity.info](http://www.photosensitivity.info) look under 'Forms'). It gives the medical professional an idea of how much digital media your child uses each day, where they sit in the classroom, what symptoms have been felt by your child and observed by you or the teacher. Online assessments are filtering into the school system, so ability to work with digital media is necessary to maintain assessment marks that truly reflect your child's ability. Once the medical professional understands why these symptoms need to be addressed, supporting data in the way of Headache Diaries ([www.photosensitivity.info](http://www.photosensitivity.info) look under 'Forms'), Observation Records (pg 34) or the Students Checklist (pg 12) become more helpful. Printouts of these forms may also be obtained by going online.

Perseverance is key. You are your child's best advocate.

## Introductory Letter to Medical Professional

Student name:

Age:

School:

(Student Name) has been experiencing some difficulty when working for long periods with digital media (computer/ipad/Interactive Whiteboard/phone).

The symptoms include:

(Student Name) usually sits near the front/middle/back of class.

The lighting is in the form of windows/fluorescent lights/skylights.

Classroom digital media is used between ( ) and ( ) hours per school day.

Some school assessments are now online, these can take up to 75 minutes (Year 7) to complete.

(Student Name) carries a light/medium/heavy bag to school, on his/her right shoulder/back/left shoulder.

The classroom desk/chair combination is too short/just right/too high.

Your assistance is required to enable (Student Name) to more actively participate in class, and complete assessments that more truly reflect his/her ability.

With thanks

(signature – parent/teacher)

Accompanying records:

- Headache diary
- Observation Records
- Student Checklist



## Notes on Medical Research and Medical Journals

Medical research is often published by its creators as an article in a medical journal, and there are hundreds of journals published many times each year. This is one way for information to be shared amongst the global medical community, and between researchers. Each specialized medical field has its own group of journals, as well as keeping an eye on the general medical journals. For example, the paediatric medical community have journals including *Pediatrics* and the *Journal of Paediatrics and Child Health*. The neurologists have *Epilepsy*, *Brain* and *Headache*, and there are also general medical ones like the *Australian Medical Journal*, *British Medical Journal* and *The Journal of the American Medical Association* just to name a few.

Articles within many medical journals are ‘peer-reviewed’ which means that the content has been scrutinized by an equivalent individual to the author, and has been accepted. An accepted article has used good methodology, therefore the results should be trusted and able to be repeated in other patients. Therefore published articles affect people’s general health and wellbeing.

For example, a group of Italian doctors and researchers can experiment using blue tinted lenses and publish their findings. Then a group of Australian doctors can use those results to help treat their own patients without having to start the experimental process all over again. It saves the Australian doctor time in identifying an appropriate treatment and it saves the patient time and energy.

The ‘abstract’ of these articles is usually found on Google or Google Scholar. The abstract is a short summary of what the researcher did, and what their conclusions were. The longer text version (usually a few pages) includes more specifics on who the patients were, when the experiments were carried out, details on the results and how they reached their conclusions. This longer version may require a fee. Some libraries have access to multiple journals, other journals do allow free access for some articles. ‘Free to read’ articles

are marked as **FREE** in the reference list at the back of this book. There are also some guides as to which sites allow this free view.

The reference list is written alphabetically (in APA style). Sometimes I will reference ideas in the text so that you can read the original research. If there are two different references for the same item, they will be separated by a semicolon. If the reference says 'et al' after the first name, then either there are a lot of authors and only the first one gets mentioned, or the paper has been mentioned already and this is just reminding you who the first author is. In the academic world, it is the most prestigious (and the most work) to be the first author in a published article – because this is the way by which the article is referred to.

The glossary is to help with some of the terms. Sometimes there are multiple terms for the same thing, or the same term refers to different events. This can be frustrating.

Summaries are occasionally too general. Advice such as 'avoid the triggering factors' is not very practical if the triggering factor is in every classroom in the school environment. This book was prompted by reading similar advice - as someone with an electric brain I wanted relief, as a teacher I wanted practical advice. The top ten strategies have been listed with their supportive reasoning. Different students will find different strategies helpful. Once again, keeping records is valuable in the long term. Records can also be shown to teachers to help create ILPs (Individual Learning Programs) to support your child throughout the school year. They can also be useful to smooth transition from one school year into the next.