

Andover Education Association

Educational Technology Report: A Critical Analysis of Ed Tech in the Classroom 2018/2019

Executive Summary:

Over the past decade the proliferation of technology in Andover's classrooms has rapidly changed the dynamics of the learning environment. A veritable deluge of electronic toys, tablets, laptops, books, e-readers, interactive games, and applications has become inextricable from students' daily lives. Much of this technology is specifically marketed to young people, and much of it serves to harvest user data for private sector marketing and research purposes. The considerable effects of this technological eruption, and its intersection with the accumulation of data and individual information, is changing the experience of education before our eyes. Additionally, what seems clear from the research is that the ubiquity of these technologies in our learning environments poses serious health and safety implications for both students and educators in schools.

The Andover Education Association charged the Technology Study Committee with researching how Andover Public Schools utilizes technology, how AEA members experience technology, what research exists on the use of various technologies on student learning, and on the physical and psychological impact of technologies on students and educators.

We first solicited general feedback from faculty regarding three essential questions:

1. **What concerns do you have about the current technology initiatives and how they impact teaching and learning?**
2. **What concerns do you have regarding the roll-out and implementation of technology in the district?**
3. **What do you see as the strengths of technology in instruction and student learning?**

After reviewing this feedback, we crafted a survey that categorized and pinpointed issues that emerged across the district. We received a statistically significant sample (about 100 respondents/approximately 15-18% of our membership) representing every level of instruction. Thirty percent of respondents were Educational Support Personnel. Among other data, the survey reveals particular concern regarding how student wellness is impacted by technology in the classroom. The complete survey data can be found in the Appendix of this report. Some highlights:

- 72.8% of respondents "agree" or "strongly agree" with the following statement: **"I am concerned about the amount of screen time students are exposed to at school."**
- 81.5% of respondents "agree" or "strongly agree" with the following statement: **"I am concerned about the effect screen time has on the social/emotional health of students."**
- 70.6% of respondents "disagree" or "strongly disagree" with the following statement: **"I am satisfied that adequate safeguards are in place to protect students' social and emotional health as technology use increases."**

Included in the committee’s report are the following findings:

- Excessive screen time is linked to an increase in visual problems, anxiety, and depression among children and adolescents.
- Extensive use of a touch-screen tablet has a negative effect on the fine motor development of children age 5 and under.
- The academic effectiveness of online and blended learning programs on K-12 students is negligible.
- Cloud file-sharing programs provided through APS enables Google to mine data from students and faculty members without due compensation for their intellectual property.

We hope the following analyses and recommendations open a broader and deeper dialogue between the faculty, management, and the community-at-large regarding the understudied, but nevertheless ubiquitous, impacts of educational technology in the classroom.

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Student Wellness and Learning

As technology has rapidly expanded into almost every conceivable facet of our day-to-day lives, the same holds true for many K-12 classrooms in the United States. While the debate about smartphones and screen time in schools rages both in the U.S. and abroad – one notable European legislature overwhelmingly supported banning students’ access to smartphones during the school day¹ – Andover Public Schools has opted to increase student exposure across-the-board despite evidence indicating the alarming risks of technology to both student health and achievement. In particular, our Bring Your Own Devices (BYOD) initiative has continued to bulldoze ahead with little to no consideration of the potentially harmful effects of ever-increasing student exposure to screen time both at school and at home. In light of an abundance of research that indicates serious cause for concern regarding technology use by young people, it would behoove the Andover Public Schools to conduct a thorough, multilateral, and meaningful review of its technology initiatives.

Andover’s BYOD initiative has been supported under the auspices of “aim[ing] to enhance student learning by creating a personalized, student centered learning environment where every student has a laptop to use in school and at home. Students will leverage these tools in the classroom to learn how to collaborate, analyze data, and be effective members of a team.”² In fact, if one were to peruse the *iAndover BYOD Pilot Report* from 2015, the only noted concerns were related to troubleshooting potential network connectivity issues and the financial burden placed on families. Nowhere in this document is there any reference to student health and well-being outside of a passing comment on student complaints re: the weight of their devices. There is, however, an abundance of anecdotal commentary about the purported educational benefits of an increased technology presence at the middle and high school levels. This seems rather odd when one considers that 95% of school administrators across the country feel that students spend too much time on screens at home.³

A cursory exploration of recent research indicates that an over-exposure to technology in both academic and social contexts can actually do more harm than good. A 2014 study of 450 undergraduates conducted at West Point indicated a statistically significant decrease in students’ performance on exams in classrooms where laptops were allowed⁴ compared with classes that did not allow laptops. A more recent undergraduate study from 2017 indicated that an over-reliance on devices/screens as a method of reading leads to poorer student comprehension, particularly with specific textual details.⁵

The impact of technology on students’ social and emotional development is considerably more concerning than its effects in an academic context. A 2014 study of college students who had to go without using their phones found that the heaviest phone users experienced the greatest spike in self-reported levels of anxiety.⁶ Another 2014 study conducted by the University of California, Los Angeles

¹ Alissa J. Rubin and Elian Peltier, “France Bans Smartphones in Schools Through 9th Grade. Will It Help Students?” *The New York Times*. Sept. 20, 2018. <https://www.nytimes.com/2018/09/20/world/europe/france-smartphones-schools.html>

² https://www.aps1.net/DocumentCenter/View/6491/iAndover1to1-Learning-Initiative_Final-06-11-15?bidId=

³ Christina A. Samuels, “School Principals Overwhelmingly Concerned About Children’s Screen Time,” *Education Week*. April 17, 2018. <https://www.edweek.org/ew/articles/2018/04/18/school-principals-overwhelmingly-concerned-about-childrens-scre.html>

⁴ Susan Payne Carter, Kyle Greenberg, and Michael Walker, “The Impact of Computer Usage on Academic Performance: Evidence from a Randomized Trial at the United States Military Academy” SEII Discussion Paper #2016.02, May 2016. <https://seii.mit.edu/research/study/the-impact-of-computer-usage-on-academic-performance-evidence-from-a-randomized-trial-at-the-united-states-military-academy/>

⁵ <https://www.tandfonline.com/doi/abs/10.1080/00220973.2016.1143794?journalCode=vjxe20>

⁶ <https://www.psychologytoday.com/us/blog/rewired-the-psychology-technology/201706/the-anxiety-epidemic>

found that young people were spending more time than ever before in front of screens, and that it may be limiting their ability to recognize emotions.⁷ Young people today are also less socially active in person than previous generations, and shockingly, 12th graders in 2015 spent even less in-person time with their friends than 8th graders in 2009.⁸ A study from The National Institute on Drug Abuse found that, “Teens who spend more time than average on screen activities are more likely to be unhappy, and those who spend more time than average on non-screen activities are more likely to be happy.... Eighth-graders who spend 10 or more hours a week on social media are 56 percent more likely to say they’re unhappy than those who devote less time to social media... those who spend six to nine hours a week on social media are still 47 percent more likely to say they are unhappy than those who use social media even less.”⁹ A 2017 study from Florida State University found “compelling evidence that the more time teenagers spend on smartphones and other electronic screens, the more likely they are to feel depressed and think about, or attempt, suicide.”¹⁰ When viewed comprehensively, these studies and findings at the very least indicate a need for a much more in-depth examination of the district’s technology policies and procedures, as well as the short- and long-term effects of technology use on student and faculty social/emotional and physical health.

Recommendations

- 1. Screen time guidelines and limits for the school day should be established at all levels:** These should be grounded in sound academic and medical research, and clearly communicated to all stakeholders.
- 2. APS technology initiatives must be thoroughly vetted by a multilateral committee of stakeholders that includes parents, students, teachers, and administrators before they are implemented.**
- 3. APS technology initiatives should support our stated mission of “providing creative and quality instruction that educates the whole child so that they are prepared for success in college, career & life.”**
- 4. APS technology initiatives should be regularly reviewed to assess:** A) The effects on student academic achievement, and B) the effects on students’ social and emotional health, as well as compatibility with the district’s educational mission statement.
- 5. APS technology initiatives should be supported by sound academic and medical research, as well as demonstrate a measurable benefit to both student academic achievement and student/faculty social and emotional health.**

⁷ <https://www.sciencedirect.com/science/article/pii/S0747563214003227>

⁸ <https://www.theatlantic.com/magazine/archive/2017/09/has-the-smartphone-destroyed-a-generation/534198/>

⁹ Ibid.

¹⁰ <https://www.sciencedaily.com/releases/2017/11/171130170212.htm>