What we see is made in the brain from signals given to it by the eyes.

What we see is in fact made in the brain. The brain makes sight from signals given to it by the eyes.

What is the normal structure of the eye?

The eye is made of three parts.

- A light focusing bit at the front (cornea and lens).
- A light sensitive film at the back of the eye (retina).
- A large collection of communication wires to the brain (optic nerve).

A curved window called the cornea first focuses the light. The light then passes through a hole called the pupil. A circle of muscle called the iris surrounds the pupil. The iris is the coloured part of the eye. The light is then focused onto the back of the eye by a lens. Tiny light sensitive patches called photoreceptors cover the back of the eye. These photoreceptors collect information about the visual world. The covering of photoreceptors at the back of the eye forms a thin film known as the retina. Each photoreceptor sends its signals down very fine wires to the brain. The wires joining each eye to the brain are called the optic nerves. The information then travels to many different special ‘vision’ parts of the brain. All parts of the brain and eye need to be present and working for us to see normally.

What is Retinal Detachment?

The covering of light sensitive patches at the back of the eye forms a thin film known as the retina. If this film peels off from the back of the eye then a Retinal Detachment is said to have occurred.

Why Does The Retina Detach?
A tear or hole can develop in the retina. This allows water from within the eye to leak behind the retina. The water then seeps under the retina slowly lifting it off the inside of the back of the eye. Eye doctors call this a ‘Rhegmatogenous’ Retinal Detachment. This is the most common way the retina detaches after an eye injury or in short sightedness.

Sometimes water and fat can collect under the retina without there being a hole or tear present. The effect is the same with the retina being lifted off the back of the eye leading to a detachment. The water and fat often comes from leaking blood vessels. Eye doctors call this an ‘Exudative’ Retinal Detachment. This happens in some rare eye conditions such as Coat’s disease.

Sometimes instead of the retina being ‘lifted’ off from underneath it can be ‘pulled’ off from on top. Some eye conditions can cause damage inside the eye. As the damage heals scars form. With time the scar tissue can shorten and pull the retina off the back of the eye. Eye doctors call this a ‘Tractional’ Retinal Detachment. Tractional Retinal Detachment can be a complication of Retinopathy of Prematurity.

What Conditions Can Cause Retinal Detachment?

There are many different conditions that can cause Retinal Detachment. Sometimes there is no obvious cause and we don’t know why it happens. Some of the more common causes include:

- Short Sightedness (Myopia)
- An injury to the eye
- Retinopathy of Prematurity
- Coat’s Disease
- Cataract Operation
- Coloboma
- Retinal Detachment runs in some families

Why Are Short Sighted Children Likely To Develop A Retinal Detachment?
Children who are short sighted have a higher chance of developing a retinal detachment. This is because eyes that are short sighted are bigger. Although the outer covering of the eye is bigger the retina inside is not. The retina has to ‘stretch’ to cover the whole of the back of the eye. Sometimes a tear or a hole can appear in the ‘stretched’ retina. If this occurs water from within the eye can leak down behind the retina. As the water seeps in it causes the retina to come away (detach) from the back of the eye. A Retinal Detachment will then be present. Conditions where short sight is more common include:

- Marfan’s Syndrome
- Ehler’s-Danlos Syndrome
- Stickler’s Syndrome

In these conditions because children will also be short sighted Retinal Detachment is more common.

**How does Retinal Detachment affect the way a child sees?**

The symptoms that a child might complain of depend on:

- the age of the child
- which bit of the retina has detached
- whether it is affecting only one eye or both
- the condition that is causing the detachment

Most young children will only complain of poor vision when the centre bit of the retina has detached. This will cause the centre bit of vision to become very blurred and ‘grey’. Most children will notice this, especially if it happens in their better eye. Younger children do not usually notice smaller areas of detached retina that are away from the central bit of vision.

Older children may notice the symptoms of retinal detachment earlier before it affects more of the retina. Sometime they complain of ‘flashing lights’ and ‘floaters’ in their vision and a ‘shadow’ away from the centre of the vision.

In some conditions the retinas of both eyes detach when the child is very young. Despite this they are most likely to initially feel their vision to be ‘normal’ as they have never known
anything else but their own visual world. They will assume that everyone else has vision the same as their own. They will not realise that other people see things differently.

**Are there any other conditions associated with Retinal Detachment?**

There are several conditions linked to retinal detachment that can affect more than just the eyes. These include Marfan’s Disease, Stickler’s Syndrome and Ehler’s-Danlos Syndrome.

**How can Retinal Detachment be Diagnosed?**

Retinal Detachment can usually be diagnosed during an examination by an Eye Doctor. By looking into the eye using a special lens and torch the retina can be seen.

If it is difficult to see into the back of the eye then an ultrasound scan can be performed. This can usually show if the retina has peeled away from the back of the eye or not. In younger children this may have to be done under a General Anaesthetic.

**What can be done to help?**

What can be done to help depends on the cause of the Retinal Detachment. If the retina has detached because a hole or tear has developed in the retina (Rhegmatogenous Retinal Detachment) then an operation may help. A surgeon would try to drain the water from underneath the retina, close the hole and then ‘stick’ the retina back down on to the back of the eye. This can often help fix the problem. In some conditions this may not work the first time and a second or third operation may have to be done.

If the retina has been pulled off by scarring then it is much more difficult to fix. Often, despite an operation, the retina will be pulled off the back of the eye again by the scar tissue.

If the retina detaches because water and fat have collected under the retina without there being a hole or tear present then again it is very difficult to fix. Sometime laser treatment to leaking blood vessels can help.

**How can parents, family, friends and teachers make a difference?**
We use our vision to get around, learn new things and to meet other people and make friends.

Most children with Retinal Detachment have few problems getting around. The way they act can give the impression that their vision is normal. It is important however to be aware of their own special problems with vision.

Problems at school may be due to some of the reading books being hard to see. This often means it takes longer and more effort to do the work. If the size of print is increased most children will find schoolwork easier.

It is worth watching carefully to find out what the smallest toys are that a child can see and play with. Then try to only play with toys that are the same size or bigger.

Recognising facial expressions can often be difficult. It is worth trying to find out at what distance facial expressions can be seen and responded to. Then always try to talk and smile from within this distance. This helps a child to learn what facial expressions mean and to copy them.

Children with Retinal Detachment may have a part of the vision missing with the rest normal. It is important to recognise which part is missing to avoid placing objects in these areas.

Even if a child has very poor vision many useful and practical things can be done to help. Advice can be given on ways to support your child by your VI teacher or habilitation specialist.