Integration of Digital Devices in Public Schools

Health and Safety Guidelines

October 202 3

In June 2021, the governor signed House Bill (HB) 3489, which added new Texas Education Code (TEC) §38.0231 requiring the Texas Education Agency (TEA), in consultation with the Health and Human Services Commission (HHSC), to develop and distribute model health and safety best practice guidelines for the use of digital devices in local education agencies (LEAs) beginning with the 2023-2024 school year.

The guidelines must be based on evidence-based studies and practices, consider the needs of students with intellectual or physical disabilities, and consider the potential costs of implementation of the guidelines and affordable ways to reduce the hazards associated with the extended use of digital devices and address:

- use of digital devices for varying ages and developmental levels;
- amount of class time a student spends using digital devices in the classroom;
- appropriate frequency for breaks from the use of digital devices;
- physical positioning of digital devices in the classroom;
- use of digital devices to complete homework assignments; and 0e A.vicxenc-6 (om)3 (k a)4 (s)dmplem(a
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outcomes with excessive use of digital devices during childhood and adolescents such as higher levels of depression (International Journal of Public Health. 2015 Feb; 60(2): 147-55.), negatively impacting sleep (deprivation) (increased lack of sleep) habits (Edutopia, 2020), and increased rates of obesity (Journal of Pediatrics. 2011 Feb; 127(2): e330-5. Doi: 10.1542/peds.2010-1235.).

As technology advances, accessibility to digital devices increases. Increased accessibility to digital devices in LEAs significantly changes the dynamic of the teaching and learning process and the developmental stages and educational use of technology should be taken into consideration. Additionally, more students are expected to access instructional materials and resources on digital devices. In fact, LEAs are redesigning their curriculum to ensure that students are prepared to meet technology-driven job labor markets. When digital devices are implemented successfully, students are able to draw stronger connections between the content and real-world applications of technology.

LEAs may form partnerships with families to support virtual learning via digital devices while helping families balance their student's screen time. Sharing the responsibility between the family and LEA is essential for academic reasons as well as to assist with building positive habits that promote physical and mental health.
LEAs and families must work together to balance

3. Parents should set a good example for their children by limiting their own use of digital devices and social media (American College of Pediatricians, 2020).
4. Develop a family media use plan that takes into consideration your child's age and developmental stage.
5. Promote getting outdoors or engaging in other extracurricular activities or sports to get the recommended 1 hour per day of physical activity.
6. Promote activities that facilitate development such as reading, writing/journaling, or interacting socially with get-togethers.
7. Recommend that children not sleep with digital devices in their bedrooms and discontinue use of devices at least 1 hour prior to bedtime (American Academy of Pediatrics, 2016).

Advancements in technology and the demand for more blended virtual learning options has exponentially increased the amount of time students spend using digital devices over the past several years. This has increased concern surrounding the correlation between the amount of time students spend on digital devices and potential health risks. Correlational studies have shown that 8- to 11-year olds with increased screen time have scored lower on cognitive assessments. A combination of screen time and too little sleep has also been associated with heightened impulsivity in the same age group.

Researchers have also found links between screen time and various health outcomes in teens with the strongest associations between screen time and obesity and screen time and depressive symptoms American Psychological Association, 2022).

A recent study revealed that 8- to 12-year-olds in the United States now use screens for entertainment purposes for an average of 4 hours, 44 minutes a day while 13- to 18-year-olds are on screens for an average of 7 hours, 22 minutes each day (Rideout & Robb, 2019).

The Centers for Disease Control and Prevention (CDC) reports on average, 8- to 10-year-olds in the United States spend 6 hours a day using screens for entertainment purposes, 11- to 14-year-olds spend 9 hours, and 15- to 18-year-olds spend 7 hours, 30 minutes each day (OSF Healthcare, 2022).

Both studies focused on the amount of time using screens for entertainment purposes. Neither study addressed the amount of time students used screens for classwork or homework. Therefore, a recommendation cannot be made for how much time students spend using digital devices in the classroom.

Given the research, LEAs will need to establish a standard for the appropriate amount of time students should use digital devices in the classroom.

It is important to consider best practices related to the amount of time spent using digital devices and the appropriate use of breaks from such devices. Extended use of digital devices has been linked to negatively impacting physical and mental health, negatively impacting sleep due to increased blue light exposure, which suppresses melatonin levels and shifts circadian rhythms, and vision related problems (Screen Time Can Be Dangerous for Kids' Mental and Physical Health, 2017; and The Negative Effects of Technology for Students and Educators, 2021).

Strom and Moffit recommend that students should take breaks from using digital devices every 30 minutes.

However, the American Academy of Ophthalmology (AAO) (2020) recommends following the 20-20-20 rule to reduce eye strain. Every 20 minutes students should look at an object at a minimum of 20 feet for at least 20 seconds to give your eyes a break and to allow them to reset. The AAO also recommends blinking frequently to keep your eyes from drying out.

Given the research, LEAs will need to establish a protocol for the appropriate frequency of breaks from the use of digital devices in the classroom based on student's needs.

LEAs and parents should be mindful of the amount of time their students are spending using digital devices, ensure that content is safe and age-appropriate, and set clear boundaries. Students should avoid using digital devices or other types of social media at least 1 hour prior to bedtime to maintain a healthy sleep pattern (American Academy of Pediatrics, 2016; and The Negative Effects of Technology for Students and Educators, 2021).

Ergonomics, sometimes also referred to as human engineering, is the study of the relationship between people, their work tasks, and their physical environment. Drawing from a variety of disciplines, it applies designs and practices to optimize the interaction between the person and the work environment in relation to designing tasks, workspaces, controls, displays, tools, lighting, and equipment to fit a person's physical capabilities and limitations (Center for Disease Control (CDC) and Prevention, 2018). For example, without appropriate physical positioning, digital device use could result in musculoskeletal disorders such as neck, back, or shoulder pain due to improper posture, wrist discomfort due to improper positioning of keyboard, and headaches due to increased screen time, eye fatigue, and improper positioning of the digital device screen. The objective of appropriate physical positioning is to enhance the comfort, safety, and quality of the instructional surroundings during the learning process. The following practices are recommended for educators and parents to consider in face-to-face as well as virtual learning environments when using digital devices.

Proper Posture and Positioning

1. Straight upper torso
2. Neck is upright and not turned, tilted, flexed, or extended
3. Upper arms hang vertically alongside the torso with shoulders relaxed, forearms horizontal, and elbows close to the body
4. Wrists are straight and not bent
5. Spine is erect or upright
6. Thighs are in a horizontal position and lower legs are vertical with feet resting on the

Various research studies have been conducted and the amount of time students spend using digital devices varies based on access to and type of digital device, a student's age, grade, ddigi[( )]Tmo)4 (u)4

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There is no cost to join the MS-ISAC, and membership is open to all U.S. SLTT government organizations. Membership to MS-ISAC consists of the following no-cost MS-ISAC services:

- Security Operations Center (SOC)
- Malicious Domain Blocking and Reporting (MDBR)
- Cyber Incident Response Team (CIRT)
- Cybersecurity Advisories
- Cyber Threat Intelligence (CTI)
- Real-Time Indicator Feeds
- Malicious Code Analysis Platform (MCAP)
- Nationwide Cybersecurity Review (NCSR)
- Information Sharing, Cybersecurity Awareness, and Education

Additional fee-based services are available, and they are provided by CIS (Multistate Information and Analysis Sharing Center).

LEAs may also wish to contact their regional education service center (ESC) representative that provides information technology (IT) support services in their area. The ESC may also provide cybersecurity assistance or services similar to MS-ISAC.

4. Incorporate a learning management system (LMS). An LMS is a comprehensive one stop shop to support LEAs, teachers, parents, and students by providing high-quality instructional materials, technology solutions, and professional development resources (The Negative Effects of Technology for Students and Educators, 2021).

Additional resources and recommendations to support implementation of digital learning can be found in the United States Department of Education (USDE) Office of Educational Technology's Teacher Digital Learning Guide. This guide includes key considerations, guiding resources, and reflection questions to assist with planning and implementing technology to meet the needs of students.

The USDE Office of Educational Technology's School Leader Digital Learning Guide provides resources and recommendations to assist leaders with planning, funding, implementing, maintaining, and adapting digital learning programs to meet the needs of students and their LEAs.

The EdTech Triangle, a research-based model developed by the nonprofit Everyschool, emphasizes using technology that can produce an outcome or develop a skill beyond traditional means. This model is based on research about screens, student achievement, and student well-being and can assist educators with implementing technology in the classroom. For more information on using the EdTech Triangle in your classroom or LEA, please visit the Everyschool resource page and download the guide Triangulate (Fairplay's Children's Screen Time Action Network).

References

Amanda Strom and Angila Moffitt, “

Kierstan Boyd, “Computers, Digital Devices and Eye Strain,” *American Academy of Ophthalmology*, March 3, 2020, https://www.aao.org/eye-health/tips-prevention/computer-usage.

Luke Legner, “Kid’s Screen Time: How Much is Too much?”, Order of St. Francis (OSF) Healthcare, April 22, 2022, https://www.osfhealthcare.org/blog/kids-screen-time-how-much-is-too-much/.

Multi-State Information Sharing and Analysis Center®. *Center for Internet Security Inc®*, November 2022, https://www.cisecurity.org/ms-isac.

The National Institute for Occupational Safety and Health (NIOSH). *Center for Disease Control (CDC) and Prevention*. “CDC Ergonomics and Musculoskeletal Disorders.” February 28, 2018, https://www.cdc.gov/niosh/topics/ergonomics/default.html.

Nicole Beurkens, “Screen Time Can Be Dangerous for Kids’ Mental and Physical Health,” *Holistic Child Psychology* (blog), November 18, 2017, https://www.drbeurkens.com/dangers-overexposure-electronics-kids-mental-physical-health/.

The Office of Educational Technology. *United States Department of Education (USDE)*. “School Leader Digital Learning Guide,” https://tech.ed.gov/publications/digital-learning-guide/school-leader/.

The Office of Educational Technology. *United States Department of Education (USDE)*. “Teacher Digital Learning Guide,” https://tech.ed.gov/publications/digital-learning-guide/teacher/.

The Center on Media and Child Health at Boston Children's Hospital, "Family Digital Wellness Guide: What Parents Need to know about Media and Their Child," Copyright 2020, https://cmch.tv/wp-content/uploads/Family-Digital-Wellness-Guide.pdf.

Eyes Front Operational Manual, Version 2.2. Dale Harville, Education Service Center (ESC) Region 20, San Antonio, TX. April 4, 2022.

Fairplay's Children's Screen Time Action Network. Technology in Schools: Promise and Perils.

Law Insider, 2022. https://www.lawinsider.com/dictionary/digital-device.

By Emma. Text by Melissa Lawrence. LearnSafe. How to Use Technology for Different Learning Styles. January 16, 2018.

Schoolsafety.gov. Cybersecurity Action Steps for the K-12 School Community