The Paradox of Classroom Technology: Despite Proliferation and Access, Students Not Using Technology for Learning

AdvancED Research by

Ludwig van Broekhuizen, Ph.D.

Creating a
world of opportunities
for every learner.

AdvancED®
www.advanc-ed.org

Governments, schools and systems as well as the philanthropic community have invested heavily in technology to keep up with the demands of 21st century learners. Even after years of huge public and private investments and the sheer number of technology-in-education initiatives (1:1 computing, e-Rate, P-TECH, STEM), one would think that students' use of digital tools and technology for learning in K-12 settings would be ubiquitous. It is in fact the contrary. While the pervasive use of tablets, smartphones, laptops and digital education content is expanding around us, in the classroom, students are not actively using these technologies for learning—even within well-equipped classrooms where access is not the problem. AdvancED® research has found that examples of technology being put to use by students to strengthen learning are barely evident in classrooms today.

After conducting over 140,000 direct classroom observations in K-12 schools in the U.S. and across the globe, AdvancED has uncovered that there are still relatively few classrooms in which students' use of digital tools and technology is a regular part of a student's school experience.

Do Students Actually Use Technology for Learning In Classrooms?

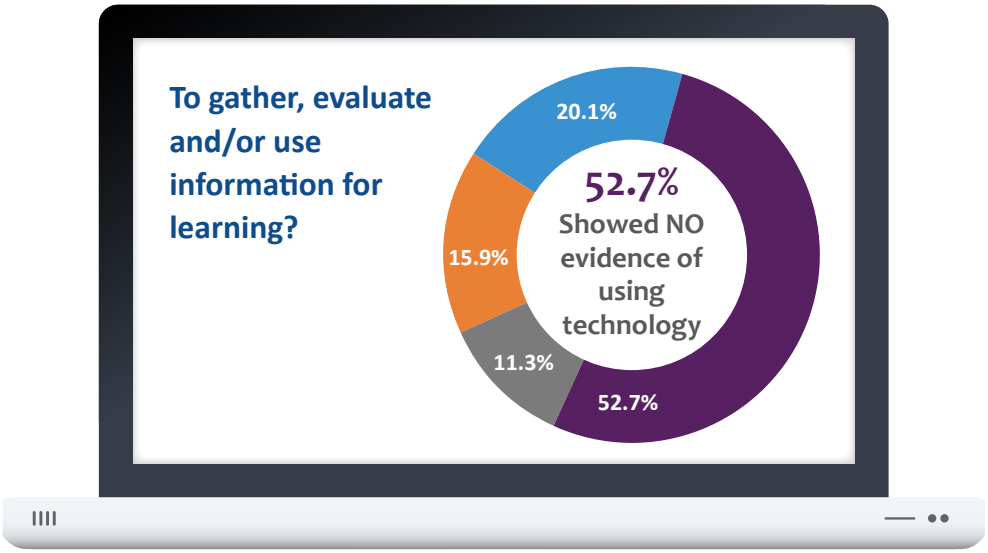
Learners' use of digital tools and other technology to support their learning in our K-12 systems continues to be sporadic and often not observed despite the proliferation of use outside of school. Based on an analysis of three years of direct classroom observations in K-12 schools across 39 states and 11 countries, AdvancED found there are still relatively few classrooms in which the use of digital tools and technology is a regular part of a student's school experience. In more than half (52.7 percent) of classrooms direct observations show no evidence students are using technology to gather, evaluate, or use information for learning; two-thirds of classrooms show no evidence of students using technology to solve problems, conduct research, or to work collaboratively.

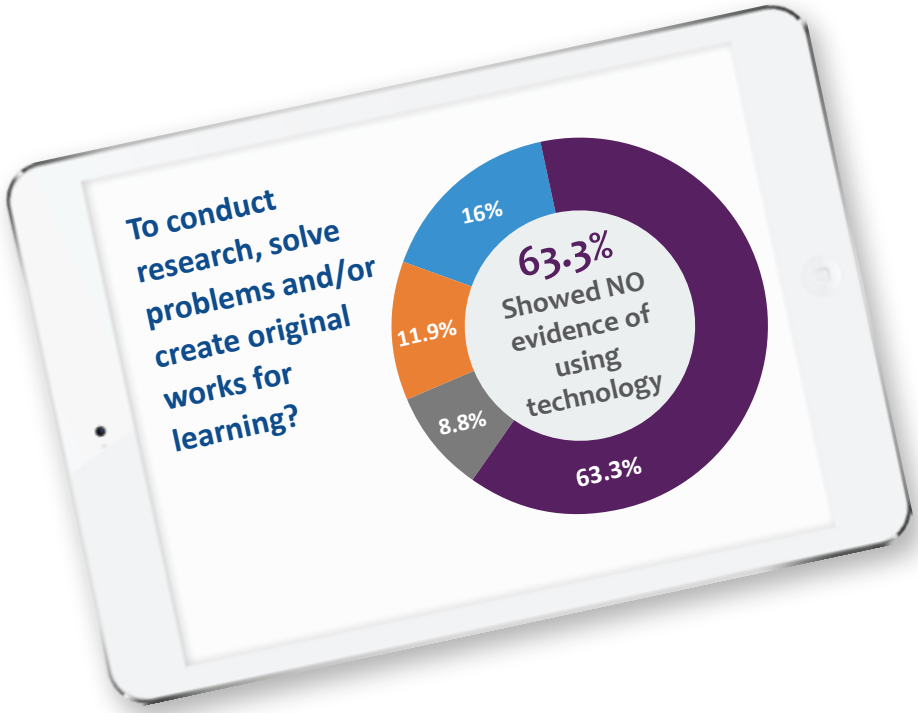
Trained and certified observers conduct classroom observations as a part of AdvancED's continuous improvement process which could include STEM Certification, accreditation, readiness and/or diagnostic review. Each observation lasts a minimum of 20 minutes during which observers use the learner-centric eProve™ Effective Learning Environments Observation Tool® (eleot®) to gather data focused on the activities learners are engaged in, their discussions and interactions, resources they are using for learning, their behaviors and dispositions during the learning process, etc. Observers rate each of the 30 eleot items on a four-point scale where 4 = Very Evident, 3 = Evident, 2 = Somewhat Evident and 1 = Not Observed.

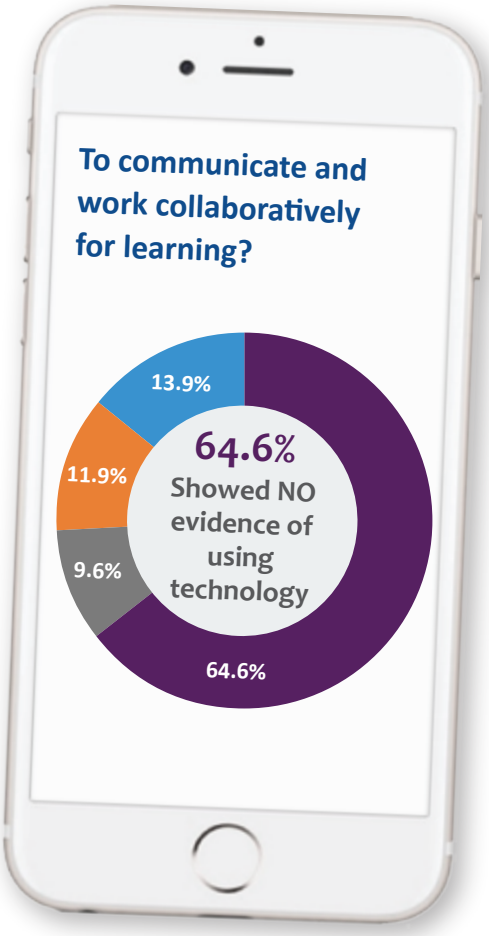
Three eleot items focus specifically on students' use of digital tools and technology for a variety of purposes, namely:

1. **Students use digital tools/technology to gather, evaluate and/or use information for learning.**
2. **Students use digital tools/technology to conduct research, solve problems and/or create original works for learning.**
3. **Students use digital tools/technology to communicate and work collaboratively for learning.**

Do Students Actually Use Technology for Learning in Classrooms?







- Not Observed
- Somewhat Evident
- Evident
- Very Evident

1. Using technology to gather, evaluate and use information for learning

The first item pertains to a light use of technology mostly to simply access information. Across 142,606 20-minute observations, observers noted that during this time, students' use of digital tools/technology to gather, evaluate and/or use information for learning was only somewhat evident (Average=2.02). A somewhat evident rating means that what was observed is not deemed to be a regular classroom practice. However, this eleot item received the highest average rating of the three Digital Learning Environment items. This is not surprising given that this is the most superficial use of technology, most easily implemented and least time consuming.

eleot Digital Learning Environment Item	Mean	Standard Deviation
Uses digital tools/technology to gather, evaluate and/or use information for learning	2.02	1.217

Rating frequencies provide even greater insights into what observers saw in classrooms. In over two-thirds (n*=91,228) of classrooms, observers either did not see or only saw superficial implementation of students using technology to gather, evaluate and/or use information for learning. In one-third of classrooms (n=51,537), observers rated this type of student use of technology as being a regular part of classroom practice with about a fifth of classrooms receiving a "very evident" rating which demands that this be a classroom practice along with more complex and deeper application.

Rating	Frequency/Number*	Percent
1 = NOT OBSERVED	75,088	52.7
2 = SOMEWHAT EVIDENT	16,140	11.3
3 = EVIDENT	22,614	15.9
4 = VERY EVIDENT	28,743	20.2
TOTAL	142,606	100.0

"In more than half of classrooms students show no evidence of using technology to gather, evaluate or use information for learning."

2. Using technology to conduct research, solve problems and create original works

Using digital tools/technology for more complex activities like conducting research, solving problems or creating original works received a lower average rating of 1.80 based on 142,586 observations. This is not surprising given that if technology is only sporadically being used to simply gather information (as in the previous item), its use to engage in more complex activities that require more time would be even less evident.

eleot Digital Learning Environment Item	Mean	Standard Deviation
Uses digital tools/technology to conduct research, solve problems and/or create original works for learning	1.80	1.157

This data bears out when we examined rating frequencies. In nearly three-quarters of classrooms (n*=102,772), observers did not see students using technology for these purposes or only saw it in settings where it was not a regular classroom practice. However, observers saw a more routine use of technology for these purposes in slightly more than one-quarter of classrooms.

Rating	Frequency/Number*	Percent
1 = NOT OBSERVED	90,241	63.3
2 = SOMEWHAT EVIDENT	12,531	8.8
3 = EVIDENT	16,993	11.9
4 = VERY EVIDENT	22,821	16.0
TOTAL	142,586	100.0

"Two-thirds of classrooms show no evidence of students using technology to solve problems, conduct research, or to work collaboratively."

3. Using technology to communicate and work collaboratively

The lowest average rating (1.76) based on 142,585 observations was students' use of digital tools/technology for the purpose of communicating and working collaboratively. Given that students are constantly using technology to communicate through chatting, blogging, emailing, texting and gaming, it is surprising that this routine part of students' daily lives is not being leveraged for learning in their K-12 classrooms. Or maybe this should not be at all surprising. According to Richard Freed, a clinical psychologist and the author of Wired Child: Reclaiming Childhood in a Digital Age, "High levels of smartphone use by teens often have a detrimental effect on achievement, because teen phone use is dominated by entertainment, not learning, applications." (Barnwell 2016). But perhaps this is a "which came first, the chicken or the egg?" dilemma. Teens were never asked or charged with using smart phones for learning so their lived experience and reality command a different use. Well-orchestrated and deliberate learning applications for smartphone use in classrooms could change this.

eleot Digital Learning Environment Item	Mean	Standard Deviation
Uses digital tools/technology to communicate and work collaboratively for learning	1.76	1.126

Observers very infrequently saw students using digital tools and technology for the purpose of communicating and working collaboratively. In 92,190 classrooms (64.6 percent), observers did not see students engaging in this use of technology at all. Given that students are active on any number of social networking, communication and/or collaborative platforms and applications (Snapchat, Instagram, Vine, Facebook, Twitter, WhatsApp) and seem to easily communicate through these with one another and with the virtual world at large, we might expect that this would be a no-brainer to "persuade" students to leverage learning using these various modes (blogs, Google docs, etc.). This was not the case since of the three digital environment eleot items, this one scored the highest number of "not observed" ratings and the fewest "very evident" ratings.

Rating	Frequency/Number*	Percent
1 = NOT OBSERVED	92,190	64.6
2 = SOMEWHAT EVIDENT	13,672	9.6
3 = EVIDENT	16,916	11.9
4 = VERY EVIDENT	19,807	13.9
TOTAL	142,585	100.0

"Students thrive when the teacher requires technology use not only for researching and writing but also to solve problems, work collaboratively and develop creativity."

Conclusion

While numerous surveys suggest that the pervasive use of tablets, smartphones, laptops and digital education content in the classroom is expanding and changing the role of teachers, the AdvancED study found little evidence of technology being used by students to strengthen learning in classrooms today.

Until this report, most of the analysis of use of technology in learning has been based on teacher surveys and teachers' use of technology. Teachers say that they are doing more and more to integrate technology into their students' classroom experiences, but this is not evident in comprehensive classroom observations made across all parts of the school day.

Educator surveys typically indicate that large percentages of teachers have access to personal computers or laptops in their classroom. More than eight in 10 teachers (81 percent) have access to personal computers or laptops in their classroom (PBS Future of Digital Learning Survey). And because AdvancED's own study indicates that there is little variation in availability of technology across different types of schools, it is likely that limited use of technology for learning is neither an issue of in-school student access to the tools (tablets, laptops, smartphones, etc.) nor an issue of technology infrastructure (broadband or Internet). Rather, it may be due to a broad range of factors related to teacher preparation and training, the impact of technology on school culture, or concerns about the availability of technology at home or out of school that could increase disparities among students from different socio-economic backgrounds.

AdvancED research data of the extent to which students, not teachers, are actually using technology for learning—show that even as more sophisticated technology tools have become commonplace in schools, they are still doing little to change how students learn on a day-to-day basis. AdvancED findings come from an analysis of three years of data from its Effective Learning Environments Observation Tool (eleot), which measures and quantifies active student engagement through learner-centric classroom observations, to determine how extensively technology is being used to engage students in learning. Instead of just indicating the mere presence of technology in the classroom, an analysis of eleot classroom observations was conducted to determine how extensively technology is being used by students as part of efforts to engage students in learning. The study's findings present educators and the community at large with an opportunity not only to use technology more effectively for learning but also to measure student engagement, find ways to enhance curriculum relevance and interact with students in different ways.

Based on AdvancED's research and analysist of direct classroom observations, the K-12 system has not yet made large-scale student use of technology a reality that would support greater integration of learning and greater depth of understanding as required by new standards used by most states. ***(Conclusion continued on next page)***

Support for use of technology is crucial. Teachers typically lack support and in-service and preservice training on how to effectively integrate technology into lessons and to use it for teacher and student collaborations. And educators are often reticent to "allow" technology to be broadly used for fear of inappropriate use (a genuine concern but one that has been discussed for over a decade); concern about creating increased opportunities for students to cheat on tests (more easily done when there is only one correct answer); and encouraging off-task use and technology, which is often seen by educators as a distraction from learning. Equally important, there may be a deep underlying belief among educators that technology tools are useful only in certain contexts for certain students or not at all.

Whatever the case, it is no longer a question of "whether" but rather "how" to incorporate and leverage the use of technology and digital tools to boost learning inside our K-12 classrooms. Technology has the potential to be the great equalizer as long as all students have access (both inside and outside school time) to these tools. And it is not just about having a smartphone, though according to a recent Pew Research Center survey, 73 percent of teens have them. (Lenhart 2015) Devices such as tablets and laptops in all their shapes and sizes provide students opportunities to organize their notes and assignments, explore interests, communicate with their teachers and peers, prepare presentations, work together on projects and connect with experts.

We need to ensure that teachers are provided support and training so that they know how to integrate students' use of technology into their classrooms and create a student-centric learning environment. Until teachers and administrators are convinced that technology can be a help not a hindrance to learning, the shift will not happen.

The teacher is the key to students successfully using technology as a learning and problem-solving tool. Students thrive when the teacher requires students to use technology not only for researching and writing but also to solve problems, work collaboratively and develop creativity (Rasmussen 2015).

With new technologies available to observe classrooms and study student engagement, educators and the community at large can look more closely at the extent to which they are using technology more effectively for learning and to explore ways to increase student engagement, enhance curriculum relevance and interact with students in different ways. When students are genuinely engaged in their learning around topics that connect to their lives and interest them, they are much less inclined to engage in off-task behaviors with or without access to technology. It is when students lose themselves in their learning that we have accomplished what we set out to do for them in the first place.

AdvancED's findings present educators and the community at large with a challenge not only to use technology more

References

The Future of Digital Learning

Henessey, Marcus A., Using Smartphones (and other PDAs) in Class: These Days, it's Cool! retrieved from:
http://lessonplanspage.com/using-smartphones-and-other-pdas-in-class-these-days-its-cool/

Rasmussen, Darin 2015 – Digital Native Teachers Become the Majority: Now What? edmentum.com retrieved from:
http://blog.edmentum.com/digital-native-teachers-become-majority-now-what

Barnwell, Paul. Do Smartphones Have a Place in the Classroom? The Atlantic retrieved from:
http://www.theatlantic.com/education/archive/2016/04/do-smartphones-have-a-place-in-the-classroom/480231/

Lenhart, Amanda. Teens, Social Media & Technology Overview 2015 Pew research Center, retrieved from:
http://www.pewinternet.org/2015/04/09/teens-social-media-technology-2015/

Freed, Richard. (2015). ***Wired Child: Reclaiming Childhood in a Digital Age***. CreateSpace Independent Publishing Platform.

Additional Reading

Trends in Digital Learning: Empowering Innovative Classroom Models for Learning retrieved from:
http://www.tomorrow.org/speakup/2015_ClassroomModels.html

5 reasons schools aren't using more innovative classroom models retrieved from:
http://www.eschoolnews.com/2015/07/13/classroom-models-378/

About the Author

Dr. Ludwig "Ludy" van Broekhuizen is the Chief Innovation Officer at AdvancED. As a lifelong educator and learner, he has dedicated his career to supporting the success of all students. A former classroom teacher, professional developer, community organizer and education researcher, his current role allows him to lead the creation of innovative tools and processes that drive improvement in schools and systems throughout the world.

https://www.advanc-ed.org/bio/ludy-van-broekhuizen-phd

About AdvancED

AdvancED is the world leader in providing improvement and accreditation services to education providers of all types in their pursuit of excellence in serving students. AdvancED serves as a trusted partner to more than 34,000 schools and school systems—enrolling more than 20 million students—across the United States and in 71 other countries.

The North Central Association Commission on Accreditation and School Improvement (NCA CASI), Northwest Accreditation Commission (NWAC) and the Southern Association of Colleges and Schools Council on Accreditation and School Improvement (SACS CASI) are accreditation divisions of AdvancED.

9115 Westside Parkway, Alpharetta, GA 30009
888.41ED NOW (888.413.3669)
Global: +1 678.392.2285

AdvancED®
www.advanc-ed.org