



TECHNOLOGY AND SLEEP

- Technology use in the evenings may delay bedtime and interfere with sleep
- Using a bright screen for 1.5 hours or more can increase alertness.
- Not all people are affected by technology use in the same way.
- Some forms of technology use may be better than others and some activities better than others.
- In the evening, use technology in moderation. Switch from interactive devices (e.g., phones) to passive devices (e.g., e-reader).

Note: All words that are underlined relate to topics in the Sleep Health Foundation Information Library at www.sleephealthfoundation.org.au

1. How can technology use affect us at bedtime?

- The *bright screen* light from devices can cause increased alertness
- Activities on such devices can be *stimulating* and make us less ready to sleep
- People can become *absorbed* and continue using technology beyond their usual bedtime

2. How long is too long to spend in front of a bright screen before bed?

Studies have tested the effects of bright tablets (e.g. ipads) and laptop screens for up to 5 hours before bed. It seems that the natural evening rise in melatonin (a hormone that makes us ready for sleep) is not affected by 1 hour of bright screen light, but it is after 1.5 hours. Thus after 1.5 hours of technology use in the evening people report feeling less sleepy. They also do better on mental performance tests and their brainwaves suggest increased alertness. Repeated use of a bright screen over 5 days can delay the body clock by 1.5 hours. This means you consistently want to go to bed later and sleep in longer. This can be a real problem when you need to get up at a set time in the morning for school or work.

3. Does using technology just before bedtime affect sleep?

Self-reports suggest that sleep is indeed affected by technology use in the hour before bed. Such late-night technology users report less satisfactory sleep more often than those not using technology before bed. They are also more likely to feel sleepier during the day in a range of situations, including driving. These findings relate to both using a computer or laptop before bed or texting. The findings are from a 2011 US study that involved over 1500 people, surveyed by the US National Sleep Foundation.

4. Are some forms of technology use more stimulating such that they affect sleep?

Technological devices can be either interactive or passive. *Passive* devices are those which need little to no input from the users. Examples include listening to music, reading an e-book, watching television or a movie. With interactive devices what is viewed on the screen changes with input from the user. For example, playing a video game is clearly interactive. To a lesser extent, so is surfing the web, messaging and making posts on computers, laptops, tablets and smartphones. Researchers propose that *interactive* technological activities are more harmful for getting ready for sleep compared to passive activities.



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5. Is everyone's sleep affected by technology in the same way?

No. Some people are more affected than others. Some young people, especially those who don't play lots of computer games, can be sensitive to the effects of violent video games and this affects their sleep. However, more experienced gamers may habituate to using technology before bed and are less affected by violent video games. Also, teenagers who consider themselves to be less risk-takers are more likely to stop gaming earlier and go to bed earlier than their higher risk-taking peers. Finally, those teenagers who strongly immerse themselves in computer game activity (experiencing what is called a 'flow' state) play for longer and delay their bedtimes. Research is yet to uncover all the different individual characteristics that explain why some people are more affected by technology use before bed than others.

6. What about the effect of technology use on people's bedtimes?

Data from over 85,000 teenagers (through an analysis of several studies of teenage sleep) showed that different forms of technology use (e.g., televisions, computers, phones – and even video gaming) were related to later bedtimes. The more frequently adolescents used technology in the evening, the later they went to bed. Using technology often may increase alertness and/or reduce the ability to recognize sleepiness at night. Thus the teenagers keep playing, surfing, texting and chatting, resulting in delayed bedtime.

7. Can the alerting effects of screens be reduced?

Dim the screen as much as possible for evening use. In many e-readers you can even invert the screen colour (i.e., white font on black background). A free software program for PCs and laptops decreases the amount of blue light (which affects melatonin levels) in computer screens during the evening and increases orange tones instead. This program is called f.lux and is at <https://justgetflux.com>

8. What about watching television in the bedroom?

Many people enjoy reading a good book in bed, or listen to relaxing music or the radio before sleep. Those who report doing these passive activities in bed often have no trouble falling asleep, especially if the lights are dim or off. So considering the television is classed as a passive device, should it enter our bedrooms?

The answer is not clear. On the one hand, sleep experts talk about the benefits of keeping the bedroom as a sanctuary for sleep. They believe that electronic devices in the bedroom can easily be a distraction from sleep. We know that unsupervised teenagers can easily watch TV in their bedrooms till long past a healthy bedtime. On the other hand, we currently have no evidence that watching a TV in the hour before bed in the bedroom brings on sleep problems.

We do know, however, that relying on the TV being turned on *while* you fall asleep can mean you lose the ability to self-soothe yourself to sleep and thus may have trouble falling back to sleep when awake in the middle of the night.

9. What strategies can help regulate my child's technology use?

Parents of a pre-teenaged child should try to restrict technology use to after-school or earlier in the evening. Plan quiet activities (board games, drawing, playing with toys, reading) closer to bedtime. This negotiation is more difficult in the teenage years. Try to encourage interactive technology use (e.g., video-gaming, smart phones) earlier in the evening, and use of passive technological devices (e.g., watching TV/movies, reading) in the lead up to bedtime. A certain level of accepting evening technology use is needed. After all, it has been found that more than 90% of both teenagers and adults (13 to 64 years old) in the USA use technology before bed. Practice what you preach.

10. Where can I find out more?

<https://sleepfoundation.org/sleep-polls-data/sleep-in-america-poll/2011-technology-and-sleep>

For information on over 60 different sleep related topics, written by professionals, visit the Sleep Health Foundation Information Library at www.sleephealthfoundation.org.au. The underlined topics in this article are covered in detail there.



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