The post-pandemic classroom: Media multitasking and digital distractions impact student engagement

The digital natives occupying schools (and their digital native parents) have quite literally been raised on technology. Naturally, they're adept at media multitasking and can easily navigate this multi-sensory digital world, realizing very little impact on engagement or achievement. Or are they?

Despite what we may think about our ability to multitask at work or school productively, the physiological reality of our brains is that, for most of us, it's simply not possible. Take the recommendation of Earl Miller, professor of neuroscience at The Picower Institute for Learning and Memory at MIT:

> 'Don't try to multitask. It ruins productivity, causes mistakes, and impedes creative thought. Many of you probably think, "But I'm good at it!"
>
> Sadly, that's an illusion.
>
> As humans, we have a very limited capacity for simultaneous thought — we can only hold a little bit of information in the mind at any single moment.'

Furthermore, Miller found that people who believe they're proficient multitaskers actually have a lower capacity for simultaneous thought; they are more likely to be bad at ignoring distractions, 'but instead of trying to improve their ability to focus, they convince themselves that multitasking increases productivity.'

Miller isn't alone in his findings.

A University of Utah study discovered that 98% of us are delusional in believing that we're successful multitaskers when it isn't statistically or physiologically likely.

2018 work done by Stanford professor Clifford Nass further corroborates Miller's work. Nass's research finds similar results that indicate, even when focused, frequent multitasking changes how the brain functions, leading to decreased productivity.

Research by Gazzaley and Rosen (The Distracted Mind: Ancient Brains in a High-Tech World, 2016) examined how distracted we've become in modern society. Some areas they explored were aspects of our brains and minds that help shape our cognitive capacity, the damage done by multitasking, and evolutionary factors that point to limitations of the human mind. Gazzaley and Rosen concluded that our efforts of hyper-productivity, powering through distractions, and multitasking are futile.

Distilling some of their research down to the basics — our brains can only do so much. And our brains can make mistakes. And burdening our brains with heightened levels of activity in the hopes of working more productively or mastering content at a higher level is simply misguided. It won't produce the results we anticipate.

As it relates to school-age learners, Rosen's research published by Phi Delta Kappan states the following insights:

- Teenagers are almost always attempting to multitask, even when they know full well that they cannot do so effectively.
- When teenagers have their phones taken away, they become highly anxious (and visibly agitated within just a few minutes).
- The average adolescent or young adult finds it difficult to study for 15 minutes at a time; when forced to do so, they will spend at least five of those minutes in a state of distraction. (Rosen, 2017)

Media multitasking and digital distractions impact academic performance

The rapid increase of 1:1 initiatives has perhaps contributed to the digital distraction and media multitasking phenomena that have emerged in our post-pandemic K12 classrooms. Defined as simultaneous access to multiple digital streams (e.g., juggling multiple devices, flipping between multiple apps, multiple tabs open), media multitasking is a phenomenon that's exploded since smartphones came into vogue.

We've all seen it being done (or do so ourselves) — jumping from one app to the other, checking the score of the game, then jumping to the latest weather report while sitting in the waiting room at the doctor's office or

sitting in line at the Drive-Thru. As a society, we may have officially climbed down the media multitasking rabbit hole.

Perhaps not surprisingly, studies show that "American youth spend more time with media than any other waking activity," averaging 7.5 hours every day — with 29% of that time (roughly 2 hours and 15 minutes per day) media multitasking. A whopping 95% of technology users report multitasking on two devices on a daily basis — with school-age children in some cases managing as many as a staggering seven devices at one time. It's common to witness students effortlessly transitioning from device to device, app to app, and tab to tab as they engage with their technology applications, often at a near frenetic pace. The question is, what effect does this increased level of media multitasking have on learning? The research is starting to stack up a bit.

A recent University of Illinois paper published in the *Journal of Food Science Education* paints a rather stark picture of media multitasking's impact on students doing schoolwork. Researchers in psychology, cognitive science, and neuroscience all cite interference with attention and working memory, difficulty recalling previously learned concepts and applying those concepts in different contexts, comprehension and note-taking declines, diminished performance on tests, and lower grade point averages.

There's a healthy amount of corroborating evidence as well:

- A 2015 study suggests that media multitasking during learning has a negative impact on academic outcomes.
- A Dutch study conducted with eighth-graders found instant messaging via Facebook or similar media during reading dramatically reduced reading efficiency — in one case, increasing the time to read a passage from 29 minutes to 49 minutes.
- Instant messaging while doing homework affects a student's academic performance and negatively impacts the student's perceived ability to do homework.
- Still, more data suggest that accuracy on education-related tasks involving problem-solving suffers when students switch more frequently to other computer-based activities.
- Researchers found that media multitasking during schoolwork interferes with students' attention and working memory, which produces shallower and spottier learning. Students understand less and

have difficulty recalling and applying what they have learned in a new context.

These are snapshots of several studies and aren't intended as a blanket indictment against using digital devices. Yet, for many parents and educators alike, these and other similar studies raise concerns regarding the impact of digital distractions and media multitasking on students. Regardless of the evidence, striking a balance in K12 classrooms continues to be a work in progress. It is rapidly becoming a priority for schools as they embrace the new normal that's unfolded in our now tech-heavy classrooms.

Consider the impact YouTube had as a remote learning instructional tool during the pandemic. YouTube's popularity has soared as the third most popular classroom resource for teachers during the 2021-22 school year (topped only by Google Drive and Google Forms). Much like during the pandemic, YouTube continues to be widely used as a complimentary resource for instructional teams. Yet even as teachers are reluctant to limit access to YouTube for the educational benefits, they're painfully aware of the time-sucking management challenges open access to YouTube can create.

Illustrating this challenge, a North Carolina middle school science teacher interviewed for an April 2022 WSJ article shared the benefits YouTube videos bring to her instruction in the form of brief, 5-minute summaries and investigations of key concepts. Yet, she simultaneously indicates that unfiltered YouTube access for students can be problematic from a management standpoint, estimating that she 'busts six or seven kids' (a third of her class) each day for watching non-educational YouTube videos or playing games.

Post-pandemic, productive classroom instruction and student engagement are needed to help close learning gaps. The manual policing of student internet use by instructional staff takes valuable time away from helping other students in the class who may need additional support.

Relatedly, evidence suggests that digitally distracted students in class may have a greater impact on other students in the class than we realize. Since a decade ago, we have known through research that, in addition to negatively impacting the off-task student's academic success, digital distractions can also negatively affect classmates who were able to view the off-task student's screen. Both the off-task student and off-task observer were found to present decreased levels of comprehension when compared to their non-digitally distracted counterparts.

More recently, a study of university students by Hall (2020) planted students in classrooms with directions to intentionally engage in off-task behavior on laptops. Students were given orders to internet surf on two websites (specifically Facebook and Buzzfeed), check email, and do other online activities unrelated to the classroom instruction. Results from Hall's study echo the decade-old study — distracted students negatively affect others in the classroom. Nearby students that could see the off-task students' screens had lower comprehension and retention levels.

Considering the YouTube management challenges of the science class in the previously cited WSJ article, the ripple effect that digitally-distracted students can potentially have in a classroom instructional setting could prove quite significant.

Given what we know about the negative impacts distractions and media multitasking can have on academic achievement, are students able to recognize these patterns in their own behavior and make changes of their own volition?

Based on the findings of a 2021 study by Dontre, the answer is 'Probably not.' His research suggests that when it comes to media multitasking, many students struggle to accurately assess the impact media multitasking will have on their academic performance. And that, even when provided with the knowledge of the detrimental effect media multitasking can have on their academic success, Dontre's findings indicate that students are seemingly unable to self-regulate and find balance in their consumption of non-education-related media.

Forward-thinking school leadership teams are helping to reverse the digital distraction trend by providing instructional teams with the tools they need to keep students digitally engaged on school devices. Though not entirely to blame, the limitations of traditional filtering technology leave school IT departments with few options as they work to limit students from accessing inappropriate, non-educational content on YouTube and similar sites. Invented for the internet of the 1990s, traditional filtering techniques that rely on manually maintained Blocked Lists and Allow Lists of websites, URLs, and keywords are proving ineffective.

In contrast, Deledao provides schools with a powerful tool that uses artificial intelligence to discern web content like a human, analyzing each piece of content as it renders in the browser in real time. As part of a comprehensive digital literacy or digital citizenship solution, Deledao's patented AI

technology helps teachers manage their digital classrooms by keeping students engaged and learning on school devices.