

A Guide to Classroom Screen Safety

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The links contained herein are provided for quick access to some of the more definitive or recent scientific evidence, underscoring the need for the health and safety best practices that the [Maryland General Assembly has required](#) the Maryland State Department of Education, with consultation from the Maryland Department of Health, to develop.

RISKS TO STUDENTS' HEALTH AND VISION

I. [Myopia \(refractive error; nearsightedness\)](#)

- Epidemic, nationally and worldwide; use of screens recognized internationally as major cause
- Exacerbated by fixed, near work and lack of exposure to the sun
- Genetic predisposition among Asian, African-American, and Hispanic populations
- Developmental predisposition among 11-15 year olds
- Often undetected due to lack of proper eye exams
- Blurs vision; interfering with academic, athletic abilities
- Progressive; can lead to blinding conditions such as glaucoma, retinal detachment, and cataracts

SUGGESTED MITIGATION:

- Schedule device use within grade levels to [ensure routine breaks](#) from screens on a daily basis. For instance, when device use is required in the first period, it must take place in the first 20 minutes of class. The next 20 minutes would be used without screens. Then in second period, device use would also take place during the first 20 minutes, followed by a break. Third period, the same first 20 minutes. Each grade level team could determine what part of the class they would prefer, as long as the use and breaks were consistent throughout the school day.
- Increase recess and outdoor classes. Sunshine has proven to be [a key factor in the mitigation of myopia](#). It stimulates dopamine in the brain, which helps to curb the elongation of the eye that is taking place when the child grows. That elongation helps to create the refractive error.
- Work toward increased eye exams – not just vision screening – for all students. The schools may be unwittingly exacerbating pre-existing conditions; [one-third of all students need a comprehensive eye exam](#).

- Begin public health information campaign to alert families to risks at school and at home from excessive screen time; strongly encourage more breaks and more outdoor play.
- Develop classroom posters that remind teachers and students to take breaks; duplicate posters as flyers to be used at home.
- Develop classroom contracts similar to those needed for science class that outline for the teacher, student, and parent what the risks and mitigating practices are regarding the safe use of the school's digital devices (emulate the approach used for lab equipment).

II. Retinal Damage from blue light exposure; associated sleeplessness

- Hazardous blue light is absorbed more by children because their lenses have yet to develop the protective pigmentation that provides adult eyes a bit of protection from retinal cell destruction caused by blue light, emitted by digital device screens.
- The light travels to the back of the eye – the macula – and the process permanently destroys the cells needed to see. This process has been recognized as part of aging. It has been called age-related macular degeneration or AMD. Today, signs of macular degeneration are being seen in much younger patients as a result of screen use.
- Blue light suppresses the production of melatonin, the hormone that regulates sleep. Sleeplessness is directly associated with anxiety, depression, poor academic performance, and obesity. Obesity is epidemic among children today, and leads to heart disease, kidney disease, and diabetes. That's why the American Heart Association published a statement calling for screen time limits for children.

SUGGESTED MITIGATION:

- Blue light filters should be installed on every school-issued digital device and made a basic requirement for all future RFPs.
- No homework should be assigned on devices. Schools cannot control the time that students use the schools' equipment, and therefore, could be contributing to the interruption of critically important healthy sleep patterns, since many students are doing homework late in the evening.
- To protect students from the serious risks posed by blue light exposure, the use of screens in the classroom should be limited to actual schoolwork; "free play" or "quiet time" should not be spent using devices.

III. Computer Vision Syndrome and Dry Eye Disease

- Children (and adults) blink 67% less often when using digital devices, which has caused a significant rise in dry eye disease symptoms in younger patients. Severe dry eye can permanently damage the cornea.
- Dry eye disease and computer vision syndrome are closely related since the symptoms can overlap: red, scratchy eyes, blurred vision, headaches, and tearing.
- The student's discomfort can interfere with academic performance since the child finds it difficult to concentrate. Moreover, if children are accustomed to experiencing this discomfort, many will find it "normal," and not report it to an adult.
- Sore necks, back pain, and shoulder discomfort are also related to computer vision syndrome, as those muscles can also affect a student's vision.

- Undetected, unreported chronic eye discomfort can be a sign of more serious conditions and permanently damage children's eyes and vision.

SUGGESTED MITIGATION:

- Adhere to [manufacturers' safety guidelines](#) for safe workstation settings to include monitor height, monitor angle, and proper settings for glare and contrast (and audio settings – which are often ignored but necessary to protect students' hearing).
- Review classroom seating and overhead lighting to minimize glare and reflection from windows or other light sources.
- Ensure proper ergonomic posture among students; require proper posture to avoid muscular discomfort.
- Train teachers and school nurses to recognize the signs of discomfort when children are using devices, and develop policies to offer paper alternatives whenever possible.
- Teach children to recognize and report their own symptoms of dry eye or digital eyestrain.
- Make these issues part of the overall public education component (classroom posters and letters to the home) for digital device screen safety.
- In all cases, encourage parents to provide a full eye exam for their children and establish a policy of uniform, scheduled breaks from screens throughout each school day.

ADDITIONAL CONSIDERATIONS

There are many additional health and safety concerns that must be addressed in the law's deliberations, chief among them:

- Fundamental cultural biases within the school climate that encourage ever-increasing screen use.
- Little awareness of screen addiction; it is exacerbated by the constant demand that students use devices regardless of healthier alternatives that would serve the same purpose, and also made worse with the increase of educational "gamification."
- Little understanding of the associations between screen use and mental health issues: anxiety and depression are sharply rising and suicides have tripled among teenage girls in recent years.

A clear understanding of the educational benefits and health risks posed by these devices must emerge so that they are used to their best advantage, without harming students in the process, visually, physically, or psychologically.