Kids, Digital Screen Media and Healthy Vision

Kids and digital devices are nearly inseparable these days. With many school-age kids and even preschool children spending hours in front of a computer or on a digital device every day, it's worth considering what effects digital screen media might have on your children's eyes and their vision. Is it bad for their eyes? Does it help or hurt school performance? Should kids wear computer glasses at school? This article will help you learn more about these timely topics. Computer ergonomics is the study of people's efficiency at their computer workstations. Problems with computer ergonomics are closely associated with computer vision syndrome (CVS), which can affect children as well as adults.

Computer Use Improves School Readiness

Here's good news: Recent research suggests computer use among preschool children may actually improve their readiness for school and academic achievement. In one study of 122 preschoolers enrolled in a rural Head Start program, children in the experimental group were given the opportunity to work on a computer for 15-20 minutes per day with their choice of developmentally appropriate educational software, while the kids in the control (non-computer) group received a standard Head Start curriculum. All children in the study took four standardized tests at the beginning of the study and six months later to assess their school readiness, visual motor skills, gross motor skills and cognitive development. The children who worked on a computer performed better on measures of school readiness and cognitive development than the children without computers. Also, kids who did computer work both at home and at school performed better than kids who worked at a computer only at school. Too much unsupervised computer or digital device work, however, may cause vision problems for kids.

Computer & Digital Device Risks for Children

But too much of anything can be a problem. Like adults, children who spend many hours in front of a computer or a digital device have a greater risk of developing computer ergonomics problems and computer vision syndrome. Many eye care practitioners who specialize in children's vision believe prolonged computer use among children puts them at risk for progressive myopia, dry eye syndrome and damage to their retina later in life. For these reasons, it's a good idea to set guidelines for your children when it comes to the amount of time they spend in front of a computer.

Reducing Your Child's Risk of Computer Vision Syndrome and Ergonomics Problems

To reduce your youngster's risk of childhood computer vision syndrome and computer ergonomics problems, make sure he or she is seated comfortably and has a "neutral" posture when working at the computer. Characteristics of this posture include:

- Head is balanced on neck, not tilted back or forward. Computer screen should be positioned approximately 15 degrees below eye level.
- Back is straight and shoulders back but relaxed. Avoid slumping forward over the keyboard.
- Upper arms are close to the body and relaxed, not angled away from his sides or tilted forward.
- Forearms are flat on the desk, with the elbows forming at least a 90-degree angle.
- Hands are nearly level with forearm, with little wrist bend.
- Feet are flat on the floor or a footrest, with knees forming at least a 90-degree angle. (The angle behind the knee should be open; don't tuck legs under the chair.)

Many experts also recommend getting away from the computer every 20 to 30 minutes to stand, stretch and look far away at least 20 feet out. This helps relieve skeletal and eye muscle tension that can contribute to computer vision problems and computer ergonomics problems. Also, forcing eyes to blink frequently is important, as research shows that the decreased blink rate on the computer and digital devices contributes to the development of dry eye disease and meibomian gland atrophy, even in children.

3D Viewing and Its Effect on Children's Eyes

The American Optometric Association (AOA) said 3D viewing of movies, TV and video games isn't necessarily a problem; in fact, it may even help eye doctors diagnose subtle vision disorders that should be corrected. One example is convergence insufficiency, the inability of the eyes to align together to focus properly. This can lead to eye fatigue that is noticeable when reading, but perhaps especially noticeable during a 3D viewing experience. The AOA recommends that if you or your children experience the "3Ds of 3D viewing" (discomfort, dizziness or lack of depth perception), get an eye exam and find out why, because treatment is usually available.

Reducing the Risk of Myopia Linked to Computer Use

Though heredity seems to play a significant role in the development of myopia in childhood, some research suggests that eye strain, and specifically computer eyestrain, also may be involved. To see clearly up close, the eye has to exert focusing effort. Some researchers feel that fatigue caused by excessive focusing can lead to changes within the eye that cause myopia. And experts agree that focusing on images on a computer or digital device screen causes greater eye fatigue than reading normal print in a book or magazine. To reduce the risk of focusing fatigue that can cause advancing nearsightedness among kids who spend a lot of time on a computer or digital devices, many eye doctors recommend frequent breaks from computer/digital device work. Some call this the "20-20-20" rule: Every 20 minutes your child should take their eyes off the computer/digital device and look at an object at least 20 feet away for at least 20 seconds. This simple exercise relaxes the focusing muscle inside the eye and may help reduce eyestrain and eye fatigue that could cause progressive myopia. Children with certain refractive errors may need computer glasses to relieve their eyestrain and visual fatigue, and allow them to see clearly.

Protect Young Eyes From Too Much Blue Light

In addition to discomfort symptoms and myopia progression risk caused by too much computer use, research is now suggesting that hours in front of digital screens each day may be putting children at risk for damage to their retinas later in life. This is because computer displays and the screen of smart phones and other digital devices emit significant amounts of high-energy visible blue light that can have long term damaging effects on retinal tissue. In addition to placing limits on the amount of time your child spends in front of a digital screen each day, it is wise to have kids wear eyeglasses with photochromic lenses and/or anti-reflective coating designed to filter out blue light.

Tips for Monitoring Screen Media Use by Young Children

- For children younger than 18 months, avoid use of screen media other than video-chatting. Parents of children 18-24 months of age who want to introduce digital media should choose a high-quality programming and watch it with their children to help them understand what they are seeing. Engaging in back-and forth "talk time" is critical for language development.
- For children ages 2-5 years, limit screen time to maximum of 1 hour per day of high-quality programs. Parents should co-view media with children to help them understand what they are seeing and apply it to the world around them. Screen media should supplement, not replace, educational activities such as art, books, music, outdoor exploration, dramatic play and socializing with other children. Don't use technology as an emotional pacifier. Media can be very effective in keeping kids calm and quiet, but it should not be the only way they learn to calm down.
- For children ages 6 and older, place consistent limits on the time spent using media, and the types of media, and make sure media does not take the place of adequate sleep, physical activity, school work, play and other behaviors essential to health. Look into organizations like Common Sense Media for reviews about age-appropriate apps, games and programs to guide you in making the best choices for your children.
- Studies show that using digital devices at night can interfere with sleep quality. Restrict the use of phones, tablets and computers for at least 30-60 minutes before bed.
- Designate media-free times together as a family, such as dinner or driving, as well as media-free locations at home, such as bedrooms. Have ongoing communication about online citizenship and safety, including treating others with respect online and offline. As a parent, be a good role model: teach and model kindness and good manners online and limit your own media use. You will be more available for and connected with your children if you are interacting with your children rather than staring at a screen.

Preparing Your Child for Using Computers at School

To make sure your kids are ready for computer use at school, ***schedule a comprehensive eye exam for your children prior to the start of every school year.*** This annual routine eye exam should include tests that evaluate near vision skills for computer use and reading as well as visual acuity testing that is conducted both across the room and up close. Tell your eye doctor if your child has shown any signs of eye or vision problems, such as squinting, frequent eye rubbing, red eyes, head turns and other unusual postures, or if he or she complains of blurred vision or eye fatigue when reading or using a computer. Avoidance of computer work may also indicate vision problems. Computers and digital devices are an important (and virtually unavoidable) part of your child's life and education. A comprehensive eye exam each year during the school years can help them be as comfortable as possible and perform at their best during computer work. In some cases, a referral to a children's vision specialist and/or a program of vision therapy may be indicated to resolve computer - or learning-related vision problems.