
Increasing Access to Technology - Part 2

— For Students and Staff @
Londonderry School District —

C3 Committee Meeting, Oct. 3rd 2018

Outline for Today's Presentation

- Research on Technology's Effect on Student Achievement
- Research on Screen Time

After listening and thinking with 6 School Buildings:

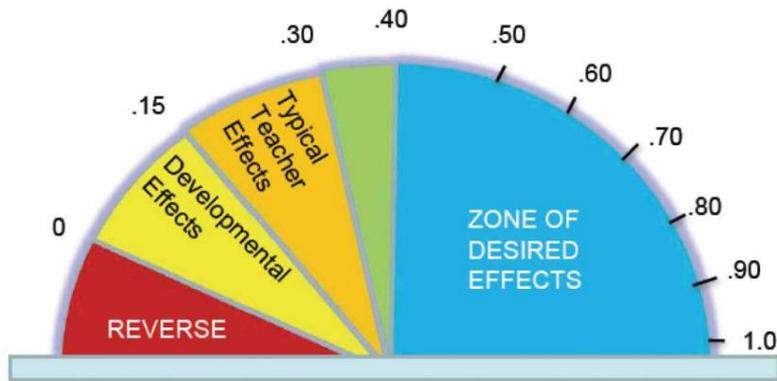
- What ratio do we want to be at for 2019-20? Over the next 3 to 5 years?
- What professional development we would need to support the 2019-20 "plan" and beyond.
- Do we task the early adopters to help us think through the next 3 to 5 years?

Research on Technology's Role in Student Achievement

— C3 Committee , Oct 3rd, 2018 —

A Look at John Hattie's Work with "Visible Learning"

Hattie is a researcher that synthesizes and compiles the work of others.(Meta-analysis) He started in 2009 by compiling [138](#) approaches in education that could possibly affect students achievement, and he ranked them based on their "power" or influence to affect student achievement. This work created his "effect size" barometer seen below:



How to use effect size: (Example from 2009 List)

- Teacher-Student Relationships - 0.72
- Class-Size - 0.22

Where would you "spend" your efforts and resources?

Zone of Desired Effects - Above 0.4, with 0.6 considered a large effect. How much effort will it take to implement and be successful?

Typical Teacher Effects - What normally happens from one year of school. They are positive, but should always be considered against how many resources it will take to make that positive outcome.

"Developmental Effects" - What students achieve without school.

"Reverse" - Choices that reverse students achievement.

A look at the most updated version of Hattie's List (252 Influences)

How does technology play into the [most updated list?](#) (Compiled from 2017 to 2018)

Current Top 5 Effect Size	What that means in English	Could i-Ready be utilized with this approach to affect student achievement?
#1 - 1.57 Collective Teacher Efficacy	A school staff that collectively believes they can accomplish great things together.	Maybe - it's a stretch - if we use it as our measurement tool to believe in ourselves and the impact we have on students.
#2 - 1.33 Self Reported Grades	"Student Expectations" - a teacher uncovers what a student think they can do, then purposely pushes them farther.	Potentially - If a teacher sits down to conference with kids, looks at their current scores together, pumps them up and pushes them to big goals.
#3 - 1.29 Teacher Estimates of Achievement	The accuracy of an individual teacher's knowledge of students in his or her classes - how that influences the learning activities, questioning, and groupings.	Maybe to Potentially - If we use i-Ready as a good gauge of our students current abilities, and the growth mindset to make sure we are always pushing them farther
#4 - 1.29 Cognitive Task Analysis	Breaking down complex thinking tasks - identifying an approach - letting the students practice and monitor these approaches.	A Big Stretch - Teachers would need to sit next to students and monitor with them, but maybe at a certain cycle they could review "wrong answers" with students and coach them through complex thinking.
#5 - 1.29 Response to Intervention	Early, systemic assistance to students who are struggling in school.	Potentially - I-Ready can help us identify and be a progress monitoring tool, but we still need humans to help with the interventions.

Hattie's Specific Research on Technology

TEACHING: Focus on implementation method	ES
Implementations using technologies	
Clickers	0.22
Gaming/simulations	0.35
Information communications technology (ICT)	0.47
Intelligent tutoring systems	0.48
Interactive video methods	0.54
Mobile phones	0.37
One-on-one laptops	0.16
Online and digital tools	0.29
Programmed instruction	0.23
Technology in distance education	0.01
Technology in mathematics	0.33
Technology in other subjects	0.55
Technology in reading/literacy	0.29
Technology in science	0.23
Technology in small groups	0.21
Technology in writing	0.42
Technology with college students	0.42
Technology with elementary students	0.44
Technology with high school students	0.30
Technology with learning needs students	0.57
Use of PowerPoint	0.26
Visual/audio-visual methods	0.22
Web-based learning	0.18

This list is one piece of the 252 influences that Hattie compiled over 2017 to 2018 for his updated framework.

As you can see there certainly are some positive influences with “teaching implementations using technology” - but none that rise above a large influence (>0.6 effect size).

As with all of Hattie’s work, there is digging to do to understand his definition, and then figure out how much of a “resource” effort it would take to implement the approach.

What caught my eye for sure was that “one to one laptops” falls into the ranking of “developmental effects” - (0.16 effect size) - having 1 to 1 laptops doesn’t make a real discernable difference in student achievement during the school day.

As we move forward we could look more closely into the larger effects and see if we can’t weave them into a coherent plan around improving our access to technology.

- Right now I-Ready does fall into his definition of “intelligent tutoring systems” because it does adjust to students on a personalized basis. (0.48 effect size)

Screen time and Schools

C3 Committee , Oct 3rd, 2018

Impacts of Screen Time

Screen time is increasing: “In the USA, rates of mobile media use among 2- to 4-year-olds increased from 39% to 80% between 2011 and 2013.” (1)

- Risks
 - Language Delays
 - Attention difficulties
 - Reduced communication skills
 - Exposure to violent content
 - Inability to distinguish reality from what is seen on screens
 - Difficulty falling asleep
- Most research shows these risks are seen primarily in children with very high (7 hours per day) screen time, and starting at a young age (under 2 years).
- Benefits
 - Age-appropriate and well designed apps and programs provide additional pathways to learning language and reading.
 - Devices can serve as motivational tools to create engagement in new ways.
 - Offers additional resources and pathways for children with disabilities.
 - Allows individualized and independent learning.
 - Breaks down the barriers of time and space with virtual travel and experiences that may otherwise not be an option.
 - “Today’s generation of children and adolescents is growing up immersed in media. This includes platforms that allow users to both consume and create content, including broadcast and streamed television and movies, sedentary and active video games, social and interactive media that can be creative and engaging, and even highly immersive virtual reality.” (4)

Mitigating Risks and Finding Balance

- Research shows that very high screentime presents more risks than benefits.
- What is on the screen is more important than how much it's used.
- Finding the right balance between screen time and real world interaction is important, and looks different not only by age but by individual and family or by class, subject, or school.
 - Setting limits
 - Modeling balanced habits
 - Prioritizing in-person relationships and face-to-face communication
 - Designate media-free times
- "Some research suggests that children of technology limiters, who focus mostly on minimizing their children's use of technology, are most likely to engage in problematic behaviors such as posting hostile comments or impersonating others online, whereas children of **media mentors** are much less likely to engage in problematic online behaviors." (3)
- "Problems begin when media use displaces physical activity, hands-on exploration and face-to-face social interaction in the real world, which is critical to learning." (4)
- Nationwide survey of 500 principals found that 95% felt children were spending too much time with screens overall, but 66% felt they were spending just the right amount of time with screens at school. The other 30% were split between not enough and too much. (5)
- "...As educators, we must ask ourselves if we are contributing to a growing problem, or are we instead modeling a reasonable way for our students and families to embrace technology, but without becoming overwhelmed by its negative side effects." (6)

Questions Educators (and Parents) Should Consider to Find Balance

- Is the time students spend in front of screens engaging and purposeful?
- Are students joining together in focused face-to-face conversations, without the interruptions of digital devices, for a significant amount of time during each school day?
- Do teachers play an instrumental role in reviewing, monitoring and guiding their students' technology use?
- In the classroom, is technology viewed as “just one of the tools” students can use to solve problems, answer questions and present information?
- Does the school provide training to parents on the most effective ways to guide and monitor their children's technology use?
- Are students taught and encouraged to read deeply instead of simply skimming, to evaluate sources and consider viewpoints different than their own, and to become monitors of their own screen time and to know when and how to disengage from technology?

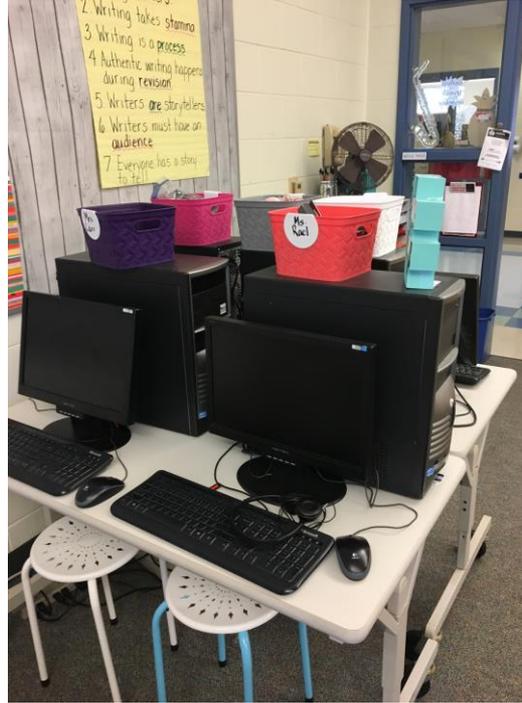
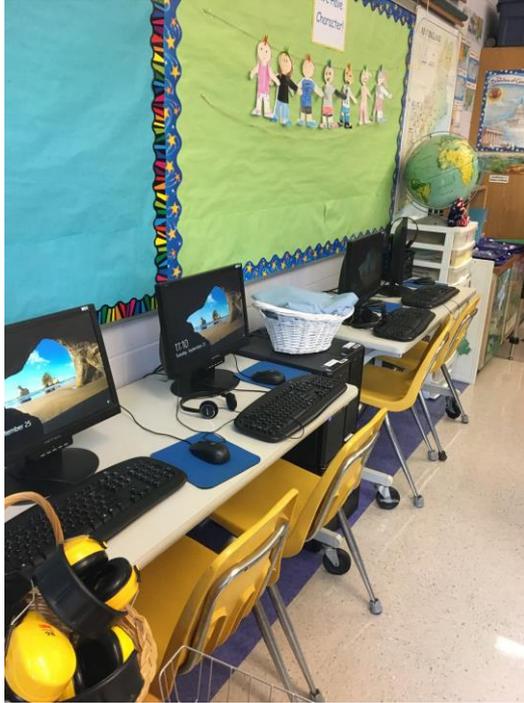
“An essential skill we can impart to our students is to recognize the difference between their digital experiences and other forms of knowing. The point is not to cordon students off from technology—that would be foolish—but to teach students how to go back and forth thoughtfully between various media and understand the costs and benefits of each. “ (7)

A Look into Our Current Ratios

C3 Committee , Oct 3rd, 2018

Stationary Computers in Classrooms Now

Device Metric Handout from Sept. C3 Meeting



In many of our 1 to 5, and in some 6 to 8 classrooms we have a small cluster of computers to use.

This does increase our overall current ratio, but at what rate are they being used?

What rate are they being used *effectively*?

These stationary computers skew our current ratio, (making it look higher than actual use), and do not allow for ideal lesson planning.

What do you do with 16 kids, while 4 are on the computer?

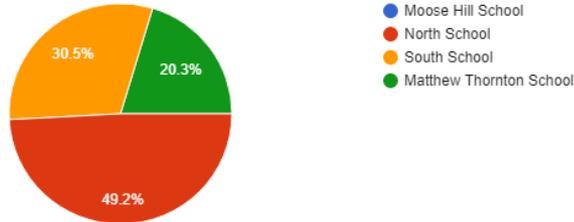
Staff Survey Results to Think Through Future Ratios

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Grades 1 through 5 Staff Survey - 59 Responses

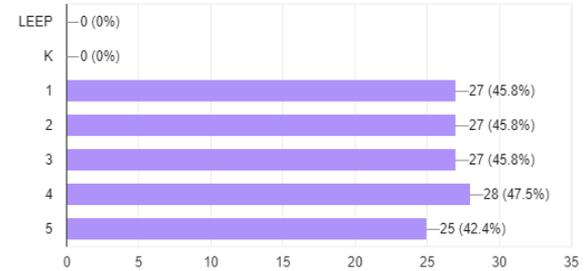
Which School do you work in?

59 responses



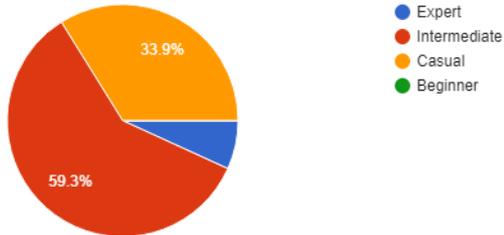
Which grade level(s) do you teach? Check any that apply.

59 responses



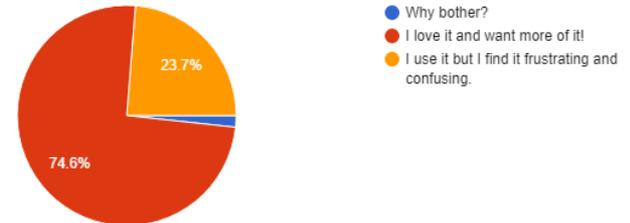
How would you describe yourself at using technology?

59 responses



What is your interest level in integrating technology in your classroom?

59 responses



Grades 1 through 5 Staff Survey - 59 Responses

What additional support do you need to better integrate technology into your curriculum?

- More devices available for students, replace old devices: 32 responses
- More (time for) PD: 21 responses
- Teachers need access to technology: 10 responses

What is the biggest burden on access to technology in your school?

- Not enough devices available, NO devices available when I need them: 32 responses
- Devices we have don't work properly: 20 responses
- Not enough time to learn or plan to use technology: 6 responses

What PD or training do you need the most?

- 72% said Google Integration
- 37% said Basic Computer Skills
- 32% said Instructional Design Principles
- 30% said Classroom Redesign
- 27% Managing and Understanding Digital Behavior

86% responses feel that teachers and students need better access to technology.

Grades 1 through 5 Staff Survey - 59 Responses

Which option would best address short term needs?

- 37% said 1 mobile cart per grade level plus 1 mobile cart available for checkout at the library
- 36% said classroom set of 16 in every classroom
- Custom responses offered other ideas but primarily focused on having more mobile carts available or devices available in the classroom.
- Several respondents suggested more tech personnel like a computer teacher or tech integrator to make better use of resources we already have.

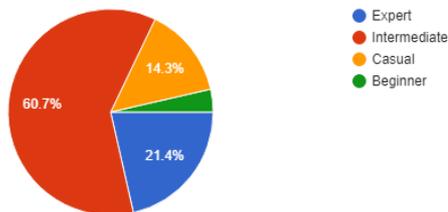
Which option would best address long term needs?

- 44% said full classroom sets in each room (14% said 1:1 initiative in all grades)
- 24% said multiple mobile labs in each grade level
- 19% said classroom sets of 15 plus a mobile lab for each grade level

LMS Staff Survey - 29 Responses

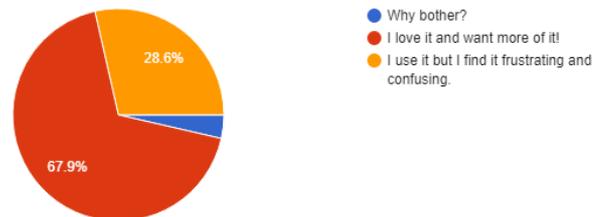
How would you describe yourself at using technology?

28 responses



What is your interest level in integrating technology in your classroom?

28 responses



Common Answers:

- We need better access more devices
- We need devices and wifi that works reliably
- We need more time/PD
- PD we need: Google Integration, Classroom redesign, Instructional Design Principles

68% feel that a full 1:1 initiative in needed to address long term needs

LHS Staff Survey - 65 Responses

What support to you need to integrate technology?

- Better/working hardware = 12
- More Training = 17
- More student devices = 10
- Improved Infrastructure = 7
- Additional Support Staff = 7

What training do the staff want/need?

- 67% said Instructional Design Principles
- 51% said Managing and Understanding Digital Behavior
- 44% said Classroom Redesign
- 44% said Digital Citizenship

78% feel that teachers and students need better access to technology at LHS

***62% feel that LHS should be a 1:1 School
15% would prefer to have more mobile carts
15% feel we should better leverage BYOD.***

Short Term Scenarios

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Addressing Short Term Needs in Grades 1-5

Scenario 1: Classroom sets of 15 - \$410,625

- Classroom set of 15 Chromebooks in each elementary classroom
- 1,125 Chromebooks for \$365,625 to district
 - NS: 25 sets = 375 Chromebooks
 - MT: 26 sets = 390 Chromebooks
 - SS: 24 sets = 360 Chromebooks
- 75 cabinets for ~\$600 each = \$45,000

Scenario 2: Mobile Carts - \$233,750

- 1 mobile cart of Chromebooks for each grade level in each elementary school
 - 18 mobile carts of 25 = 450 Chromebooks at \$146,250 to district
 - 18 carts = ~\$20,000

Scenario 3: Shared Sets - \$226,200

- 1 classroom set of 16 shared between 2 classes in all elementary schools
 - 13 sets of chromebooks in each building = 624 Chromebooks for \$202,800
 - 39 Chromebook cabinets = ~\$23,400

Invest in our Infrastructure: Meanwhile we must continue to invest in our physical infrastructure.

- Upgrade wiring in LMS

Addressing Short Term Needs in Grades 6-12

Year 1: Redistribute Elementary Devices and Continue Pilots

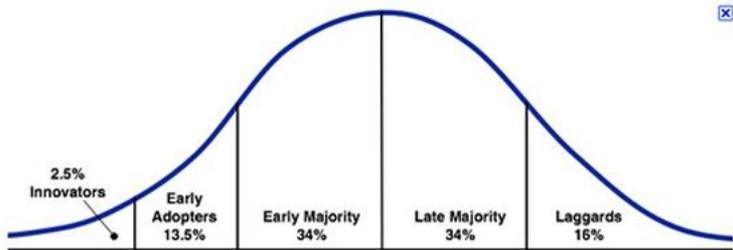
Classroom computers and laptop mobile labs could be redistributed to LMS and LHS to replace old devices or increase inventory where needed to support electronic testing and improve access.

- 154 desktop computers
- Up to 250 laptops (or 10 mobile laptop labs)
- Add 6 mobile lab carts to LMS (if possible, based on funding) = \$67,500
 - 180 Chromebooks = \$58,500
 - 6 carts = \$9,000
- Fill as many “early adopter” Technology Budget Requests as possible based on funding as a continued pilot program.
 - To leverage the skills and energy of early adopters to explore and demonstrate the impact of access to new devices, district-wide.

Year 2: Add Mobile Labs of Chromebooks to LMS and LHS to Improve Access

- Much of the feedback we have received is that the devices we have do not work well, are often broken or out for repair, are old/slow and getting access to them can be time consuming.
- Access to mobile labs of 30 Chromebooks throughout the building would help us easily address these issues while continuing to evaluate the correct ratio.
- Continue improvements to infrastructure: Elementary Schools and/or LHS

The “Tech Request Process” in these Scenarios



The “law” of the diffusion of Innovation

If we use the next budget cycle, and coordinate well among tech committees and administrators, the focus would be on the “ratio” problem to overcome our i-Ready/State Testing issue starting in 2019-20.

If we do that, then we would recommend that the “Tech Request” process is really for the “innovators” and “early adopters” in our district that can help us think through a new future of how we use technology to support the achievement of our learners.

Sources

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2. Oxford Academic, Paediatrics & Child Health. Screen Time and Young Children: Promoting Health and Development in a Digital World. <https://academic.oup.com/pch/article/22/8/461/4392451>
3. The Atlantic. Parents: Reject Technology Shame: The Advantages of Helping Kids Learn to Navigate the Digital World, Rather Than Shielding Them From It. <https://www.theatlantic.com/technology/archive/2015/11/why-parents-shouldnt-feel-technology-shame/414163/>
4. American Academy of Pediatrics. American Academy of Pediatrics Announces New Recommendations for Children's Media Use. <https://www.aap.org/en-us/about-the-aap/aap-press-room/Pages/American-Academy-of-Pediatrics-Announces-New-Recommendations-for-Childrens-Media-Use.aspx>
5. Education Week, April 17, 2018. School Principals Overwhelmingly Concerned About Children's Screen Time. <https://www.edweek.org/ew/articles/2018/04/18/school-principals-overwhelmingly-concerned-about-childrens-scree.html>
6. Center for Digital Education. Too Much Screen Time in Schools? March, 14th, 2018. <http://www.govtech.com/education/k-12/too-much-screen-time-in-schools.html>
7. Education Next. Winter 2018 / VOL. 18, NO. 1. Putting Dialogue over Devices Shapes Mind and Character. <https://www.educationnext.org/putting-dialogue-over-devices-shapes-mind-and-character-forum-scoggin-vander-ark/>

Other Resources

- 3 fears about screen time for kids - and why they're not true. TED Talk by Sara DeWitt, <https://www.youtube.com/watch?v=8woKcr7u-YQ>
- The Common Sense Census: Media Use by Tweens and Teens, <https://www.commonsensemedia.org/research/the-common-sense-census-media-use-by-tweens-and-teens>
- Build a Family Media Plan, Media Time Calculator, etc. <https://www.healthychildren.org/English/media/Pages/default.aspx>
- Working With Your School To Reduce Screentime, <http://www.screenfree.org/wp-content/uploads/2014/04/WorkingWithSchools.pdf>