

Warning Sounded on Tech Disrupting Student Sleep

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November 29, 2016

Educators who promote the use of education technology are working harder to caution students and parents about the impact of digital devices and the "blue light" they emit, which can disrupt student sleep patterns.

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A recent meta-analysis by British researchers has brought renewed attention to the issue, calling increased use of mobile devices at bedtime a "major public-health concern" for children and teenagers.

As many schools and districts shift to 1-to-1 device programs, often allowing students to take those devices home each night, education leaders are looking for ways to incorporate warnings about the detrimental effects of mobile devices on sleep.

"When we hand out iPads, we suggest they aren't stored in the bedroom," said Lawrence J. Mussoline, the superintendent of the 13,000-student Downingtown, Pa., district, which features a 1-to-1 iPad program for 6th graders, who take the devices home at night. "We don't want them trying to get in the mindset to go to sleep at night and then popping open this screen which emits blue light."

Nearly three-fourths of children and 89 percent of adolescents have at least one device in their sleep environment, with most of them used near bedtime, according to the new research paper, "Association Between Portable Screen-Based Media Device Access or Use and Sleep Outcomes: A Systematic Review and Meta-analysis." The study was published Oct. 31 online by the journal [JAMA Pediatrics](#).

The review of 20 recent studies covering four continents and more than 125,000 children found a "strong and consistent association between bedtime media-device use and inadequate sleep quantity, poor sleep quality, and excessive daytime sleepiness." Similar negative effects were found for children who had access to such devices, even if they did not use them before bedtime.

Finding the Right Balance

Patrick Larkin, the assistant superintendent of the 3,500-student Burlington, Mass., public schools, said his district is constantly thinking about how to create the right screen-time balance for students, both in and out of school. While the district is fully 1-to-1 with iPads, only students in grades 9-12 take the devices home.

Children who used a portable media device at bedtime were more than 40% more likely to report poor sleep quality.

"We are always clear that kids shouldn't be in front of a screen the majority of the day," he said. The new research, Larkin added, points to yet another reason why "kids shouldn't have the devices in their rooms."

Larkin recommends that parents set up a family charging station away from sleeping areas "to make sure kids are unplugged adequately before they go to bed," he said. "They shouldn't be in bed falling asleep while they're reading their Instagram."

However, that may be less of an issue for districts whose students take home laptops rather than tablets, Mussoline said. In his district, high school students are 1-to-1 with laptops—a bit more cumbersome to snuggle in bed with, he noted.

Mussoline also pointed out that many students aren't using their school-issued devices in bed, because nearly all have their own smartphones.

Districts, particularly those with 1-to-1 device programs, should incorporate some information about the impact on student sleep into digital-citizenship classes and training for parents, said Darri Stephens, the senior director of education content at Common Sense Education. The organization provides a **digital-citizenship curriculum** for schools and districts as well as information for parents.

Within those programs, Stephens said, there are references to sleep and best-practices for how to balance device use.

"None of us adults grew up with these devices, so we're constantly urging parents to stay on top of the latest and greatest information," she said. "We want them to be cognizant about helping students find that healthy balance."

'Damaging Influence'

Schools and districts have already been focused on concerns about student sleep, but more so around **school start times**. Biological shifts during the teenage years drive the need for longer sleep periods and later wake times, research shows.

Students, parents, and some researchers also argue that teenage biology makes early-morning rising more difficult and many districts are seeing a push for later high school start times.

Sleep disturbances in childhood have been associated with other problems such as poor diet, sedentary behavior, obesity, reduced immunity, and substance abuse.

Previous studies have linked TVs, gaming consoles, and desktop computers to negative sleep outcomes. A major focus has been the effect of blue-light emissions, which can negatively affect humans' natural sleep patterns.

The new meta-analysis focuses on studies of "portable mobile and media devices" like smartphones. The researchers say they've found evidence that the devices present a new challenge to healthy sleep because they facilitate real-time, continuous psychological and physiological arousal and stimulation.

What the Research Says

A meta-analysis by British researchers that examined student sleep habits and mobile device use raised serious concerns about **the impact of "blue light" on student sleep**.

Among the researchers' findings:

- Children who used portable media devices at bedtime were about twice as likely to not sleep enough, compared with children who did not have access to a device.
- Children who used a portable media device at bedtime were more than 40 percent more likely to report poor sleep quality than children who did not have access to a device.
- There were also significantly increased odds of inadequate sleep quantity and poor sleep quality for children who had access to a media device near bedtime, even if they did not use it.
- Children who had access to or used a portable media device at bedtime were more than twice as likely to demonstrate excessive daytime sleepiness than children without access to a device.

Source: "Association Between Portable Screen-Based Media Device Access or Use and Sleep Outcomes: A Systematic Review and Meta-analysis."

The study defines inadequate sleep quantity as less than 10 hours daily for children and less than nine hours daily for adolescents. Sleep quality is based on difficulty falling asleep and staying asleep, as well as not being refreshed by sleep. Excessive daytime sleepiness is defined as "poor daytime functioning as a result of both sleep quantity and quality."

The researchers expressed particular concern about the effect on children's sleep because of schools' increasing shift to digital technology.

"Given the evolving technological landscape and the replacement of textbooks with media devices in schools, screen-based media-device access and use are likely to rise," the study says. "It is imperative that teachers, health-care professionals, parents, and children are educated about the damaging influence of device use on sleep."

But adults need to take the same advice they're giving out to students, Mussoline of the Downingtown schools noted. Both he and Burlington's Larkin acknowledged that they keep their cellphones in their bedrooms at night. But both say their devices are powered down.

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Vol. 36, Issue 14, Pages 1, 14

Published in Print: November 30, 2016, as **Warning Sounded on Tech Disrupting Student Sleep**