Remember Susan and Juan
You met Susan in Unit 1. Susan is ten and doing well in school. She is near-sighted. Her glasses improve her vision somewhat, but she needs additional magnification for reading and other schoolwork.

Juan also has usable vision for schoolwork, but he has more trouble with organization than Susan does. It took him an entire school year to learn his way from the bus stop to his classroom, and he still has trouble finding the library at school when he is on his own. Learning to read was a challenge for Juan because he often read letters backward (b for d, p for q, etc.)

Retinopathy of prematurity (ROP) is a condition that affects infants who are born at thirty-two weeks’ gestation or less and who have a birth weight under 1,500 grams, which is about three pounds, five ounces, according to Dr. Khaleda Tawansy, director of the Children’s Retina Institute of California. ROP became prevalent after World War II when well sealed incubators were developed to increase control of oxygen given to premature infants. Excessive oxygen is a factor in the development of ROP, but there are other unknown factors as well. ROP continues to occur in premature infants even though doctors can manage the oxygen flow better because they are able to save younger and younger infants. These infants must have a strong flow of oxygen in order to survive.

The eyes develop fully during the last twelve weeks of gestation. When an infant is born prematurely, the blood vessels that feed the eyes may not develop in the same way that they would have in utero. Fibrous, rapidly growing vessels may develop. These abnormal vessels create scar tissue which adheres to the retina and the vitreous humor. The scar tissue puckers and pulls at the retina. It may cause tears in the retina and, in some cases, retinal detachment and total blindness.

Children who have ROP are usually subjected to eye surgeries at young ages. Cryotherapy, a freezing technique, and laser treatments are given to stop the growth of the abnormal blood vessels. A buckle is sometimes attached to the outside of the back of the eye to hold it close to the retina if it is tending to tear away from the back of the eye. These treatments may result in more scar tissue, making more blind spots on the retina.

Cataracts may form. This is when the lens of the eye becomes cloudy and stiff. The cloudy lens does not permit enough light to pass into the eye. Cataract surgery may be performed. In this surgery the clouded lens of the eye is removed, reducing the focusing power of the eye. If the child is too small to have
an artificial lens placed in the eye, glasses and contacts will be needed for focusing.

Glaucoma also occurs secondary to ROP. This is when the aqueous humor is blocked from flowing out of the front of the eye into the bloodstream, and the fluid that is supposed to replace it continues to be made. The pressure in the front of the eye builds up and presses against the back of the eye, often causing damage to the cornea in front and the optic nerve in back. Glaucoma may also require surgery as well as continuous medication, usually taken as eye drops.

Another complication for the vision of people who have ROP is that they are in danger of retinal detachment. Often they use the vision in only one of their eyes since one eye may be too compromised. If this is the case, they may not see an approaching hazard, such as a tree branch over the sidewalk at head height or a baseball thrown in their direction. Accidents that would barely faze another child may cause severe vision loss for a child who has ROP. Wearing protective lenses and using caution on the playground are important. If a student complains that his vision has changed suddenly and dramatically, he may be experiencing a retinal detachment. It is important to have a plan of who to notify if this happens. Retinal detachments must be treated quickly if any vision is to be saved.

The eye muscles of people who have ROP may not work well. If the muscles do not coordinate their movements, one eye may move away from the visual target involuntarily. This condition is called strabismus. Doctors often perform surgery to correct strabismus, but it is not always successful for the long term.

Another involuntary eye movement which occurs in people who have ROP and retain vision is called nystagmus. This is a constant, rapid movement of the eyes. The primary complaint of children who have nystagmus is that other kids are always asking them what's wrong with their eyes. The nystagmus itself does not blur their vision or make things look like they are constantly moving. The brain filters out the excess movement and image information coming from the eyes and allows people who have albinism to understand whether things are still or moving.

Most people who have nystagmus discover that by holding their heads at a certain tilt and looking from a certain angle they can find a spot where the nystagmus slows or stops. Some people use this spot for looking closely at details, such as when they are reading or looking at pictures. This spot is called the "nul spot." It is important to allow students who have nystagmus to hold their heads in the position they find best for their vision even if the position is not the ideal posture expected of fully-sighted children.

People who have ROP and retain vision are usually nearsighted (myopic), which means that eyeglasses may improve their distance vision. Enlarging print material may also be helpful. Good lighting may be helpful. Hands-on activities
are especially important since a lot of what is learned incidentally by fully-sighted children will not be available to children who are severely myopic. For children who have significant visual impairment, there is no substitute for hands-on experience.

The entire neurological system of a child who is born prematurely may have developed differently outside the womb than it would have if given the chance of a full gestation. Premature infants may have brain bleeds or may not get enough oxygen to their brains during birth or immediately after birth. Quirky neurological development may lead to difficulties in school, such as attention deficits, problems learning to read or auditory processing problems. It is not at all unusual to see people who have ROP having other neurological problems. In fact, you may notice that some children who have ROP also have many of the characteristics of cortical visual impairment (CVI). The CVI may not have been diagnosed since the ROP diagnosis is enough to explain why the child does not see well, and since a CVI diagnosis requires more time-consuming and expensive tests. Teachers and school psychologists often need to look at hospital reports regarding the student’s birth in order to understand what kind of neurological damage might be present.

Students who have ROP are notorious among orientation and mobility specialists for having poor spatial orientation. While some people who have ROP actually have very good innate orientation, many have difficulty becoming oriented for travel as well as for near tasks, such as finding the top of a page or determining the difference between letters which are mirror images of each other. In order to learn routes at school or in the community, people who have orientation deficits need frequent, concrete landmarks on each route and a lot of repetition in finding the landmarks as they travel. It is suspected that difficulty with spatial orientation occurs more frequently in these students because of brain injury around birth and because their brains were not as stimulated lying in a hospital bed as they would have been if the babies had been moving around in the womb for the full term of pregnancy.

In summary, there are many ways to accommodate the needs of students who have ROP:

- Facilitate preferential seating to optimize close viewing or hearing;
- Encourage the use of magnification devices and/or braille as directed by the teacher of visually impaired students;
- Ask the teacher of visually impaired students whether the student has other disabilities that may affect learning and behavior;
- Have procedures in place with the teachers for eye emergencies, such as detached retina or complaints of eye pain that could be signs of glaucoma;
- Ask for consultation from the orientation and mobility specialist if the student has difficulty finding routine locations at school.
References

