Proposed visual screening manual for school aged children

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Abstract
School nurses and teachers often perform visual screenings on students with the use of the Snellen Visual Acuity Chart. Snellen acuity taken at twenty feet is not an adequate evaluation of the visual system. Efficient visual skills are necessary for effective learning in current classroom environments. This is a guide directed toward school board members to improve vision screening programs provided by the educational system.

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PROPOSED VISUAL SCREENING MANUAL FOR SCHOOL AGED CHILDREN

By

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ABSTRACT

School nurses and teachers often perform visual screenings on students with the use of the Snellen Visual Acuity Chart. Snellen acuity taken at twenty feet is not an adequate evaluation of the visual system. Efficient visual skills are necessary for effective learning in current classroom environments. This is a guide directed toward school board members to improve vision screening programs provided by the educational system.
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I. INTRODUCTION:

“Vision is the supreme sense of man ... seeing is not a separate, independent function. It is profoundly integrated with the total action system of the child -- his posture, his manual skills, his motor demeanors, his intelligence, and even his personality traits. When viewed in terms of the action system, the mechanisms of vision become a key to the understanding of behavior, both normal and deviate. To understand vision, we must know the child; to understand the child, we must know the nature of his vision.”

Arnold Gesell wrote the above quote summing up his wide knowledge in his studies dealing with child development as it relates to vision. The more the human visual system has been studied over this century, the more we realize that vision is not just simply seeing an object, but is deeply integrated with all of our senses and perceptions of reality. Observing just the clarity for which one sees provides only a small piece of information about how well one’s visual system is performing.

Once an image is formed on the back of the eye, the retina, the process of vision has only begun. Now this image must be transformed into an electrical impulse which our brain can interpret. Through a series of connections (synapses) the signal can reach the visual center in our brain, the occipital lobe. It is here that we can begin to understand the visual information from the image on our retina.

To actually identify an object, much more information about the target must be realized. For instance, if we have never seen a particular object before, how do we know what it is? We have the ability to draw on past experiences and to use our other senses to help us understand the world around us. Other portions of the brain must be utilized so that we can integrate all of our past experiences and such other information as what does the object sound like, or what does it smell like, or in an infant’s major
experience, what does the object feel like and taste like? Vision does not stand alone to guide us through our environment, but it is an essential ingredient. We must be able to not only take in stimuli through our eyes and other senses, but interpret the signals so that we can take action. This is the process of perception. It must be realized that there is much more to seeing an object than just a clear image on the retina.
II. STATEMENT OF THE PROBLEM:

Many communities rely on the local school system to screen students for visual problems. Most school districts screen elementary school children through school nurses and sometimes teacher observations. In most cases, the screener is given very limited tools and skills to accomplish an adequate evaluation of the visual system.

Visual acuity is a measure of how clearly a person views the world. In other words, how clear an image is formed on the retina after light passes through the optical media (the cornea and the crystalline lens). If a person has 20/20 visual acuity, it simply means that they see clearly (without blur) in the distance. Another visual acuity should also be measured for near work. Twenty feet for distance visual acuity and 40 cm for near visual acuity are the two standard distances. These findings can be dramatically different, even for young children.

Distance visual acuity is usually the only test administered to students during a vision screening. There are a few districts that may use an additional test for binocularity along with teacher observation. These tests simply are not enough to make and educated referral to the proper eye care provider.

With adequate vision screenings, common visual problems can be detected early in the academic career of students. The earlier visual problems are diagnosed, the more easily and completely they can be treated with lenses, vision therapy or medication.

As it stands now, many children are not receiving everything that our educational system offers because they are not able to accomplish the visual tasks that reading and writing require. An excellent vision screening program can reduce the number of visual obstacles that many children face when learning to read and write and consequently, greatly benefit the educational system as a whole.
Armed with a better understanding of the visual system, more children will receive vision care that is necessary for effective reading and learning. School board members need to be aware of this problem so that appropriate adaptation to policy concerning existing vision screening programs can be made.
III. KEY TERMS:

In order to better inform the reader of the importance of a healthy visual system as it relates to learning, it is important to define several key terms. Figure 1 shows basic anatomical features of the eye to help with these definitions (see appendix).

1. Refractive Error (ametropia): A condition in which light rays that pass through the ocular media do not focus directly on the retina. We perceive refractive error as seeing blurry. There are several different types of refractive errors. For children and our purposes, two main types will be defined.
   a) Myopia (nearsightedness): A condition in which light rays that pass through the ocular media focus at a point in front of the retina. Think of it as if the ocular media were a magnifying glass (plus lens) that is too powerful. The stronger the plus lens, the shorter the focal length of the lens. A lens of minus power is used in spectacles to compensate for the “plus lens effect” of the ocular media.
   b) Hyperopia (farsightedness): A condition in which light rays that pass through the ocular media focus at a point that would be behind the retina if the retina were not there. Think of it as if the ocular media were a magnifying lens that is not strong enough. A plus lens is used to compensate for the “minus lens effect” of the ocular media.

2. Binocular vision: Using both eyes together at the same time and in the same place without double vision. To achieve this, the eyes must be properly aligned and the images on the retina must correspond to one another.

3. Vergence: Movement of the eyes together either toward the nose or
away from the nose. There are two kinds of vergence:

a) **Convergence:** Movement of both eyes toward your nose. In other words, crossing your eyes in a controlled way. Convergence is necessary to view a target up close. The closer the object, the more you must converge your eyes to attain proper binocular vision at a specific distance.

b) **Divergence:** Movement of the eyes away from the nose simultaneously. Divergence is utilized to view a target that is further away from the observer than the previously viewed object. For example, to see an object singly at a distance of one foot, you must converge your eyes a certain amount. To then view a target that is 10 feet away, you must diverge your eyes outward to see the new target singly. It is easy to think of it as uncrossing your eyes in a controlled way.

4. **Accommodation:** To see an object up close clearly, your eye must focus in such a way that the focal length of the ocular media stays the same (light still focuses on the retina) as the object is moved closer. In other words, the closer an object is to your eye, the more your eye must focus in order to see it clearly. To do this, the crystalline lens thickens with the use of a muscle inside your eye called the ciliary body. Just like a magnifying lens, the thicker the lens, the more plus power it has. The process of focusing one’s eye is called accommodation. Accommodation must be accurate and sustainable for clear and comfortable vision while performing near tasks such as reading and writing. Also, it is important to realize that the accommodative and vergence system are very closely linked to one another through pathways in the brain. As we accommodate, we also converge and vise-versa.
5. **Strabismus** (tropia): The deviation of one eye or the other such that binocularity is lost and both eyes are not pointing at a given target at the same time. Often people with strabismus see double (diplopia) or suppress the turned eye. There are three main types of strabismus:

a) **Esotropia**: When one eye is turned in toward the nose while the other eye is aligned with the target. A person with an esotropia appears "cross-eyed."

b) **Exotropia**: When one eye is turned away from the nose while the other maintains alignment with the target.

c) **Hyper/hypotropia**: When one eye is deviated upward (hyper) or downward (hypo) in relation to the other eye creating a vertical diplopia or a suppression by the deviating eye.

- Tropias can occur in the same eye all the time, or alternate eyes, or even occur only under certain viewing distances or under general fatigue.

6. **Phoria**: The position that the eyes tend to posture in the absence of stimulus for fusion. A good way to look at it is if a person is placed in an absolutely dark room with both eyes open, his or her eyes will most likely not be looking perfectly forward. As with a tropia, a phoria can either be an esophoria (a slightly nasalward posture), an exophoria (temporal posture), hyperphoria or hypophoria. High phorias often cause difficulty with prolonged visual tasks such as reading or even driving.

7. **Amblyopia** ("lazy eye"): A reduction in visual acuity that cannot be compensated for by spectacle lenses and not due to any pathological reasons. In other words, placing spectacles on an amblyopic eye will not improve vision up to 20/20. Additional therapy and treatment is required to attain clear vision.
8. Stereopsis: The perception of three-dimensional depth as a result of light hitting the retinas of each eye in non-corresponding points. Non-corresponding points are points on the retina that are not perfectly, anatomically correspondent with those on the other eye's retina.
IV. VISION AND LEARNING:

To understand the need for more thorough vision screenings within the educational system, we must explore the role of vision in the students’ learning experience. There are some important questions to think about to address this issue.

The first question is, in today’s classroom learning environment, what are the visual demands placed upon the student to learn effectively? Then let’s ask the question of what information is brought to the child by the sense of vision? Do we need efficient vision in order to learn effectively and what exactly is efficient vision? What is the prevalence of visual problems that may hinder learning and reading? Are these problems common? Is it important to catch vision problems early? These are all significant questions to answer the ultimate question of, are efficient visual skills necessary for a child to achieve scholastically up to his or her potential given our current teaching methods? Put another way, what does vision have to do with learning in today’s classroom environment?

In this section, each question will be addressed beginning with:

• What are the visual demands placed upon the student during normal classroom learning?

It has been estimated that as much as 90% of what we learn in the classroom, we learn through vision. Children must be able to perform tasks such as copying notes from the chalkboard, or overhead projector. They must be able to read from close distance and guide their hand visually through fine motor coordinated tasks such as writing. On top of that, they must process all this information and make sense out of it.

When a child copies something from the board, several visual tasks must be performed. First the child must read the sentence. To do this, he must be able to see the board clearly. Eye movements called saccades are
used to read each word. Saccades are short, quick, accurate eye jumps from word to word. If saccadic eye movements are not accurate, words can run together and become confusing. Then the child must remember what the board said as he makes another saccadic eye movement to his paper. During this movement, visual memory becomes important. Now he must see clearly up close. In order to do that, our eye must accurately focus (accommodate) to the plane of the page. Also, a convergence or an inward turn of the eyes must be performed in a controlled manner to point the eyes at the plane of the page. Binocularity or eye teaming must remain solid throughout the task. It is now that we can integrate our visual system with the motor task of writing. When the child looks up, he must make an accurate eye movement, focus must relax, and the eyes must diverge or uncross to the plane of the chalkboard. Eye alignment and congruent eye movements must be retained in order to see singly and clearly.

Reading alone poses not only the task of holding accommodation and vergence at the correct place, but being able to do it quickly, accurately, and for long periods of time while maintaining good saccades. If the child possesses all these tools, it makes it much easier to decode the symbols at which he is looking. Such a task is an example of visual perceptual demands that must be overcome to comprehend what is being read. Other visual perceptual demands besides symbol decoding are visual sequential memory, figure ground, and auditory integration. An example of the latter is listening to the teacher and taking notes.

In the above example, we only looked at one simple visual task. School aged children face many more. Try to imagine all the visual tasks that must be performed throughout the day in the classroom and outside. A healthy binocular system that is accurate and sustainable for long periods of time is ideal. If it is not accurate, letters and words can become very confusing and even reversed. Gross motor coordination necessary in sports will be difficult. If these skills are not sustainable, then the child will
get very tired and even become strabismic or suppress an eye at times of fatigue. Visual tasks will often be avoided.

What information is brought to the child through vision?

Think about all the components that go into identifying an object. When we see something, we can tell its size, shape, color, texture, location and even how it smells or feels by drawing on past experiences with the object. Good visual skills and the ability to see things three dimensionally (stereoacuity) all factor in as information is brought to us through our eyes.

Through vision, we can identify objects and, by using all aspects of vision (image on retina to analysis in the brain), we can even bring meaning to arbitrary symbols such as letters. Our brains then have the ability to clump the letters into meaning and context to understand concepts. Out of the five senses of man, vision is the ultimate provider of information in our environment. Furthermore, it is very closely integrated with all the other senses through connections in the brain to provide useful and quick information about the world around us.

What is efficient vision and do we need it to learn effectively?

To keep things as simple as possible, I will only discuss efficient vision from a mechanical standpoint and leave out areas such as perception. We can break down the bare visual skills that are necessary for a child just to get by into adequate visual acuity, accommodation, vergence, and binocularity or eye teaming skills.

Visual acuity is the measure of how well a person can see things clearly. We quantify visual acuity using the familiar Snellen letter chart or modified charts for very young children or those who do not know their letters. With less than 20/20 vision a child will not be able to clearly see what is on the chalkboard or what is written on a page. It is possible that a person can see clearly at far and not near as is the case in hyperopia (farsightedness). It is also possible that a person can see clearly at near
and not far as those with myopia (nearsightedness) or not clear at any distance with high myopia, hyperopia and astigmatism. Astigmatism is a condition in which the cornea is not perfectly spherical, but is steeper in one meridian than the other. Light rays do not focus on the retina as a circle of light, but rather an oval of light. It is important therefore, to measure visual acuity both near (16 inches) and far (20 feet).

It is easy to understand how blurry vision can hinder a child's learning experience. If he or she cannot see what is on the board or on a page, it is much more difficult to extract information from it. Assuming a healthy retina and visual pathway to the brain, most of these refractive errors can be compensated for with spectacle lenses. In the case of amblyopia, lenses alone will not allow the child to see 20/20, but active vision therapy must be used as treatment.

In order to see clearly at near, we must accommodate or focus our eyes. There are three components that are important to efficient accommodation. The first is amplitude. Amplitude of accommodation is the maximum amount the lens in the eye can focus. The younger we are, the higher our amplitude of accommodation. As we age physiological factors hinder our ability to accommodate and we must use reading glasses to compensate for a lack of focusing ability. Children of school age should have a very high amplitude of at least 5.00 diopters or more. This is more than enough to see very fine print. Likewise, he or she must be able to release their accommodation to see clearly in the distance.

Facility is the second important component of efficient accommodation. Facility is a measure of how quickly accommodation can be stimulated and relaxed in order to see letters clearly. A common test is to use lens flippers with one set of lenses which stimulate accommodation (-2.50 diopters) and one set that stimulates the relaxation of accommodation (+2.50 diopters). The lenses are alternated to see how many times a person can clear each set within a minute. This activity can give you a good
idea of how well a person can accurately focus their eyes when constantly looking up to the chalkboard and back down to their paper as in taking notes.

Sustaining ability is also important. It is one thing to have the accommodative amplitude to see something clearly, but if clarity through accommodation cannot be maintained then the image will blur out with any prolonged near activity. A good sustaining ability is necessary to keep letters clear and fatigue from happening. Once fatigue sets in, learning is very difficult, if not impossible.

Vergence is the next mechanical component necessary for efficient vision. When we look at something close our eyes converge (cross) and diverge (uncross) when viewing something further away. Vergence is similar to accommodation in that amplitude, facility, and sustaining ability are all important for efficient vergence. The only difference in testing is that we use prisms to stimulate vergence and not lenses which stimulate accommodation.

It is important to know that efficient accommodation and vergence also means that these two systems work well together. Both accommodation and vergence must be at the same and proper plane in order to see a target clearly and singly. When accommodation is stimulated, convergence is also stimulated and vise versa. When one system relaxes, the other is also stimulated to relax.

The Optometric Extension Program Foundation (OEP) is an organization that looks at vision as a sense that deals with all the above components, not just visual acuity. OEP recommends that a school aged persons should be able to have at least an accommodative amplitude of 5.00 diopters or more at a distance of one third of a meter. A child should be able to have an accommodative facility of about 10 cycles a more per minute using +/-2.50 D flippers at 16 inches. He or she should be able to converge about 19 prism diopters in the distance and diverge 9 prism
diopters as measured through a phoroptor. A phoroptor is a lens/prism bank that is used by optometrists. At near, convergence should be at least 21 prism diopters and divergence, 10 to 15 prism diopters.

Binocularity is also a very key component for efficient vision. Binocularity or eye teaming skills are basically a measurement of whether or not the eyes are pointing at the same target at the same time. If they are not, the child faces double vision, blurred vision, and suppression of the turned eye. In the case of a high phoria, the child has to work extra hard to compensate for their phoria to maintain binocularity at a given distance.

To answer the question, is efficient vision necessary for effective learning?, we can make an analogy. Think of it like trying to run a marathon before learning how to walk. Even if a person can walk, it doesn't mean they can run a marathon. If they can make it across the finish line, it definitely will not be at a fast time and the person will definitely not be comfortable at the end of the race. The key to an efficient visual system is to have efficient components of the visual system that work properly together. If they do not, words will be jumbled and information coming to a child through their eyes will be confusing and not conducive towards learning.

An interesting study in 1988 was done by William and Diana Ludlam called “Effects of prism-induced, accommodative convergence stress on reading comprehension test scores.” They changed a group of relatively young optometry students, who had healthy binocular systems, into people with a high esophoria by the use of spectacles with nine diopters of prism. This group read passages along with another who had no prism (plano lenses) in their spectacles. Then questions were asked of each passage. The group who wore the spectacles with prism (and consequently a high esophoria) scored statistically lower on comprehension. They also reported fatigue and even headaches. Keep in mind these are all post graduate students who scored low on comprehension. Imagine a child who is just learning to read or just trying to read to learn. An unstable binocular
system poses a significant handicap to those students who have to deal with it untreated.

"Vision anomalies and reading skill: A meta-analysis of the literature" written by Simons and Gassler reviewed 34 studies trying to relate vision and its role in learning. Each study dealt directly with this issue. They concluded that hyperopia, exophoria at near, vertical phoria, anisometropia (different refractive errors between the two eyes of more than 1.00 D), and aniseikonia (different size images projected on the retina of the two eyes) all are associated with below average reading performance. These conditions are not those of a person who has an efficient visual system.

Are vision problems common? What is the prevalence of vision problems and ocular disease?

To answer this question, we need to differentiate vision problems from ocular disease. Ocular disease describes conditions where visual skills such as accommodation, vergence and binocularity are not the issue. Things such as ocular infections, tumors involving the visual pathway, glaucoma or cataracts are examples of ocular disease. Visual problems are inefficient visual skills which effect clear comfortable vision for a given task.

A very important recent study was conducted in 1996 by Scheiman, Gallaway, Coulter, Reinstein, Ciner, Herzberg, and Parisi called "Prevalence of vision and ocular disease conditions in a clinical pediatric population." They examined 2023 patients between the ages of 6 months and 18 years. They were divided into three groups, infants and toddlers (birth to 2 years, 11 months), preschool children (3 to 4 years, 11 months), and school-aged children (6 to 18 years). The school-aged group made up the largest portion of the subjects with 1650 children included. The sample population consisted of 48 percent female children and 52 percent male. In
each subject ocular health was assessed as well as visual skills.

All subjects included, refractive error showed the highest prevalence of any vision disorder. Hyperopia of at least +1.50D was the most prevalent condition (24.8%) followed by astigmatism of at least 1.00D (22.5%). Myopia of -0.50D or more was shown in 17.6% of subjects. Binocular disorders not including children with strabismus were the next most common vision disorder. Amazingly, 14.3% of the children tested had some lack of efficient vision, not even including those with strabismus. Strabismus had a prevalence of 11.9%, amblyopia 7.1%, and accommodative disorders had a prevalence of 5.4%.

Within the group of nonstrabismic binocular disorders, convergence excess (7.1%) followed by convergence insufficiency (4.6%) were the most common. Constant esotropia was the most common form of strabismus followed by intermittent exotropia. Interestingly, ocular disease was found to be fairly uncommon with the most prevalent being peripheral retinal abnormalities (1.8%).

Since we are most concerned with the school-aged population, I will review their findings. Hyperopia (23.0%) was the most common, followed by astigmatism (22.5%) and myopia (19.6%). Binocular disorders not including strabismus had a prevalence of (16.3%) and strabismus with 10.7%. Amblyopia and accommodative disorders were common with a prevalence of 6.8% and 6.5% respectively. The prevalence of all ocular disease combined was only 3.4%.

Important conclusions can be drawn from this study. Not only are vision disorders very common, but refractive error and binocular vision and accommodative disorders are very prevalent. The prevalence of accommodative and binocular vision disorders including strabismics and nonstrabismics is 9.7 times greater than that of ocular disease in children between the ages of 6 and 18.

The bad news is that visual conditions with potential to impede the
maximum learning experience for a child are very common. The good news is that most of these conditions are very treatable if detected.

Is it important to catch vision problems early?

The eyes are a direct extension of the brain. Like the brain, the visual system is very flexible in infancy and as a toddler. The plasticity of the brain lessens as we age into childhood. The sooner experiences happen to us the sooner the brain and visual system can develop. Likewise, if certain experiences are not embedded for one reason or another, development can take an abnormal course. If vision problems are found early, the brain has an easy time learning how to use vision correctly. The longer a vision problem goes untreated, the more chance it has to be embedded and the more difficult it is to treat.

An interesting example of this point is a case study performed by David Fitzgerald and Carl Gruning and written up in an article called "Vision therapy for a preschool child with acquired accommodative esotropia." A three year old male Hispanic child was brought to the clinic because the mother noticed that his eye was turned in. The eye had been turned in one week when the child presented. The child was examined and given the diagnoses of accommodative esotropia and amblyopia. A prescription was given to compensate for his hyperopia.

Accommodative esotropia is a condition in which the eye turns in as the child focuses at a near target. Often times the eye which turns in or has the greatest amount of hyperopia will be deprived of normal visual experience and amblyopia results.

Since the child was amblyopic, his best corrected visual acuity was only 20/80 in the right eye and 20/200 in the left eye. This being the case, the optometrist recommended a course of occlusion of the better eye. While the eye was occluded, active vision therapy exercises were delivered to the child every day and in office therapy was given weekly. This was to
give the child visual experience that he lacked due to deprivation of the left eye. All the goals were met in a period of only 10 vision therapy sessions (10 weeks). The eyes were straight and visual acuity was back up to age appropriate levels. Furthermore, the child was now able to show normal stereoacuity and binocular vision.

If the child had not gone through this program, success would not have been achieved so quickly (compared to just occluding the better eye without active vision therapy). Since treatment began so quickly, it was easy for the appropriate neurological connections to be made in the child’s visual cortex. In most cases, the child is not started on therapy until the condition has persisted for a long period of time. Even when therapy is initiated after the condition has been there for a long period of time, the same goals are met in a time period that can extend twice as long or even longer. Often the goals are not met to such a high degree e.g. good stereoacuity. The bottom line is, the earlier a condition is diagnosed and treated, the more quickly and completely it will resolve.
V. ADDITIONAL SCREENING TEST SUGGESTIONS:

In order to justify additional tests, it is important to go over current policy that is common in most school districts. Once that is known, then we can explore the question of whether or not the skills tested are adequate enough for a proper referral. Next, previous research dealing with the screening process will be explored and finally, I will recommend additional tests that can be performed and interpreted easily, quickly, and at low cost.

In Oregon, two major factors comprise a vision screening. Teacher observation and a visual acuity taken only in the distance are the only two recommended information gathering methods. Teacher observation is an extremely useful tool to spot possible vision problems. A good checklist is given by the Oregon Department of Education's vision screening guide (see appendix for current policy and other checklists for behaviors to look for in common visual dysfunctions). Checklists such as these and others provided by various organizations should be reviewed each year by each teacher in an organized faculty meeting.

Distance visual acuity is also evaluated by Oregon schools. This is also a critical piece of information in a vision screening. If the student can see at least 20/40 in the distance, he or she passes the screening. If a child sees worse than 20/40 it would be very difficult to read the board or overheard projector. Twenty/twenty is considered very sharp vision. Many people will have complaints if vision is worse than 20/20 especially if they have experienced 20/20 vision already. As you can imagine, there are people who have never experienced 20/20 vision due to uncorrected refractive error or other reasons. Twenty/forty can be interpreted as the clarity of vision or resolution that a person with 20/20 vision experiences if he or she is at 40 feet compared to a person with 20/40 who is at 20 feet.

One of the more complete vision screenings that is recommended by a state are the guidelines laid out by the Wyoming School Nurses
Association. School districts such as the Campbell County School district follow this procedure. Not only is visual acuity and teacher observation used, but near visual acuity, binocularity, color vision, and extra ocular muscle balance are also assessed. Only distance visual acuity and teacher observation are required by school districts in Wyoming, but districts such as Campbell County are a good example of more complete screening procedures. See the appendix for the recommended vision screening tests in Wyoming. Unfortunately, a vast majority of school districts only use teacher observation and distance visual acuity for referral criteria.

If teacher observation was extremely reliable, many children could be referred in for a more complete screening. However, it is very difficult for a teacher to accurately assess each student every day as they perform visually in the classroom. Teachers simply do not have the time or are not properly trained to notice signs. It is for these reasons that objective measurements are necessary to evaluate each child. Distance visual acuity is a must for a proper screening, but by itself will miss statistically the most prevalent visual problem for school aged children. Hyperopia was found in 23% of those children from 6 to 18 years old. Low and moderate hyperopes can usually easily pass a distance visual acuity demand of 20/40.

As we discussed in section IV, efficient vision is closely related to learning effectively. Near visual acuity, binocularity, smooth and accurate eye movements, and age appropriate visual perception are all factors that are equally as important to vision as visual acuity. School districts need to take a more active role in assessing other important integral factors of vision in school aged children.

The Orinda Study,6 is a landmark study done by two ophthalmologists and an optometrist that was published in 1959. The purpose was to figure out the minimum amount of tests necessary to conduct a proper vision screening at a low cost. One of the important points that can be pulled from this historic study is the very definition of what a vision screening should be.
The first paragraph in this study goes as follows: “In general, the problems that should be identified in a screening program can be classified as: vision problem, including poor visual acuity, significant refractive error, and faulty coordination; and organic problems, including pathology and anomalies of the eye, adnexa, and impaired visual pathway or neuromuscular mechanism. Both kinds of problems must be detected if the screening program is to accomplish its main objectives.” Measuring visual acuity at far will only determine if the child has a significant amount of myopia or a large amount of hyperopia. Clearly, more thorough vision screenings are necessary to fit the very definition of a vision screening according to this study. It was concluded that visual acuity is not adequate, rather the Modified Clinical Technique was recommended. The Modified Clinical Technique tested visual acuity, refractive error, binocular vision, and looked for pathology.7

There are tests available that can be performed easily, quickly and with little equipment by a trained nurse or teacher. Eye care professionals may volunteer or be recruited to volunteer to assist with screenings. The following are additional tests that I recommend to add to the vision screening battery (on top of visual acuity at distance): Visual acuity at near, plus lens hyperopia test, eye movement assessment, binocularity assessment, accommodative and vergence assessment, color vision, external health exam and obtaining a good case history.

Hyperopia (farsightedness) is a condition in which the lens created by the ocular media, the cornea and lens, is not strong enough to focus rays of light on the retina. Since the rays do not fall directly on the retina, it is perceived as blur. To compensate for the blur, a hyperope can accommodate to make the effective power of the ocular media stronger (more plus) to focus rays of light on the retina. Low hyperopes and children can see quite clearly with just accommodation alone. The problem is that these people must accommodate just to see in the distance and
accommodate even more when looking at near. To see clearly, hyperopes have to accommodate all day long. This is very fatiguing to the visual system. A child who is learning to read or trying to comprehend what is being read has a large cognitive demand. If the visual system is fatigued, that task is not going to be comfortable and not easy. Hyperopes will often complain of headaches and ocular discomfort and may avoid near tasks or not perform to their potential.

During the current screening process, most hyperopes can easily pass a 20/40 visual acuity demand at 20 feet. That is another reason why taking near visual acuities is a good idea. Often times moderate to high hyperopes will not see clearly at near. A child with a healthy and normal visual system should not have a difficult time with seeing 20/20 at near. Another test can be performed to catch moderate to high hyperopes (greater than +1.50D). The plus lens hyperopia test is a quick and easy test to perform.

As a person reads, there are two different types of eye movements. The main eye movement used during reading are saccades. Saccades are rapid, controlled jumps from one word or phrase to the next. The time between one saccade and the next is called a fixation. A fixation is a zero velocity pursuit. Pursuits are the other type of eye movement. Pursuits are especially important in sports and other dynamic activities. A good example is batting a ball. A smooth pursuit must be used to track the ball accurately to correctly predict its location. Pursuits and saccades can be easily screened for using fixation beads. It is important to evaluate the extra ocular muscles which are important in reading and other activities. It is also important to evaluate the ability of the child to move the eyes into extreme gazes. If they cannot, it can be an indication of a palsy or other pathological conditions.

While we are testing the extra ocular muscles (pursuits and saccades), we can also look at how far a child can converge and still hold
his or her accommodation to the target. This test is called the Near Point of
Convergence (NPC). The NPC is another test that is very quickly
performed and easily measured.

For efficient reading, binocularity is a must. A unilateral cover test
can detect strabismus readily. The Worth Dot test can judge fusion, and
stereoacuity can be measured very easily. The cover test and Worth Dot
should be measured at near and far. A student has visual demands at both
distances.

The NPC measures one aspect of accommodation and convergence.
In a way it measures the amplitude relative to each other. It is also
important to measure the facility of each system. We can do that using lens
and prism flippers. The child is asked to clear words through lenses or fuse
letters through prism as many times as they can in one minute. We can get
a good idea of how quickly their two systems work and if they slow down
toward the end of the test. There are some children who will not be able to
clear or fuse one side of the flipper and that by itself yields a lot of
information.

Color vision can be evaluated very easily with Ishihara plates. This is
useful to the child early on as they are trying to learn colors or perform in
arts and crafts classes. Color vision abnormalities can also be a sign of
certain pathological conditions dealing with either the retina or visual
pathway.

An external exam carefully inspecting the lids and lashes, conjunctiva,
sclera, iris, and pupil shape and size is also a good idea. The prevalence of
pathology in school aged children is low compared to binocularity and
refractive error anomalies, but can cause extreme discomfort or worse.

The last part of a screening is perhaps one of the most important. A
good case history can provide a wealth of information. Often times children
are too young to understand the symptoms they experience. For this
reason, teacher observation and parent questionnaires that deal with
behavior and habits can accompany this section of the screening. There are several organizations that have compiled checklists for teachers, parents, and nurses that address this very topic. In the appendix different examples of checklists and questionnaires are provided (also see Oregon and Wyoming policy in appendix for their teacher observation checklist). They are all very good.

The following section is a procedures manual on the above screening tests. This manual will provide the purpose of the test, necessary equipment, cost, procedure, interpretation, and pass/fail criteria.
VI. SCREENING TEST PROCEDURES AND INTERPRETATION:

Visual Acuity (VA) at Far

Purpose: To measure the clarity of vision at 20 feet.

Equipment/Cost: Occluder ($12.50), Snellen Distance Chart ($7.95), Child Recognition Distance Visual Acuity Chart ($7.95), Masking tape.

Procedure: The procedure has been standardized and is carried out in the same fashion every time for consistency. Refer to the Oregon Department of Education vision screening manual or any other state vision screening manual for proper procedure and interpretation. This manual is in the appendix. Children who do not know their letters may use the symbol card instead of the Snellen Letter Chart.

Interpretation and Pass/Fail Criteria: It has been agreed upon in many screening policy manuals that the referral criteria for distance visual acuity is 20/40 or worse. Keep in mind that a person who is used to 20/20 vision will be bothered by 20/40 vision. Twenty/forty vision is still the most common criteria. Children who have a difference between the two eyes of two lines or more should also be referred. A two line difference, even if the worse eye is better than 20/40, indicates that there is a significant difference in refractive error between the two eyes (anisometropia). A referral must be made because the brain may learn to shut off the information to the eye that is not seeing clearly and amblyopia and even strabismus can result.

Visual Acuity at Near

Purpose: To measure how clearly the student can see at 40 cm (16 inches).
Equipment/Cost: Snellen Near Letter VA Chart ($0.30), Child Recognition Near VA Chart ($0.30), occluder.

Procedure: With the child sitting comfortably in a well lit area, cover the left eye. Hold the appropriate acuity card (Snellen for all children who know their letters), 40 cm (16 inches) from his or her eyes. Have the child call out the letters of the smallest line that he or she can make out. Record just as you would the distance VA. Repeat with the left eye by covering the right.

Interpretation: School aged children should have a large amplitude of accommodation. A child who sees less than 20/20 at 40 cm (16 inches) is likely to have a large amount of myopia or at least a moderate amount of hyperopia. Amblyopia is also possible.

Pass/Fail Criteria: 20/40 or worse.

**Plus Lens Hyperopia Test**

Purpose: To test for hyperopia greater than +1.50 diopters (D).

Equipment/Cost: +/-1.50D lens flipper ($25.00), distance snellen or child recognition chart.

Procedure: Same as VA at far except it is performed through the plus lens side of a +/-1.50D lens flipper.

Interpretation and Pass/Fail Criteria: If the child is still able to call off the same row of letters that he or she did without the lenses, then the child fails the test. Looking through +1.50 lenses should drop the acuity at least a full
line of letters. If it does not, then significant hyperopia exists.

**Eye Movements**

**Purpose:** To evaluate pursuits and saccades and to ensure the ability of the child to move their eyes in all extreme gazes freely and smoothly in an age appropriate manor.

**Equipment/Cost:** Fixation beads ($7.00 for a set of three).

**Procedure:** Sit the child down directly across from the examiner. Start with a fixation bead 16 inches away from the child in the middle of the two eyes. Slowly move a fixation bead from the center of the child’s vision to the right extreme by moving the bead in a horizontal fashion. Once the bead is moved far enough where the child is in extreme left gaze, move the bead upward until the left upward extreme is found and then directly down until the downward left extreme is found. Then, slowly move the bead back to center left gaze and straight left until the right gaze extreme is met. As before, move the bead until the child hits his or her upper right extreme, then lower right extreme. With this technique, an “H” pattern is performed to meet all the extremes. In lower gaze, the child’s eyelids may have to be held up by the examiner’s fingers to observe the eye movements.

The “H” pattern technique measures smooth eye movements (pursuits). Saccades are equally important to test. To do this, hold two fixation beads about 12 inches apart and 16 inches from the child. Make sure both beads are of different color. Instruct the child to quickly look at the bead for which the color is called out. For example, if you are using a red and white bead, the examiner simply calls out “white.” Once the saccade is complete, then the examiner calls out “red” and observes the saccade. This is done
several times to get a more accurate picture of how a child performs saccadic eye movements.

One more test that is good to perform while the fixation beads are in use is called the Near Point of Convergence (NPC). To do this, start with the bead about 18 inches from the child's nose. Ask the child if the bead is seen singly. Then slowly move the bead toward the child's nose. Ask the child to verbally tell the examiner when the bead gets blurry and when it goes double. Carefully watch the eyes for the point in which one eye gives up and starts to drift outward. Encourage the child to keep the bead clear and single at all times. Measure the distance that the child reports seeing double (diplopia) or when the examiner sees one eye drift outward. Then have the child close his eyes and then open. Once the eyes are open, slowly move the bead away from the nose until the child reports the bead is single again. Record the distance the bead was from the eyes when the bead split into two and also when the child was able to get the bead single again. Record as break/recovery, e.g. 3 inches/4 in.

**Interpretation:** When performing pursuits and saccades it is essential that you become a good observer. While observing pursuits look for smoothness, congruency (both eyes moving together), accuracy, and fullness of gaze. Children above the age eight should no longer demonstrate a midline jump during pursuits. It is normal for some midline jump in children below the age eight. Record accuracy of movement, smoothness of movement, and if the child is able to reach all the extremes of gaze. Examples of recording for pursuits are “smooth, accurate, full” or “jerky, midline jump, with limitation in left gaze.”

When observing saccades look for quickness and accuracy. Examples of recording saccades are “quick and accurate,” or “delayed saccades with
overshooting and undershooting.

Pass/Fail Criteria: NPC is an easy one to judge for pass/fail status. In an article called “Results of a pediatric vision screening program,” B Krumholtz, used four inches as the pass/fail criteria. Her research found this to be a good cutoff point for the break value during an NPC. If the recovery value is over twice the break, the child should not pass the NPC test.

Pursuits and saccades are more subjective. Children in fourth grade or higher should have smooth, accurate, and full eye movements. Expect some imperfections in children younger. Any limitation of extreme gaze is an automatic fail. A child who cannot move one or both eyes into every extreme may be at risk by whatever factor is limiting movement (nerve damage, obstruction such as a tumor, orbital fracture, etc.) Children with an obvious or gross ocular motility dysfunction should also be referred.

Binocularity

There are three tests that we can use to assess binocular function. The unilateral cover test is a test for strabismus, the Worth Dot test assesses suppression and fusion, and the Randot Stereogram assesses stereoacuity.

Unilateral Cover Test

Purpose: To reveal a strabismus.

Equipment: Fixation bead, occluder.

Procedure: With the child seated comfortably in a well lit room, instruct him
to concentrate at a letter on the distance VA chart. Cover the left eye with the occluder while observing the right eye. If the right eye moves in any direction, a strabismus is present. If the eye moves nasally, then the child is an exotrope, if the eye moves temporally, then the child is an esotrope. Cover and uncover the left eye three times to confirm movement or no movement. Repeat the next eye with the same procedure.

Now have the child concentrate at a very small target at 16 inches. Putting a dot on a fixation bead works well. Again, do the unilateral cover test with each eye. Performing a cover test at near is extremely important. A child can be strabismic at one distance, and not the other!

**Interpretation and Pass/Fail Criteria:** If the uncovered eye makes any movement towards fixation while the covered eye is covered, then the child has a strabismus and fails the screening.

**Worth Dot Test**

**Purpose:** To test for suppression and fusion.

**Equipment/Cost:** Worth Dot flashlight ($20.00), Red/Green Anaglyphic glasses ($4.95).

**Procedure:** This test should also be done at two different distances. Sixteen inches and ten feet are good distances. Have the child wear red/green glasses with the red filter over the right eye. If the child wears spectacles, put the R/G glasses directly over the top. Hold the flashlight at 16 inches from the child in a dimly lit room. Ask the child how many dots are seen. Now repeat by moving back to ten feet.
Interpretation: The flashlight has two green dots, a red dot and a white dot. If two red dots are seen, then the child is suppressing his left eye. If three green dots are seen, then the child is suppressing the right eye. If four dots are seen, then the child has a normal response. If five dots, two red and three green, are seen, then fusion is lost and the child experiences diplopia.9

Pass/Fail Criteria: If any response other than four dots are reported at any distance the child’s binocular system is not performing well. This child should be retested if he or she is fatigued at the time. Otherwise, a referral should be made.

Stereoacuity

Purpose: To assess the child’s depth perception at near.

Equipment/Cost: Stereofly or Randot Stereogram ($119), Polaroid glasses ($4.95).

Procedure: With child sitting comfortably and in a well lit room, have the child put on polaroid lenses. If the child wears spectacles, put the polaroids over them. A Randot is the preferred stereogram because it can pick up children with very small amounts of strabismus that is not detectable with the cover test. Have the child look at the random dots and ask if there is anything within each box. Refer to the package insert as to what the child should see and at what demand each shape tests for. Then flip the book over and ask the child to point out which circle in each row is coming toward them. If the Stereofly is used, ask the child to pinch the wing of the fly where they perceive it to be in space. This should be about an inch off the page. The stereogram will come with the correct answers and procedure.
Interpretation: When the child stops giving the correct answer, that is the threshold at which they can no longer see depth. Record the last correct response and look up the demand of that response. If no shapes are reported by the child in the random dot portion, then the child is most likely a microstabismic. If no float is seen with the fly, then the child has very poor stereoacuity (worse than 200 arc seconds).

Pass/Fail Criteria: If the child does not perceive any shapes in the random dot portion of the test, he should be referred. If the child gets less than half of the dots on the other side, then a referral may be appropriate.

Accommodation and Vergence Facility

Purpose: To evaluate the speed and accuracy at which a child can change his or her focusing system and vergence system.

Equipment/Cost: +/-2.00D lens flipper, 6 BI/BO prism flipper ($25.00).

Procedure: Sit the child at a table in a well lit room wearing spectacles if they have them. The student is to hold up the flippers close to the eyes so that he is looking directly through each lens. As soon as the letter on the card becomes clear, the child is instructed to flip the lenses. The next letter is called off and the lenses or prisms are flipped back to the other set. The student is timed to see how many times he or she can clear a letter through each side. The procedure is the same for the prism flippers and the lens flippers. The letters on the card need to be a 20/30 demand at 16 inches. These cards can be made on a computer or purchased. Symbols like the child recognition cards can also be made for children who do not know their letters. Both lens and prism flips are timed for a minute and recorded as cycles per second. One cycle is clearing the letters through both sides of
the flipper (+2.00D and -2.00D or 6 prism diopters base out and 6 base in).

**Interpretation:** Using the lens flippers, this is a measure of how many times a student can accommodate and relax 2.00D relative to the demand in one minute. Using prism flippers, it is a measure of how many times the child can fuse letters using convergence and divergence at 16 inches in one minute. If the child cannot clear one side, simply record, "could not clear minus," for example.

**Pass/Fail Criteria:** A child fails if he cannot clear one side of either the lens or the prism flippers or gets less than six cycles/minute in one flipper or the other.

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**Color Vision**

**Purpose:** To evaluate the perception of color.

**Equipment/Cost:** Ishihara Plates ($110), pointer, occluder.

**Procedure:** Occlude the left eye. Show each page of the Ishihara Plate book to the child. Instruct them to call out the number they see on each plate. If they do not know their numbers, then allow them to outline the number with a pointer. Do not let them use their fingers because it will effect the color of the plate over time. Repeat the plates over after occluding the right eye. Ensure good natural sunlight or fluorescent light throughout the test.

**Interpretation and Pass/Fail Criteria:** If any plates are missed, notify the parents and the teacher of the student. Depending on the plate missed, the instruction in the Ishihara Color Test book will identify the specific color
deficit. Refer out for a difference in color perception of the two eyes.

**External Ocular Health Exam**

**Purpose:** To look for any signs of ocular pathology or external ocular abnormality.

**Procedure:** With good light (a pen light can be helpful), carefully inspect both eyes for any swelling, discharge, redness, or anything out of the ordinary. Externally, we can inspect the lids and lashes, cornea, conjunctiva, sclera, iris and pupil. Check the lids and lashes for excessive debris, redness, or swelling. Look for cloudiness in the cornea or any debris in the tear film covering the cornea. Check the conjunctiva (the clear membrane covering the white part of the eye and the inside of the lids) for excessively injected (blood-filled) vessels or fluid underneath the membrane. Likewise, look at the sclera (white of the eye) for irritation or swelling. Examine the iris for uniformity of color. Look at the pupil for roundness and large differences in size between the two eyes or cloudiness within the pupil. It can be possible and normal to have a small difference in size between the two pupils.

**Pass/Fail Criteria:** If any abnormality is noticed or the child complains of excessive discharge, pain, or discomfort a referral must be made.

**Extended Case History**

There are several organizations that have written very good checklists of questions that should be asked of the child, the teacher, and of the parents. Children should be asked about any visual symptoms that might occur. Teachers need to fill out checklists such as the examples in the appendix.
each year. Furthermore, it would be extremely helpful if parents were sent a questionnaire dealing with their child's development and vision. Direct questions to the child, teacher observation, an a parental questionnaire combined could give the school extremely useful information as to whether complete vision exams (or medical exams) are indicated. In the appendix, there are examples of these checklists and questionnaires from various organizations. The Oregon Optometric Association has produced a fantastic manual which includes checklists and things to look for with visually related problems. The manual is called "The effects of vision on learning and school performance: A handbook for educators and parents."
VII. CONCLUSION:

The purpose of a school screening is to detect most of the children who have a condition that hinders the child's ability to take in information through sight. If vision is looked at on a comprehensive level, then all aspects of vision must be evaluated to some degree. A simple distance visual acuity will miss a very large number of those children who are in need of visual intervention. If a child tells his or her parents that they passed the school vision screening and only distance visual acuity is tested, then they may have a false sense of security and believe that their child's visual performance is adequate.

Referrals to eye care providers include ophthalmologists and optometrists. Keep in mind that if a referral is made because of poor performance on visual skills (VA, binocularity, etc.) then the appropriate referral is to an optometrist. Furthermore, if the child is having difficulty in reading or writing, or is not visually up to developmental norms, then referral to an optometrist who practices behavioral optometry (vision therapy) may be the most appropriate. Pathological conditions may be more appropriately referred to an ophthalmologist, but not always. Researching the community to find out what specialties are available in vision care is recommended.

A very important point that must be understood and extremely well communicated to parents, children, and school faculty is that screenings are not designed to, or in any circumstance replace a complete vision exam by an optometrist or ophthalmologist. It is only to reach those children without the means for regular exams or those children whose parents have not received education on the benefits of regular vision exams.

The American Optometric Association (AOA) recommends that a child who is not at risk and is experiencing no visual symptoms should get a complete vision exam at age 6 months, age 3, and before first grade and
every two years thereafter. If they are at risk or experiencing symptoms, then they should be seen as recommended by their eye care practitioner for complete exams. Regular annual vision screenings can help catch potential problems as early as possible (before the recommended complete vision exam).

Annual meetings to educate teachers on what to look for in a child’s behavior that indicate potential visual problems are strongly suggested. An observant teacher may be the first one to detect possible visual problems. The earlier they are noticed, the sooner the child may receive help. Recruitment of eye care practitioners in the community is very important to demonstrate proper screening techniques and educate screeners within the educational system.

The recommended screening procedures in this guide can be successfully carried out with proper training and as little as $370 in equipment costs. The benefit of healthy vision far outweighs the cost and time for more complete screenings. Educational success and the self confidence gained by more children can aid in an overall benefit to our educational system.
VIII. REFERENCES:


IX. APPENDIX:

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D. Wyoming State Vision Screening Policy 51

E. Pacific University Screening Form 62

F. Checklists for Parents, Teachers, and School Nurses 63
Directory of Organizations

Pacific University College of Optometry
2043 College Way
Forest Grove, OR 97116
(503) 357-5800

Oregon Optometric Association (OOA)
800-922-2045
Fax (503)659-4189

American Optometric Association (AOA)
243 N. Lindbergh Blvd.
St. Louis, MO 63141
800-365-2219
Fax (314) 991-4101

Oregon Optometric Group Purchasing (OOGP)
1028 NW Sixth St., Box 724
Grants Pass, OR 97526
800-654-3829
Fax (541) 479-6586

College of Optometrists in Vision Development (COVD)
P.O. Box 285
Chula Vista, CA 91912-0285
(619) 425-6191
Fax (619) 425-0733

Optometric Extension Program (OEP)
1921 E. Carnegie Ave., Ste. 3-L
Santa Ana, CA 92705-5510
(714) 250-8070

Parents Active for Vision Education (PAVE)
9620 Chesapeake Dr., Suite 105
San Diego, CA 92123
800-PAVE-988
Fax (619) 425-0733
THE EYE.

FIGURE 1

LIGHT

CORNEA

LENS

RETINA

OPTIC NERVE TO BRAIN

IRIS

CILIARY BODY
VISION SCREENING

School Administrator’s Responsibility:
The school district shall maintain a prevention oriented health services program for all students that includes vision screening.

Rationale

School vision screening consists of the administration of a test for distance visual acuity and the observation of students for symptoms of visual defects. This is generally accepted as an effective way to identify students with gross eye defects. The Snellen eye chart is a recommended screening tool. It is recommended that screening procedures be conducted by the school nurse or another person connected with the school who is properly trained. This individual may be a volunteer or the classroom teacher. Screening by practitioners specializing in a particular field of practice such as optometrists or ophthalmologists is not recommended because it tends to detract from an integrated health appraisal of the student and may give the impression of a definitive diagnosis.

There are at least two types of Snellen charts that are useful in this situation. The Snellen E chart should be used for students grades kindergarten through second. Students in grades three and above should be screened using the Snellen alphabet chart, unless impeded by language or developmental delays. These screening methods are not diagnostic tests. Examination beyond the scope of screening are the responsibility and the prerogative of the parent or guardian. School and health authorities are obligated to inform parents of the need for care and encourage them to take appropriate action.

Recommendations

1. It is recommended that all students in grades kindergarten through the third grade be screened annually. Additional screening of students in grades 5 and 8 to identify potential visual acuity changes prior to middle and high school entrance respectively are suggested.

2. Students referred by teachers for observed concerns of decreased visual acuity from other grade levels shall also be screened.

Teacher Observation

Since teachers have the opportunity to observe each student from day to day, they are in a position to notice unusual reactions, conditions, or changes in behavior which may be signs of a
visual problem. Observation and inspection by the teacher, and complaints by the students, are as important as an eye test in identifying symptoms. The teacher should note the following and refer for immediate attention of the school nurse.

1. Symptoms based on complaints of the student:
   - Blurred vision
   - Dizziness or nausea following close eye work
   - Definite dislike of reading or other close work
   - Pain in the forehead or temples
   - Headache

2. Symptoms based on appearance of the student:
   - Watering of eyes while reading
   - Frequent styes
   - Discharge from the eyes
   - Lids often red, encrusted, or swollen
   - One eye tends to turn inward or outward when tired
   - Frowning, excessive blinking, or wrinkling of the forehead
   - Obvious deviation of eye in any direction

3. Behavior
   - Rubs eyes frequently
   - Tries to brush away a blur
   - Sees blackboard with difficulty
   - Holds book close to the eyes
   - Sits with poor posture when reading
   - Inattention and symptoms of fatigue while reading
   - Stumbles or trips over objects
   - Squints in bright light
   - Continually tries different positions and angles during close work
   - Frequently moves book closer/further from eyes while reading

**Recommended Preparation for Screening**

1. Use of the Snellen eye chart should first be discussed with the students, and they should understand how they are expected to respond. With younger age groups, it is helpful to demonstrate and practice with the large "E" several days before screening. Thorough preparation will save time and improve accuracy in screening. Do not leave chart posted in classroom.
2. Plans for use of the Snellen eye chart may be incorporated into daily activity schedules. The teachers and nurse should become well acquainted with Snellen procedures before attempting to screen students. Anyone assisting the teacher or nurse also should be trained in testing procedures.

3. The following equipment should be on hand and in good condition:
   - Snellen “E” chart for students in kindergarten through grade two.
   - Snellen “alphabet” chart for grades three through 12 (must have ability to read and comprehend)

**Procedure**

1. Have student stand with heels on taped line on the floor (20 feet from chart) or sit in chair with the back of the legs of the chair 20 feet from the chart.

2. Students shall be checked with prescribed glasses/contacts on unless the student identifies that the prescriptive lenses are to be worn for close vision.

3. Check each eye separately.

4. Demonstrate how to use the occluder. Encourage the students not to push on the eyeball when covering the eyes because it causes blurred vision.

5. Begin screening at the 20 foot line
   a. Alter the pattern of request for student’s identification of symbols to avoid student’s memorization.
   b. Student passes line by reading 7% of symbols in line.
   c. If student unable to pass 20 foot line, continue moving upward in testing until student passes line.
   d. Observe for squinting, tearing, tilting of head, inconsistent responses and write such symptoms on worksheet.
   e. Record screening results and observations on worksheet and on the Oregon School Health Record. In recording the results, the numerator indicates the feet from the vision chart (20. The denominator indicates the lowest line read on the chart (50, 40, 30, 20, etc.) Always indicate with or without glasses. Example:

<table>
<thead>
<tr>
<th>Observations</th>
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<tr>
<td>Headaches</td>
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Referrals

Refer to the nurse for re-check of vision:
- those students with two line difference between the two eyes
- screen 20/40 or worse
- show symptoms of visual impairment

Referrals may be made on the Vision Referral Flow Sheet.

Parents of students who fail the re-screening or who continue to exhibit signs and symptoms of possible visual disturbances should be contacted with a vision referral recommending a professional eye examination. (See Report of School Vision Screening)

Record referral on appropriate forms, i.e. Referral Flow Sheet, Oregon School Health Screening Record.

Results must be recorded in the Oregon School Health Screening Record.

It is important to use a system of follow-up for each referral generated by the screening tests. A school's responsibility should not end when the referral has been made, but should continue through follow-up of any indicated vision problem. The school's record should also indicate the nature of the abnormality, as determined by the specialist, and a record of treatment prescribed.

A comprehensive eye examination can be provided by an ophthalmologist or an optometrist. In case of injury or infection, the student should be referred to a physician.

It is recommended that parents check with their vision insurance plan to identify specifically where student may be seen under specific insurance plan. Many insurance plans will not allow the insured to go directly to the ophthalmologist or optometrist.

Resources

- Oregon Academy of Ophthalmology
- Oregon Optometric Association
- National Society to Prevent Blindness

References

- Tongue, Andrea M.D., personal correspondence to Joan Box, R.N., Nurse Consultant, dated March 5, 1996.


• National Association of School Nurses, Inc. Vision Screening Guidelines for School Nurses. Scarborough, ME.
## Wyoming School Nurses Association
### Minimum Standards Health Screening Program for Wyoming Students K-12

These are recommended, not required.

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<td>RECOMMEND REFERRALS, HIGH RISK STUDENTS AND AS PART OF HEALTH APPRAISAL.</td>
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<td>ALL &lt;- NEW STUDENTS &lt;-</td>
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<td>RECOMMEND ONE TIME</td>
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<td>MUSCLE IMBALANCE</td>
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RATIONALE FOR WSNA MINIMUM STANDARDS HEALTH SCREENING PROGRAM K-12

The screening program was modeled after (1) information in the publication, *School Health in America: An Assessment of State Policies to Protect and Improve the Health of Students* (4th Edition); (2) a survey of the 49 Wyoming school districts to compile what screening was being done; (3) assessment of what screening was taking place compared to what were perceived as the needs of Wyoming school students; and (4) consultation with Victoria Hertel, the School Health Consultant for the State of Colorado. Further information is provided below for some of the screening areas.

Hearing Screening:
- Puretones means the evaluation of auditory sensitivity.
- Impedance or acoustic immittance is the evaluation of middle ear functioning.

Younger children have a higher incidence of middle ear disease. Older students have a higher incidence of permanent high frequency loss. Middle ear disease can be corrected with appropriate antibiotic therapy. Untreated middle ear disease can lead to permanent communication problems. High frequency hearing loss is a condition that can be prevented if we include protection of hearing in health education classes. Once identified, counseling is needed in order to protect what hearing is left and prevent further damage.

Scoliosis:
- Early detection of spinal curvature is essential for non-surgical treatment. Monitoring students during their growth years is the main component of early detection. The minimal recommendation could be expanded to include 5th graders and new students in grades 9-12 who have never before been screened.

Health Appraisal:
- This is a "head to toe" health assessment to identify the health problems a student has, or the student's potential for having health problems in the future. The completeness of the health appraisal will be based upon the educational level of the school nurse doing the health appraisal. A nurse practitioner will be able to assess health status at a higher level than an associate degree registered nurse. As Dr. R. Larry Meuli, Administrator of the Division of Health and Medical Services at the time, stated in his letter of 4/3/90 to Lynn Simons and Audrey Cotherman: "In 1990 it is estimated that 40% of all children have no access to health care...whatever the cause, the school system may be the only point of entry to the health system for many young people."

Health History:
- The information gathered from a complete health history gives an indication of what health problems a student has had identified and the success or failure of treatment. This provides the parent's perception of the current status of previous health problems and also helps identify the potential for new health problems. This information assists qualified personnel in the health appraisal assessment.

Height and Weight:
- These are really important indications of a student's health and should be a part of every health appraisal. This information plotted on growth charts can
provide valuable information to physicians evaluating growth disorders.

Blood Pressure:
As a state, Wyoming has not identified elevated blood pressure as a risk for Wyoming students. Blood pressures should be included in every health appraisal, by referral, and for students at high risk based on the information obtained from health histories.

Color Vision:
The use of color in many aspects of learning, especially in elementary school, presents an educational problem for those students who are color deficient. Early identification of these students will allow teachers to modify the information taught through color formats to other learning processes.

Near Vision:
Any student having difficulty with reading or close work should be tested for near vision acuity. The minimum standard does not recommend testing every student.

Distance Vision:
Not all students in all grades need distance vision tested yearly. This allows for prioritizing time for other health screening areas considered equally important as the traditional distance vision testing. Distance vision should be included in every health appraisal.

Muscle Imbalance or Muscle Balance:
This tests for the inability or the ability of the two eyes to work together. This was considered by many individual nurses in the Wyoming School Nurses Association to be an essential assessment of young students. The student whose eyes do not function together properly needs treatment as early as possible.
VISION SCREENING

Who is to be screened?

See Minimum Standards Health Screening Program for Wyoming Students K-12. Teacher referrals and parent referrals are screened regardless of student's age or grade.

Vision screening is also suggested for children who repeat a grade and those who failed vision screening the previous school year and did not see a vision specialist.

Special Alerts
- Crossed eyes
- Red rimmed, crusted or swollen eyelids
- Inflamed or watering eyes
- Recurring styes
- Complaints of double or blurred vision
- Complaints of itching, burning or scratchy eyes
- Complaints of dizziness, headaches, or nausea following close work
- Inability to see well at near or far distance
- Squinting or frowning
- Blinking excessively
- Rubbing eyes excessively
- Straining to see (shutting one eye, tilting head, thrusting head forward)
- Drooping eyelid(s)
- Holding books too close
- Stumbling over small objects
- One eye turns in or out
- Headaches in forehead or temples
- Head turns as reads across page
- Loses place often during reading
- Needs finger or marker to keep place
- Displays short attention span in reading or copying
- Too frequently omits words
- Writes up and down hill on paper
- Rereads or skips lines unknowingly
- Misaligns both horizontal and vertical series of numbers
- Closing or covering an eye when reading or watching movie
- Abnormal posture when doing close work

What conditions are necessary

Adequate lighting without glare

Room large enough to permit the examiner to have the required distance for screening. For regulation Snellen Chart, 20 feet is required. A mirror 10 feet away may be used to reflect the image to equate 20 feet (requires a reversed letter plate) or a 10 foot chart may be used when less space and no mirror is available.
Necessary equipment

The snellen tests, personal observation, and history have proven to be the three most reliable methods of identifying children with visual problems in the school setting.

Tape measure and tape to mark floor.

Occluder (may be paper cup or paper patch to be held lightly over one eye at a time).

Procedure

SNELLEN TEST (for visual acuity):

The Snellen Test establishes the level of child's visual acuity, i.e., 20/20, 20/40, etc. (Includes Snellen letter chart, HOTV or matching symbol chart, Snellen E Chart, Snellen Hand Chart and Symbol Charts).

1. Be sure light is sufficient to illuminate the chart but avoid glare on chart or in child's eyes.

2. Place chart at child's eye level.

3. Mark off 20 feet and have child sit or stand with heels on the line.

4. If 10 foot chart or mirror is used, the line should be marked 1 foot away from chart.

5. Show the student what you expect him to do. Point with finger or blunt pointer below each letter.

6. Occlude left eye with an occluder and test right eye. Then reverse the procedure and test left eye.

7. Test from the top of the chart down toward bottom.

8. Instruct students who wear glasses to keep glasses on unless student states that sight is better without glasses. Then test both with and without glasses. When testing with prescription lenses put a (C) in column below first 20 for recording results. The (C) will designate that the vision was screened with corrective lenses.

9. Instruct student to keep eye behind occluder open.

10. Use a snake pattern while screening, left to right, right to left.

11. Record right eye, then left eye. Example 20/20 20/20. If a child misses one letter on a line, mark it 20/30-1. If a child misses two letters on a line, mark it 20/30-2. If more than two letters are missed on 20/30 line or line below, the line is failed. Record vision at the previous line. A student must read all the letters correctly on the line labeled 20/40 and those above it to receive credit for the line.
12. Referrals to parents for vision check by a specialist are made only after two checks are made on the student's vision by the nurse and vision is 20/40 or worse or there is two lines or more difference in the vision of the two eyes.

13. Record the first exam in ink in the vision screening column for the appropriate year. If student fails, chart in referral and follow-up column on the Student Health Record, a vision rescreening to be done, sign and date.

14. When rescreening is competed chart vision rescreening results, referral if appropriate, name and date.

TITMIS VISION TESTING MACHINE:

This machine tests for myopia, hyperopia, amblyopia, fusion, phoria, depth perception and color vision deficits.

1. Advantage is that no space is required and lighting is uniform.

2. Disadvantages are the cost of the machine, the tendency for over-referral, and the fact that some students' eyes are closer together than the lens of the machine.

3. For specifics as how to use machine and what results should be referred see operator manual.

NEAR ACUITY FOR HYPEROPIA:

The plus lenses are designed for use with the Snellen test to detect moderate to severe hyperopia (farsightedness). Please refer to your local eye care practitioner regarding the use of plus lenses as this test may not be recommended.

NEAR POINT VISUAL ACUITY

PROCEDURE: A near point vision chart should be held 14 inches from the eyes. If the subject can read the corresponding letters, he/she has the equivalent of 20/20 near vision. (See sample at the end of this section).

COVER TEST OR MUSCLE BALANCE TEST:

This test is for strabismus. Muscle balance test should be done as early as possible. The Wyoming School Nurses Association recommended Minimum Standards Health Screening Program recommends all kindergartners and new first graders should be screened.

Binocular vision is the blending of separate images seen by each eye into one composite image. This weakness may be observed when muscle imbalance is present and the fusion reflex is blocked while one eye is covered.
PROCEDURE:

1. The student is asked to look at a specific point with both eyes. The nurse then covers one eye with an opaque cover, cup or occluder. While one eye is covered, the nurse observes movement to fix on the object. If the eye moves, it was not straight before the other eye was covered. The opaque cover is removed from the covered eye and the eye just uncovered is observed for any movement.

   A. The appearance of the object on the retina of the covered eye is suppressed.
   B. The covered eye relaxes and the eye drifts to another resting position if there is a weakness tendency of the extraocular muscles.
   C. When the child's eye is uncovered, the eye jerks back into position where the image appears again on the retina.

2. The procedure is then repeated on the other eye.

EXTERNAL INSPECTION:

A systematic inspection of observable parts of the eye and its surrounding tissues to detect signs of external eye disease or abnormalities.

1. If the child is wearing glasses, have the child remove them.
2. The eyes should be checked in the order suggested by the acronym: "WIPL"

   W - Whites: There should be no redness or growths on the sclera. If child has been swimming caution should be exercised in making a referral.

   I - Iris: The iris should be a complete circle. Both should be of the same color.

   P - Pupil: The pupils should be clear and dark. There should be no cloudiness and they should be of equal size and round.

   L - Lids and Lashes: The lids in their natural, open position should give a full view of the pupil. There should not be redness or crusts along the margin or signs of a sty. The margin of the lid should be flush against the surface of the eye. The child should show normal blinking during observation period. Lashes should be present on the top and bottom lids of both eyes. Lashes should not turn in causing them to contact the conjunctiva.

3. Refer any abnormalities noted.
COLOR VISION:

Screening for color deficiency is recommended because of educational or vocational implications. There is no treatment.

1. Use Ishihara color plates with adequate daylight or fluorescent light.

2. Screen with glasses on.

3. Screen twice if failed first time.

4. Passing is reading all number correctly.

5. If the person being tested does not know numbers, the plates with lines can be used. Have student use a pointer such as clean water color brush that would not mark up or deface color plates such as pencil, eraser or finger.

6. If student fails notify parent and teachers.

BINOCULAR VISION:

Binocular vision is not referred to in the Minimum Standards.

Polarized glasses and a polarized stereo depth test (e.g. stereo fly, stereo reindeer, stereo butterfly, or the Randot) are used to test for binocular vision problems such as amblyopia, suppression, and poor ocular alignment. All first grade, new students and referrals should be screened.

1. With the polarized glasses on, show the child the large picture of the fly (or reindeer or butterfly) to demonstrate the upward "float" of the picture.

2. Ask the child to "pinch" the wings (or antlers) guiding the child's hand in from the side rather than straight forward.

3. The Randot has the circles, but does not have the fly or reindeer or butterfly.

4. Now ask the student which of the numbered circles is floating toward them. Make sure there is no glare on the test booklet.

5. Refer any student in first grade or younger, if the fly, butterfly or reindeer are not seen in depth. Refer any student in second grade or older, if the child is not able to identify the correct response in at least five of the numbered circles.

6. If a student wears glasses, test with glasses on. Put the polarized glasses over them.
Referral and Follow-up

1. A referral is indicated if the child fails any portion of the rescreening except color vision.

2. The referral is made by sending home a referral letter with copy filed in student health record.

3. Phoning the parents soon after the referral letter to confirm receipt improves follow-up results.

4. If needed, information about the necessity for professional diagnosis and treatment and local resources can be given at this contact.

5. A referral to community resources may be made as needed.

6. A tracking system is essential to follow-up of the referrals to assure that the child identified in the screening process as having a problem, receives the appropriate treatment and other services.
STUDENT HEALTH

b. The following students will receive complete hearing screenings annually:
   i. students in grades 1-6 under P.L. 101-476;
   ii. students in grades K, 1, 2; and
   iii. students with known hearing disorders.

c. Students in grades 7-12 who are identified under P.L. 101-476 will receive annual otoscopic exams and pure tone tests (1000 and 2000 Hz at 20 dB HL and 4000 Hz at 25 dB HL).

d. Each student new to the District will receive a hearing screening during his/her first semester of attendance unless satisfactory evidence is provided that such hearing screening has been completed during the past six months.

e. Students in grades 4, 6 and 9 will receive otoscopic exams and pure tone tests (1000 and 2000 Hz at 20 dB and 4000 Hz at 25 dB).

f. Students in grades 3, 5, 7, 8, 10, 11 and 12 will be screened on request.

2. Vision Screening procedures

At the present time students in grades K - 9 and seniors will receive vision screening annually. Students in grades 10-12 will be screened once and upon request. All students who are new to the District will be screened. Depending on grade level, students may receive screening as follows: far acuity, near acuity, binocularity, hyperopia, color vision and muscle balance.

3. Determining Students who are "At-Risk"

a. A student will be considered "at-risk" for hearing impairment if one of the following conditions exists:
   i. failure on two separate screenings at a level of 20 dB HL at 1000 Hz and 2000 Hz or 25 dB HL at 4000 Hz in at least one ear; or
   ii. failure on two separate screenings with middle ear pressure greater than -200 and +100 mm H20 in either ear; or
   iii. excessively stiff or flaccid tympanogram in either ear.

b. A student's vision will be considered "at-risk" when it meets the appropriate criteria in the manual of the instrument used for testing.
STUDENT HEALTH

c. Students who are unable to understand and/or respond to vision screening will automatically be considered "at-risk" and will be referred for professional vision examinations.

d. Students failing to meet the criteria of the examination will be referred for a professional audiological or vision examination. The referral for professional examination is monitored by the school nurse. Re-checks are done on the request of a parent, teacher, or at the discretion of the school nurse.
The above named person was included in a recent vision screening conducted by ___________________ in cooperation with Pacific University College of Optometry. The results of the screening and the appropriate recommendations are listed below.

The screening evaluated eye health and those visual skills which are considered by authorities in vision to be necessary for efficient, comfortable seeing. Failure to meet any one of them indicates a need for further evaluation. The screening is NOT, however, a complete visual case study, nor does passing guarantee that an individual is free from visual deficiencies.

The person who passes is NOT LIKELY to be in need of visual care and the one who fails it is LIKELY to need care. Additionally, because vision changes can occur quite rapidly, a person's visual status should be evaluated at least yearly.

**INTERN USE ONLY**

Significant History: None

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<th>Near</th>
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**VISUAL ACUITY**

- **Far**
  - RE: 20/20
  - LE: 20/20
- **Near**
  - RE: 20/20
  - LE: 20/20

**COVER TEST**

- Far: Exo Eso Stb Ph
- Near: Exo Eso Stb Ph

**REFRACTIVE STATUS**

- Myopia
- Hyperopia
- Astigmatism
- Anisometropia

**OPHTHALMOSCOPY**

- RE: Intern's Initials
- LE: Initials

**TONOMETRY** (Time)

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**OPTIONAL ADDITIONAL TESTING**

- **MEM:** ________________
  - Target
- **ACCOMMODATIVE FACILITY ±2.00:**
- **FUSIONAL FACILITY BI/BO:**
- **PRESBYOPIA ±.50:**
- **PLUS LENS TEST:** ____________ (Lens power _______)
- **BLOOD PRESSURE:** ____________ Time
- **COLOR VISION:** ____________ ISH Other
- **OTHER:** ____________

Intern Comments to Supervisor:

---

**SCREENING SUMMARY**

- All test criteria were met or exceeded and the individual will likely experience no visual difficulty for the present. Re-evaluation in one year is recommended.
- A complete professional examination by the family eye practitioner is indicated.
- A complete professional examination by the family physician is indicated.

If an examination is indicated, please present this form to the appropriate health care practitioner. This will assist him/her in the evaluation. We urge you to seek an eye care practitioner who understands, tests, and treats the possible visual skill deficiencies noted.

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Visor's Initials: ____________

VC 90.11

Index: FORM

Revised 9/88

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Copy 1 - Pacific
Copy 2 - Sponsor
Copy 3 - Patient
AN OBSERVATION CHECKLIST FOR POSSIBLE VISUAL and VISUAL-MOTOR SKILLS PROBLEMS

Name of Student: ___________________________ Age: __ years, __ months
Name of Observer: ___________________________ Date of Observation: ________

DIRECTIONS:
For accuracy, use of this checklist should follow observation that has been conducted for at least two weeks. Do not mark a symptom if a student never displays this symptom or if the item is inappropriate for the age of the student. If the student displays a symptom nearly every day or many times a week, place an "x" under the column marked "Frequently". If the student occasionally displays a symptom, a few times a month, place an "x" under the column marked "Occasionally".

SYMPTOMS OF POSSIBLE VISUAL PROBLEMS

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<th>OCCASIONALLY</th>
<th>RARELY</th>
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<tbody>
<tr>
<td>1.</td>
<td>Does the student complain of headaches?</td>
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<td>2.</td>
<td>Does dizziness or nausea accompany near work?</td>
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<td>3.</td>
<td>Is there blur at far or near?</td>
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<td>4.</td>
<td>Does the student ever see double at near/far?</td>
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<td>5.</td>
<td>Does the student complain of tired eyes?</td>
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<td>6.</td>
<td>Does the student cover an eye when looking at near?</td>
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<td>7.</td>
<td>Does the student have difficulty seeing the blackboard?</td>
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<td>8.</td>
<td>Does the student squint while looking at books or while reading?</td>
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<td>9.</td>
<td>Does the student make facial contortions while doing close work?</td>
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<td>10.</td>
<td>Does the student hold his/her work very close or far away?</td>
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<td>11.</td>
<td>Does the student seem to close the eyes during work sessions?</td>
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<td>12.</td>
<td>Do bright lights hurt the student's eyes?</td>
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<td>13.</td>
<td>Does the student shade the eyes during reading?</td>
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</table>
14. Do the student’s eyes burn or itch?  __________  __________  __________
15. Do the eyes appear to water?  __________  __________  __________
16. Do the eyes become inflamed?  __________  __________  __________
17. Does the student have sties?  __________  __________  __________
18. Does the student mention “spots” before the eyes?  __________  __________  __________

**SYMPTOMS OF POSSIBLE VISUAL-MOTOR SKILLS PROBLEMS**

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<tr>
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<th>Frequently</th>
<th>Occasionally</th>
<th>Rarely</th>
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<tbody>
<tr>
<td>1.</td>
<td>Does the student have difficulty catching, throwing or batting a ball?</td>
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<tr>
<td>2.</td>
<td>Does the student have difficulty putting block designs together?</td>
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<tr>
<td>3.</td>
<td>Does the student have difficulty reproducing geometric shapes (e.g., a circle or square)?</td>
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<td>4.</td>
<td>Does the student have difficulty writing or drawing in limited space (e.g., writing on lined paper)?</td>
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<tr>
<td>5.</td>
<td>Does the student assume an unusual head or body position when working at a desk?</td>
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<tr>
<td>6.</td>
<td>Does the student seem to confuse numbers, letters, or words that are similar in configuration?</td>
<td>__________</td>
<td>__________</td>
</tr>
<tr>
<td>7.</td>
<td>Does the student seem to bump into people or furniture?</td>
<td>__________</td>
<td>__________</td>
</tr>
<tr>
<td>8.</td>
<td>Does the student have difficulty putting a cartoon into sequence?</td>
<td>__________</td>
<td>__________</td>
</tr>
<tr>
<td>9.</td>
<td>Does the student make reversals of letters, numbers or words while writing?</td>
<td>__________</td>
<td>__________</td>
</tr>
<tr>
<td>10.</td>
<td>Does the student have difficulty using common tools efficiently (e.g., hammer and nails or saw)?</td>
<td>__________</td>
<td>__________</td>
</tr>
</tbody>
</table>

**SCORING CRITERIA ARE AS FOLLOWS:**

If two or more of the above symptoms appear under the column marked, "Frequently", referral should be considered. If four or more of the above symptoms appear under the column marked "Occasionally", referral should be considered.
# EARLY INTERVENTION VISION SCREENING

<table>
<thead>
<tr>
<th>Question</th>
<th>YES</th>
<th>NO</th>
<th>NOT SURE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Does the parent have concerns about their child’s vision?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Is there a known syndrome or medical diagnosis?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Describe:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3. Was the child premature?</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>4. Has the child seen an eye care specialist?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physician’s Name:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Results?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Does the child wear glasses?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Does the child have his/her eye patched anytime during the day?</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>7. Are there unusual eye movements?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Please describe</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8. Does either eye turn in or out?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9. Did you observe a lack of a blink response?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10. Does the pupil reaction to light appear irregular?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11. Does the shape of the pupil appear irregular?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12. Does the child overreach or under reach an object?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A. Bright Toy?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. Bright 1/4-1/2 inch ribbon</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>13. Does the child look toward the object he is reaching for?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14. Does the child rub or poke their eyes?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15. Do the yes water frequently?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16. Are there unusual head positions?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17. How close does the child look at objects or people?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A. Within 5 inches?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B. Within 12 inches?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C. Other</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>18. Does the child have difficulty recognizing familiar adults/objects</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>across the room?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>19. Does the child appear to be awkward, clumsy, run into doors,</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>walls or have difficulty with a variety of surfaces?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>20. Does the child appear hesitant to move in unfamiliar environments?</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Additional comments: ____________________________________________________________________________

Form completed by: ___________________________ Date: ____________

Materials needed for screening: Penlight, Bright toy, 1/4-1/2 inch ribbon, objects for testing #17 (e.g. blocks), small toy, 2"

After this screening, please take this form to the vision specialist on your team if any questions are answered in the positive to determine if there should be referral to an ophthalmologist or optometrist.

Adapted from Columbia Regional Program
I authorize the release of this information to Pacific University.

Parent's Signature    Date

TEACHER'S OBSERVATION CHECKLIST

The parents of have granted us permission to request the following information from you which may be associated with the vision and/or visual, perceptual, or attentional difficulties. All information you provide will be held in confidence. Please circle the number following each item which most closely represents your observations. The form requires five to ten minutes to complete. Thank you for your assistance.

<table>
<thead>
<tr>
<th></th>
<th>not at all</th>
<th>very well</th>
</tr>
</thead>
<tbody>
<tr>
<td>How well do you know this person?</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
</tbody>
</table>

Do you feel that s/he is having academic problems in any of these areas?

<table>
<thead>
<tr>
<th></th>
<th>none</th>
<th>many</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>Spelling</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>Mathematics</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>Handwriting</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>Science</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>Language/Phonics</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
</tbody>
</table>

Is the child's behavior a problem?

<table>
<thead>
<tr>
<th></th>
<th>not at all</th>
<th>very much so</th>
</tr>
</thead>
<tbody>
<tr>
<td>Could this child achieve more highly than at present?</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
</tbody>
</table>

Please rate each of the following behaviors in terms of frequency of occurrence.

<table>
<thead>
<tr>
<th></th>
<th>never</th>
<th>always</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short attention span</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>during reading</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>during verbal or listening activities</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>Difficulty in shifting attention to new task</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>Occasional lapses of attention</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>Squirming, fidgeting, hyperactivity</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>Reads slowly</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>Substitutes words when reading</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>Poor reading comprehension (silent reading)</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>Reads well orally, but without understanding</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>Inadequate sight vocabulary</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>Difficulty understanding verbal instructions</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>Vocalizes when reading silently</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>Behavior</td>
<td>Never</td>
<td>Always</td>
</tr>
<tr>
<td>-------------------------------------------------------------------------</td>
<td>-------</td>
<td>--------</td>
</tr>
<tr>
<td>Confuses letters or words.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>Reverses letters or words.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>Skips or rereads words or sentences.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>Confuses right and left.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>Moves head excessively when doing near work.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>Covers or closes one eye.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>Tends to hold reading excessively close.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>Uses finger for marker when reading.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>Rubs or blinks eyes excessive.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>Tilts or twist head when doing desk work.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>Frowns or squints.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>Complains of headaches.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>Complains of blurred vision in the distance.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>Complains of blurred vision at near distance.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>Complains of eye discomfort.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>Complains of double vision.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>Redness of eyes or eyelids.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>Handwriting drifts uphill or downhill.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>Size of handwriting varies greatly.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>Tends to avoid near work.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>Slowness or many errors when copying from blackboard.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>Problems with eye-hand coordination.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>General body coordination problems.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>Tires easily.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>Aggressive.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
<tr>
<td>Withdrawn.</td>
<td>1 2 3 4 5 6 7 8 9</td>
<td></td>
</tr>
</tbody>
</table>

Please describe other areas which concern you about this person's learning style or abilities:

Check below any areas of optometric vision care about which you would like further information:

- Vision-Related Learning Difficulty
- Preventive Vision Care
- Vision Enhancement
- Myopia Prevention/Reduction
- Sports Vision
- Infants' Vision
- Vision Therapy
- Use of Reading Glasses for Children

Thank you for assisting us in providing optimal visual care for this child. We appreciate your taking the time to provide us a record of your observations. Please return this form in the enclosed envelope.

Teacher's name: ___________________________ School name: ___________________________

Student's grade/class: ___________________________

VTS 105 pg. 2/2 688 HLds/Im
REASONS FOR OPTOMETRIC CONSULTATION

- Failed school vision screening.
- Failed Snellen visual acuity test administered by school nurse.
- Failed Telebinocular or Titmus fusion testing.
- School recommendation.
- Recommendation by psychologist.
- Recommendation by physician.
- Recommendation by ____________________________.
- Has a problem with learning.
- Is slow in school.
- Difficulty reading.
- Difficulty keeping place while reading.
- Sees double while reading.
- Print blurs while reading.
- Eyes itch and burn after reading.
- Hold head too close to reading material.
- Makes reversals in letters and words.
- Puts in words that are not there while reading.
- Loses place while reading.
- Reads below grade level.
- Eyes hurt while reading.
- Skips lines while reading.
- Loses comprehension while reading.
- Has poor motivation.
- Has trouble following directions.
- Uses excessive effort in order to achieve.
- Has trouble with language arts.
- Difficulty writing (letter formation, staying on line, spacing, sloppy work).

Sits too close while writing.
Makes reversals in letter and words while writing.
Has trouble copying from the chalkboard.
Has trouble copying from desk material.
Is not working up to potential in school.
Has a problem with perception.

Has a learning disability.
Has a problem at sports.
Complains of headaches.
Rubs eyes.
One eye turns.
Has poor motor control.
Has poor eye movements.
Has poor eye-hand performance.
Is physically awkward
Does well verbally; cannot put information down on paper.
Has a short attention span.
Is hyperactive.
Has a problem with spelling.
Has a problem with mathematics.
Has a short memory span.
Will not work on his own.
Frustrates easily.
Tests poorly on standardized tests.

EYE HEALTH AND GENERAL HEALTH

- Eyes, ocular tissue, and related structure were healthy and free from disease.
- Eye disease was present - referral was made to appropriate practitioner.
- Systemic disease was suspected - referral was made to appropriate practitioner.

OPTOMETRIC PERFORMANCE EVALUATION - VISION ANALYSIS

- High verbal child who has not adequately developed performance skills necessary for academic success.
- Child has not adequately developed performance skills necessary for academic success.

VTS 33.205: 1/4 REVISED 7/90: HLjm
VISUAL ACUITY

<table>
<thead>
<tr>
<th></th>
<th>Far (20' or 6m.)</th>
<th>Near (16&quot; or 40cms.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Right Eye</td>
<td>20/</td>
<td>20/</td>
</tr>
<tr>
<td>Left Eye</td>
<td>20/</td>
<td>20/</td>
</tr>
<tr>
<td>Both Eyes</td>
<td>20/</td>
<td>20/</td>
</tr>
</tbody>
</table>

REFRACTIVE STATUS: Myopia __ Hyperopia _____ Astigmatism _____ Amblyopia
___ Strabismus ___ Functional Myopia

The child showed difficulty in the following areas of visual performance:

Receptive vision - difficulty taking information in through the eyes.
Processing visual data - closes off other senses while using his vision.
Lenses at far did not improve visual acuity.
Binocular vision - inadequate to meet near point demands.
Interferes with sustaining power at near.
Causes child to concentrate too intensively at near resulting in fatigue and avoidance.
Lack of binocular teaming affected child's ability to bring both eyes in on a near task with subsequent loss of sustaining power.
Child judges objects closer than they actually are.
Child judges objects as being farther away than they actually are.
Esophoria.
Exophoria.
Child suppresses vision in one eye.
Child alternates vision from one eye to the other.
Focusing at near point is inadequate. Excessive effort was needed to see print clearly causing difficulty in sustaining focus and attention at near.
Child's peripheral vision was constricted - functional tunnel vision when involved in a visually or auditory oriented task.
Child lost body awareness while involved in a visual task.
Poor accommodative facility (the ability to change focus quickly and without blur from near to far and from far to near).
Eye movements were inadequate.
Child could not sustain eye fixation on a moving target.
Child could only track a moving target with excessive effort.
Child could not smoothly follow a moving target.
Child could not use eyes in reading material at the instructional level.
Eyes were not used to guide hands - affects writing on a line, letter formation, and reading.
Pencil grasp was incorrect.
Child held pencil too close to the point and wrote tightly with fingers.
Child held pencil in a fist-like grip and worked fingers while writing.
Child held pencil in an odd grip and worked fingers while writing.
Child held head to one side while writing causing undue tension and suppression of vision of one eye.
Directionality - child lacked positive left to right organization.
Form reproduction was inadequate.
Child worked too slowly and with too much effort to make simple geometric forms.
Child did not reproduce simple geometric forms after one glance had to make many ocular fixations and drew forms segment by segment.
Child needed tactual support prior to drawing the forms.
Child moved too close to paper while writing, indicating difficulty at near.
Receptive language - difficulty following directions. Mishears directions. Functional difficulty.
Inner language - inadequate feedback of information within self.
Expressive language - difficulty expressing self.
Reading improved with use of convex lenses.
Lower than normal reading rate and comprehension.
Performance at near was more efficient with use of convex lenses.
Body coordination was inadequate.
Child did not use body as a whole.
Child lacked adequate reciprocal body movement.
Fine motor control was inadequate.
Child is color deficient.
Child lost auditory awareness while involved in a visual task.
Child lacks speech, language and auditory perceptual development.

INADEQUATE PERFORMANCE IN THE PRECEDING SKILLS RESULT IN THIS CHILD HAVING DIFFICULTY IN THE FOLLOWING AREAS:

- Sustaining on a task.
- Following instructions.
- Working up to potential ability.
- Developing fatigue.
- Becoming confused easily.
- Developing excessive tension while engaged in any near point activity.
- Attempting to do close work, the child becomes tied up in knots - the more effort expelled, the worse his performance becomes.
- Avoiding sustained close work.
- Making reversals in letters and words.
- Losing place while reading.
- Using extreme effort to keep place while reading, which then interferes with comprehension.
- Reacting poorly to pressure.
- Developing a catastrophic effect - becoming overwhelmed when presented with more work than child THINKS can be handled.

COURSE OF ACTION TO BE TAKEN:

- This child's parents have agreed to have the child enter a program of Optometric Vision Training to help develop the basic visual and motor skills that are needed in order to perform in the classroom.
- A program of Optometric Vision Training was discussed, but will not be carried out at the present time.
- In addition to the program of Optometric Vision Training, eyeglasses have been supplied to be used for all close, but not for distance activities.
- Lenses have been prescribed. They are to be worn for near point activities.
- Eyeglasses have been prescribed to improve visual acuity at distance. They are not to be worn while the child is engaged in close work, such as reading and writing.
- Home Vision Training Program.
- The parents have been advised that their child needs a professional assessment:
  - Psycho Educational
  - Speech Language
  - Medical
  - Other
ENCLOSURES:

Enclosed is a pamphlet describing the activities in the Optometric Vision Training Program.

Vision Therapy
Child Behavior
Checklist and training procedures that can be incorporated in the individual education plan.

SUGGESTIONS FOR THE CLASSROOM TEACHER:

To help improve this child’s classroom achievement, the classroom teacher might find it helpful to try the following:

- Having the child use a line marker while reading to help the child keep place.
- Breaking assignments down into smaller amounts at one time. For example, should the child have new spelling words, give him two at a time. Make sure he knows the two before giving him another two.
- Following this procedure will help avoid a catastrophic effect and panic when too large an assignment (in the child’s eyes) is presented.
- Consistency is of utmost importance. Lack of consistency will cause problems in orientation and make it difficult for the child to perform.
- Providing relatively immediate feedback on the accuracy of work.
- Having the child correct errors immediately after errors have been pointed out.
- Positioning, the child, so that he can, as quietly as possible, hand the teacher completed work. The teacher can then check it over without disturbing the class.
- Have the child hold something in his hand while sitting and listening should help aid attention.
- Working with concrete and tactual materials will help child learn as child still uses hands to explore the world and gain information.
- Emphasizing proper pencil grasp to relieve tension.
- Having child scribble on chalkboard to help the child become aware of arm movements and direction.
- Having the child scribble with paper and pencil to develop arm control for smooth and effortless flow of movement needed for writing.
- Having the child trace around large geometric forms at chalkboard and desk.
- Dictate verbal instructions and having child carry them out, starting from simple to more complicated.
- Read to child and having child discuss what was read.
- Engage child in conversation.
- Have child tell stories about pictures and writing down what was said.
- Use child’s own words as reading material.
- Child would benefit from a phonics approach to reading.
- Helping child feel an integral part of the class.
- Providing the child’s parents with positive feedback about school performance.
- Developing activities using overhead projector.

SUPPLEMENTAL INSTRUCTION

Providing supplemental instruction would be meaningful for this child.

The supplemental teacher might work to help the child develop some of the arm movement and language skills that are inadequate in this child. Some of the activities described above might be done.
TEACHER'S OBSERVATIONS

I ____________________________, grant permission for the release of confidential information regarding ____________________________ to Pacific University, College of Optometry Portland Optometric Clinic.

Date: ____________________________

It has been shown that the teacher is frequently the best "screening instrument" for identifying these problems which reduce classroom performance. We ask you to help us by describing the child's typical school behaviors. All information will be held in confidence. If you wish, a copy of any educational recommendations we make will be forwarded to you.

How long have you been the child's teacher? _______________ All subjects: ________________________________

Particular subjects (name): ________________________________

Have you known the child before this school year? If yes, please explain: ________________________________

How well do you know the child? Very well ______ Average ______ Not very well ______

Is the child in a regular classroom for the full day? If not, please explain what special services the child receives: ________________________________

Is the child having difficulty with academic subjects? If yes, please name subjects and explain difficulty:

Is the child's behavior a problem? If yes, please explain:

______________________________

______________________________
If you know the child's approximate instructional grade level in the following subjects please state it. Otherwise check whether the child is achieving above, on, or below grade level.

<table>
<thead>
<tr>
<th>Subject</th>
<th>Inst. Level</th>
<th>Above</th>
<th>On</th>
<th>Below</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reading</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spelling</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Arithmetic</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Others (specify)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In your opinion does the child have the ability to achieve above his present level?

What are the child's greatest strengths?

What are the child's greatest weaknesses?

What behavior(s) would you like most to see changed in this child?

Please read through the following list and check those items you have observed in this particular child.

**VISUAL:**

( ) skips words or sentences  ( ) blinks excessively
( ) rereads lines or phrases  ( ) frowns, scowls or quints
( ) word substitution  ( ) Holds reading closer than normal
( ) reads too slowly  ( ) moves head while reading
( ) uses finger or marker to guide eyes  ( ) covers or closes one eye
( ) says words aloud or moves lips  ( ) avoids close work
( ) reverses words, letters, numbers in a writing task  ( ) short attention span
( ) poor ability to remember what is read  ( ) daydreaming
( ) unusual fatigue or restlessness after maintaining visual concentration  ( ) tilts head to one side
( ) complains of letters or lines "running together" or "jumping around"  ( ) rubs eyes frequently
( ) complains of blur while reading or writing  ( ) rests head on his arm when writing
( ) comprehension poorer as reading is continued or loses interest quickly  ( ) improper or awkward posture while reading or writing
( ) poor eye-hand coordination  ( ) confusion of similar letters or words visually or auditorily presented (circle appropriate sensory input)
( ) unusual awkwardness  ( ) confuses likenesses and minor differences
( ) thrusting head forward or backwards while looking at distant objects  ( ) slowness in all schoolwork
Ongoing eye problems:

- One eye turns in or out anytime
- Excessive tearing of the eyes
- Frequent styes
- Reddened eyes or lids
- Headaches in forehead or temples
- Repeatedly omits "small" words
- Writes up or down on paper
- Complains of seeing double
- Mistakes words with same or similar beginnings
- Makes errors in copying from reference books to notebook
- Makes errors in copying from chalkboard
- Slowness in copying from chalkboard
- Excessive squinting in bright light
- Writes crookedly and/or poorly spaced
- Cannot complete work independently
- Misaligns both horizontal and vertical series of numbers
- Fails to recognize same word in the next sentence
- Fails to recognize same word in different book

AUDITORY:

- Unable to learn the sounds of letters (can't associate proper phoneme with its grapheme.)
- Doesn't seem to listen to daily classroom instructions or directions (often asks to have them repeated whereas rest of class goes ahead).
- Can't correctly recall oral directions.
- Doesn't seem to comprehend spoken words (may recognize the words separately but not in connected speech).

SPEECH:

- Can't name letters when they are pointed to.
- Can't pronounce the sounds of certain letters.
- Mild speech irregularities (can't pronounce common second grade words).
- Immature speech patterns (still uses much baby talk).
- Lips remain apart when at rest (mouth breathing).
- Tongue thrust forward between teeth and often beyond lips (especially when using hands for writing, cutting).
- Unable to correctly repeat a 7-10 word statement by the teacher (omits or transposes words).
- Errors in own oral expression - confuses prepositions such as over, under, in out, etc. ("Put water under a fire to boil it.").
- Transposes sounds in words (says "nabana" instead of "banana").
- Can't recite the days of the week in correct order.

BODY/MOTORIC:

- Underactive (seems lazy, couldn't care less in classrooms and/or on playground).
- Is slow to finish work (doesn't apply self, daydreams a lot, falls asleep in school).
- Overactive (can't sit still in class - shakes or swings legs, fidgety).
- Tense or disturbed (bites lip, needs to go to the bathroom often, twists hair, highly strung).
- Occasional lapses of contact with classroom activities (has "spells" when hands and/or body shakes, eyes blink or don't seem to "see").
- Misses school frequently (average five days a month) due to illness.
- Poor coordination (can't skip or hop on one foot more than three times).
Fingers tremble when hands held forward and arms supposed to be steady.
( ) Accidentally breaks and tears things (clumsy, awkward).
( ) Mistakes own left from right (confuses left-hand with right-hand side of paper).
( ) Often begins tasks with one hand and finishes with the other.
( ) Can't tie shoes and/or hold scissors properly.
( ) Loses way to school (gets turned around and doesn't know which way to go).

READING AND WRITING:
( ) Unable to learn the forms of letters (can't recognize letters when they are named).
( ) Improper pencil grasp (clutched in fist, held too tightly or presses so hard as to break lead and tear paper).
( ) Can't sound out or "unlock" words.
( ) Can read orally, but does not comprehend the meaning of written grade level words (word-caller).
( ) Does not have an adequate sight vocabulary.

RELATIONAL-CONCEPTUAL:
( ) Has trouble telling time.
( ) Doesn't understand the calendar (what day follows Wednesday, etc.?)
( ) Difficulty with arithmetic (e.g. may begin to add in the middle of a subtraction problem).
( ) Excessive inconsistency in quality of performance from day to day or even hour to hour.

Is there any behavior management system currently in effect? If so please explain:

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Please give any other impressions, special help found effective, other pertinent observations or unusual characteristics of this child.

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Thank you for your cooperation
What is vision?

Vision is a cognitive act which enables us to look at an object and not only identify it, but to determine where it is, its size, its distance from the observer, its rate of movement, its texture, and everything else that can be determined by visual inspection. Eyesight, which involves the sensory ability of the eye to distinguish small details, is only one component of vision.

It has been estimated that 75 to 90% of all classroom learning comes to the student via the visual pathways. If there is any interference with these pathways, the student will probably experience difficulty with learning tasks.

What visual skills are needed for school achievement?

Eye Movement Skills (Ocular Motility). To obtain the greatest amount of information in the shortest time and with the least effort, the eyes must be able to scan with speed and control. If eye movements are slow, clumsy or uncoordinated - e.g. if the eyes jump, miss, “stutter” or lose their place on instructional materials - the amount of information obtained will be reduced.

Eye Teaming Skills (Binocularity). The human visual system is designed so that the paired eyes and all of their reciprocating muscles work as a team. All judgments of spatial orientation, relationships, depth perception and, more importantly, the immediacy and accuracy of clear, single vision for almost every object or symbol, depends on the paired action of the eyes.

Eye-Hand Coordination Skills. This ability and any proficiency a child may attain in this area is dependent upon the use, practice and integration of the eyes and hands as paired learning tools. Out of this practice emerges the ability to make visual discriminations of size, shape, texture and location of objects. This skill is developmentally essential and preparatory to both reading and writing.

Visual Form Perception (Visual Comparison, Visual Imagery, Visualization). A child’s first symbols are images and pictures which allow him/her to process and understand reality. Visual imagery allows the child to relate primary experiences to the pictures and words seen on the printed page. This perceptual information permits the translation of object size, shape, texture, location, distance and solidarity into understood pictures and words. Visual form perception is a related developmental cognitive ability, not a separate and independent skill. Its ultimate purpose is the immediate and accurate discrimination of visible likenesses and differences, so comprehension can be followed by appropriate responses.

How are visual problems evaluated?

A comprehensive analysis of a person’s visual functioning should include an eye health evaluation, measurement of visual acuity and refractive status (nearsightedness, farsightedness, and astigmatism). Of equal importance, the analysis must determine how both eyes work together as a team, how the eyes aim and focus together, and how well clear, single vision can be sustained, especially at a near-point reading task. Vision is a process that involves an input, mental processing, an output, and a feedback mechanism. The goal of the analysis should be to determine whether the visual system is effectively and efficiently processing information. Because normal vision guides what we do in everyday life, the majority of the examination should be completed under natural conditions, without the use of cycloplegic (paralyzing) eye drops.
How are visual problems treated?

Optometric treatment for a vision dysfunction may include the use of lenses, prisms, visual training programs and developmental vision guidance. In addition, specific recommendations may also be made concerning general health and nutrition.

What are the clues to look for when a visual problem is suspected?

The following clues to classroom visual problems were compiled by the Optometric Extension Program Foundation, Inc. Children observed to exhibit these signs should be referred for a developmental vision evaluation.

1. Appearance of the Eyes
   - One eye turns in or out at any time.
   - Reddened eyes or eyelids.
   - Eyes tear excessively.
   - Encrusted eyelids.
   - Frequent sties on eyelids

2. Complaints When Using the Eyes at the Desk
   - Headaches in the forehead or temples
   - Burning or itching after reading or desk work.
   - Nausea or dizziness.
   - Print blurs after reading for a short time.

3. Behavioral Signs of Visual Problems
   A. EYE MOVEMENT ABILITIES (Ocular Motility)
      - Head turns as reads across page.
      - Loses place often during reading.
      - Needs finger or marker to keep place.
      - Displays short attention span in reading or copying.
      - Frequently omits words, especially “small” words.
      - Writes up or down hill all over paper.
      - Rereads or skips lines unknowingly.
      - Orient's drawing poorly on page.
   B. EYE TEAMING ABILITIES (Binocularity)
      - Complain's of seeing double (diplopia).
      - Repeats letters within words.
      - Omit's letters, numbers or phrases.
      - Misalign's digits in number columns.
      - Squints, closes or covers one eye.
      - Tilts head extremely while working at desk.
      - Consistently shows gross postural deviations at desk activities.
   C. EYE-HAND COORDINATION ABILITIES
      - Must feel things to assist in any interpretation required.
      - Eyes not used to “steer” hand movements (extreme lack of orientation, placement of words or drawings on page.)
      - Writes crookedly, poorly spaced, cannot stay on ruled lines.
      - Misalign's both horizontal and vertical series of numbers.
      - Uses his/her hand or fingers to keep place on the page.
      - Uses other hand as “spacer” to control spacing and alignment on page.
      - Repeatedly confuses left-right directions.
   D. VISUAL FORM PERCEPTION (Visual Comparison, Visual Imagery, Visualization)
      - Mistakes words with same or similar beginnings.
      - Fails to recognize same word in next sentence.
      - Reverses letters and /or words in writing and copying.
      - Confuses likenesses and minor differences.
      - Confuses the same word in the same sentence.
      - Repeatedly confuses similar beginnings and endings of words.
      - Fails to visualize what is read either silently or orally.
      - Whispers to self for reinforcement while reading silently.
      - Returns to “drawing with fingers” to decide likes and differences.
E. REFRACTIVE STATUS (Nearsightedness, Farsightedness, Focus Problems, etc.)
- Comprehension reduces as reading is continued, loses interest too quickly.
- Mispronounces similar words as continues reading.
- Blinks excessively at desk tasks and/or reading, not elsewhere.
- Holds book too closely; face too close to desk surface.
- Avoids all possible near-centered tasks.
- Complains of discomfort in tasks that demand visual interpretation.
- Closes or covers one eye when reading or doing desk work.
- Makes errors in copying from chalkboard to paper on desk.
- Makes errors in copying from reference book to notebook.
- Squints to see chalkboard, or requests to move nearer.
- Rubs eyes during or after short periods of visual activity.
- Fatigues easily; blinks to make chalkboard clear up after desk task.

RESOURCES

American Optometric Association, 243 N. Lindberg Blvd., St. Louis, MO 63141

College of Optometrists in Vision Development, P.O. Box 285, Chula Vista, CA 92012

Optometric Extension Program Foundation, Inc. 2912 S. Daimler, Santa Ana, CA 92705-5811
Vision Information Catalog, Educator's Checklist, Observable Clues to Classroom Vision Problems.
