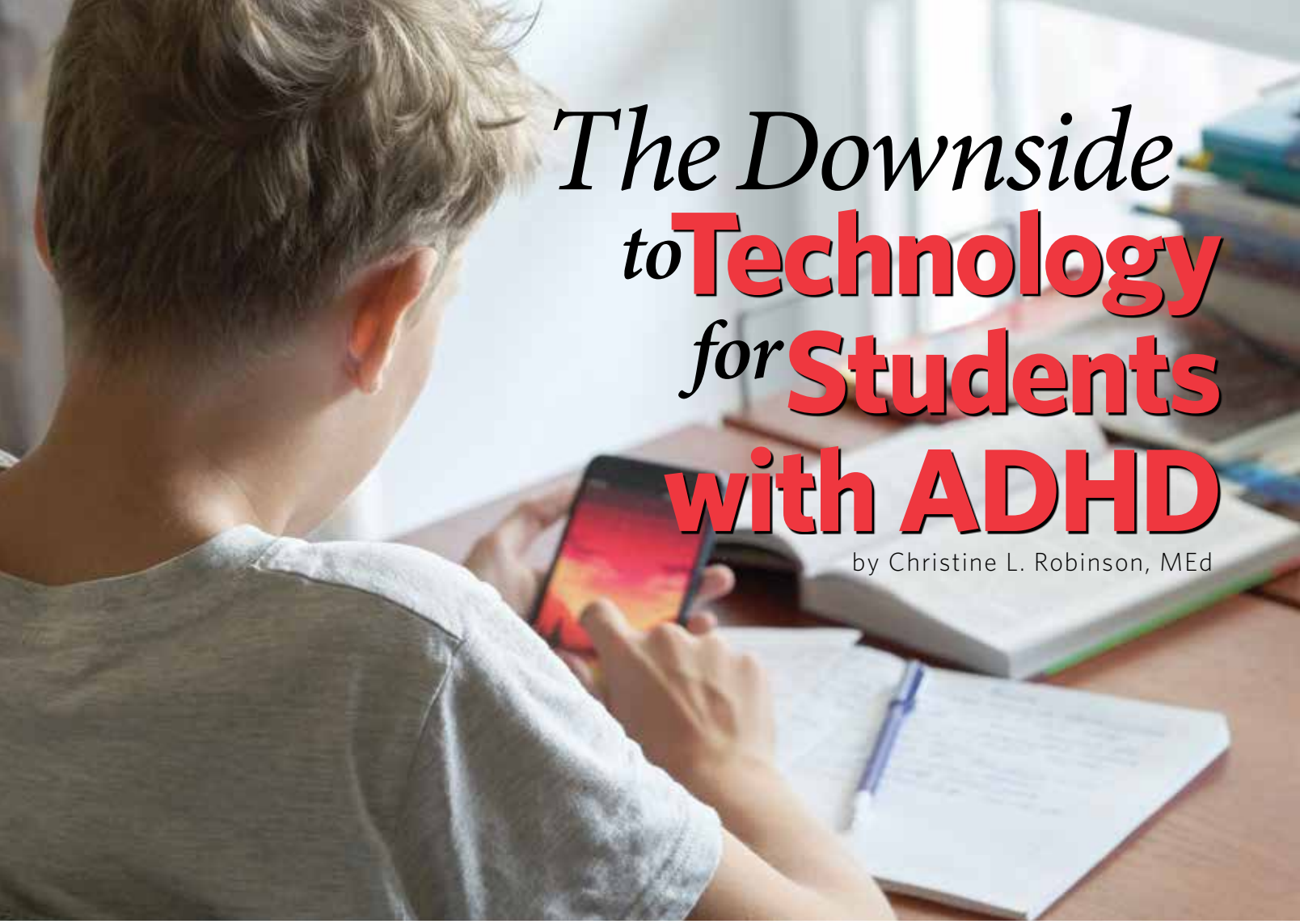

The Downside to Technology for Students with ADHD

by Christine L. Robinson, MEd

IN A STUDY CARREL AT YOUR LOCAL COLLEGE CAMPUS, a sophomore sits with sixteen open windows on his laptop. The latest YouTube video pops up just as he starts to write the first sentence of his International Relations paper. Then three friends text about making weekend plans. Two emails come in regarding campus security alerts and a professor emails a change to a class assignment. All this happens within ten minutes. Add a diagnosis of ADHD to this set of circumstances and one word comes to mind—overwhelmed!

This scenario is so commonplace today that we do not think of it as unusual. Being accustomed to the flood of news, information, texts, Alexa, and everything electronic, we are almost numb to its effects. However, all these simultaneous events tax our working memory in ways that were unimaginable even ten years ago. We all feel this burden of juggling many tasks at once. From elementary school through college, all students experience this expectation of cascading technology—but it may have especially dire consequences for those with ADHD or executive functioning deficits.

What's confusing is that so many "authorities" say technology is good for our students. It is time to take a second look.

Electronic note taking and working memory

Working memory is defined as a system for temporarily storing and managing the information required to carry out complex cognitive tasks, such as learning, reasoning, and comprehension. The demands that schools place on students with ADHD, asking them to fluidly utilize technology in their everyday learning, often exacerbates their symptoms, especially with regard to working memory deficits.

During high school or college lectures, for example, many educators urge students to take notes on a laptop, as the use of pen to paper writing is diminishing every year in our public school systems. In many schools, cursive writing is not taught at all, and high school students are now graduating unable to read cursive writing.

The research clearly shows that students learn and process information more effectively when they write their class notes by hand. Research also shows that writing with different colors of ink helps students retain information in their working memory. The use of color in writing increases attention as well as cognition.

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Researchers Pam Mueller and Daniel Oppenheim (2014) concluded that the more attention focused on certain stimuli, the more chances of the stimuli to be transferred to a more permanent memory storage. When students moved at a slower pace, they were able to synthesize and understand the material better, therefore allowing their working memory to function more efficiently. In this study, the students who typed their class notes during the lecture often typed verbatim, or close to, what the instructor said. They were "transcribing" the lesson. Yet these students often remembered the least amount of the lecture, even though they typed more of the lecture than their counterparts who took notes by hand. Those who took notes by typing alone were not able to hold the information in their working memory.

Effect of constant distractions

Now let us review the scenario with the college student who is experiencing the constant level of electronic distractions while attempting to write a paper. Since he has experienced this level of distraction for many years, it really has changed the way his brain responds to distraction, which consistently compromises sustained attention.

Electronic devices were made to be stimulating and addictive while giving their users regular "hits" of dopamine, making them come back for more. With every distraction arises a process of reorientation. The student has to manage and manipulate that information and put it into context.

Since it is proven that deficits in working memory already exist in students diagnosed with ADHD, we know that their working memory is already overburdened. Everyone has a working memory capacity or limit, and those with ADHD will reach this limit sooner. Frustration, along with feelings of low self-esteem often develop, since they cannot keep up with their peers. Although they understand the information, the process of managing this information effectively—in an exam environment, for example—becomes overwhelming.

Although students diagnosed with ADHD may have higher IQs than their peers, their grades often do not reflect this because of a compromised working memory. Their executive function deficits are holding them back. When we add increasing demands to the constant use of technology, the result is often an overwhelmed student who may even begin to shut down to academics and classroom learning.

Issues with writing

I have worked with many students who are brilliant but have issues with writing. Often, they can verbally explain the assigned topic at length in a detailed and eloquent way, but when they must organize and write a paper, the task becomes difficult and they come to a standstill. The ability to organize the material in their working memory becomes a jumble of ideas and dozens of windows open on their laptop from past research.

The students could more easily complete their papers were they to print or handwrite their notes and lay out their ideas using a more concrete method. By creating a visual representation of the task, their working memory would no longer be overloaded. The assignment would not require the organizational effort presented by solely using the computer.

Technology will continue changing the way we learn and compromising our attention spans if this trend is not consciously kept in check. Although technology has many benefits, it can also prevent us from being immersed in a subject, therefore reducing our ability to attend, learn, and create. Every time we lose attention we must reorient ourselves and, in that transition, we lose time and the ability to process information efficiently. And although the research shows that our working memory has a limited capacity, the ability to juggle and multitask remains an expectation at work and school.

This high-tech multitasking lifestyle leaves students with ADHD frustrated and overwhelmed. Sometimes a digital detox may be necessary to help accommodate an over-capacity working memory and reduce the frustration as well as increase productivity. While writing, completing reading assignments, or doing any concentrated work, it is critical that students eliminate email, texts, and pop-ups in order to sustain attention. They must be ready and willing to put electronic devices away.

Students will then be able to complete tasks in a shorter time, because they will be able to experience sustained and uninterrupted attention. It will take practice and a concerted effort to decrease and manage the constant intrusions of technology, but the benefits of feeling entrenched and less distracted will be welcome, along with the decreased anxiety. Students will experience the satisfaction of completing tasks in a way that will nourish deeper learning and lead to a better academic experience.

Christine L. Robinson, MEd, *has over thirteen years of experience coaching children, teens, adults, couples, and college students. She received her master's degree in education from Fitchburg State University, graduating summa cum laude. As well as having her private practice (www.ADDActionCoach.com) in Nashville, Tennessee, she is also associated with the Hallowell Center in New York City. A certified teacher and master coach who also has over twenty years of sales and management/leadership experience, she is considered an expert in the field of ADHD, special education advocacy, and individualized education plans.*

ADDITIONAL READING

Pam A. Mueller, Daniel M. Oppenheimer. The Pen Is Mightier Than the Keyboard: Advantages of Longhand Over Laptop Note Taking. *Psychological Science*, 2014, Vol 5 No 6, pp 1159-1168.