HEALTHY EDTECH IS HERE.

TRIANGULATE:

An Instruction Manual for Using The EdTech Triangle in Your District, School, or Classroom

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RESEARCH & CONTEXT

DEAR EDUCATOR,

You work hard. You juggle varying needs all day, and you care. Many have said that being an educator is not just a vocation, but a calling. As a former college writing professor, I can attest to that fact; teaching and guiding students doesn't just touch our minds, it touches our hearts and becomes woven into who we are and how we live.

In recent years, though, it's become even harder; the flash and promise of educational technology has excited and galvanized so many in K-12 education and beyond. We want our classrooms to be engaging, dynamic, and innovative. EdTech seems a perfect portal to those characteristics, and it very much can be. EdTech can also—when it's overused or used in certain ways—restrict learning, lower test scores, cause attention problems, and hinder social and emotional development. The research is mounting, and patterns have developed with what studies show.

Should educators be expected to keep up with current EdTech research? It would be nice, but it's not entirely realistic. Directors of Technology might be in the perfect position to align themselves with EdTech research, yet they are often charged with sourcing promising tech or servicing and maintaining various district tech platforms. Where EdTech training is concerned, it's often the very companies that sell EdTech who administer it.

Everyschool's hope with The EdTech Triangle is to provide a healthy, researched-based model of educational technology that will comfort educators with the knowledge that how they use tech in the classroom fuels learning instead of disrupting or restricting it. This manual will orient you to using The EdTech Triangle in your classroom, and we hope it can facilitate a smooth transition to a new culture of tech for you and your students. Hooray for healthy EdTech!
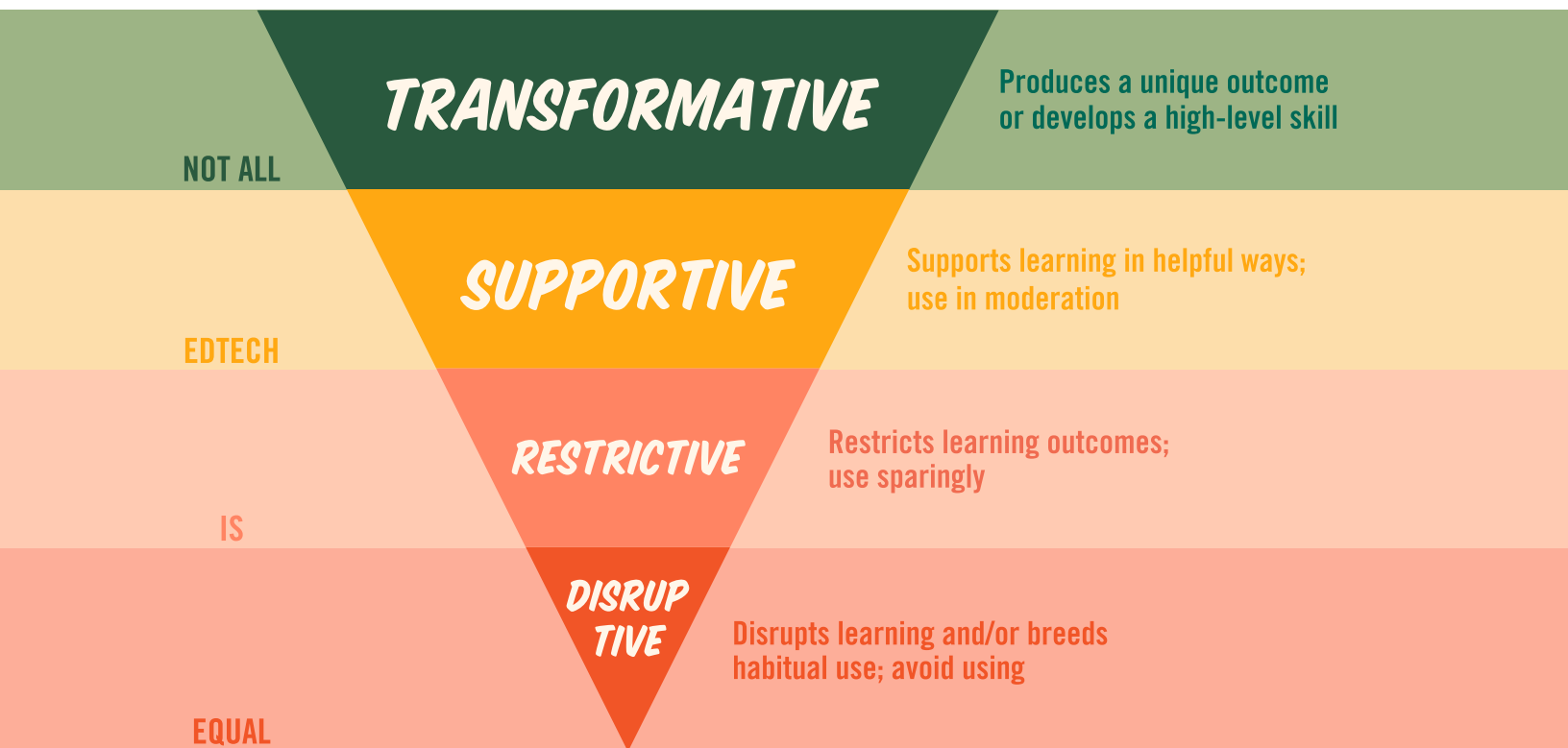
Sincerely,

Blythe Winslow
Executive Director, Everyschool

Amy Tyson
Deputy Director, Everyschool

THE
EDTECH
TRIANGLE

This framework is a research-based synthesis of the EdTech practices, tools, and skills that optimize learning, support well-being, and protect against some of tech's negative outcomes. EdTech can be powerful in the classroom, and it should be used in line with current research.

TRANSFORMATIVE

Produces a unique outcome or develops a high-level skill

SUPPORTIVE

Supports learning in helpful ways; use in moderation

RESTRICTIVE

Restricts learning outcomes; use sparingly

DISRUP TIVE

Disrupts learning and/or breeds habitual use; avoid using

NOT ALL

EDTECH

IS

EQUAL

TRANSFORMATIVE: Robotics, coding, computational thinking, computer animation, website design, graphic design, advanced photo, video, or music editing, digital marketing, spreadsheet creation, digital citizenship, any tech that helps students with special needs.

SUPPORTIVE: Digital images or articles not available in print, audiobooks, podcasts, supplementary videos, keyboarding, intentional use of sharing platforms used to update parents on student work, use of video conferencing or collaborative apps and platforms when the learning outcome is not easily replicated with a traditional or face-to-face method.

RESTRICTIVE: E-texts in place of print, prioritizing typing over handwriting (except in final work), using software or applications that have already been mastered by the student (such as taking pictures with a tablet), points-based learning games, overcomplicated tech use by teachers, screen-based tech whose learning outcomes are easily replicated with a traditional or face-to-face method.

DISRUPTIVE: Any platform that exposes students to age-inappropriate content or bullying, unrestricted access to cell phones during school hours, tech for tech's sake, needless screen-based homework assignments, using screen time as a reward, for behavior management, or as a choice during free time, too much screen time.*

*SCREEN TIME LIMIT RECOMMENDATIONS
Tech use is not imperative for academic success or student well-being, and The EdTech Triangle does not endorse a minimum amount of tech use per grade. Moreover, all types of screen-based EdTech (even Transformative) can isolate students from their teachers or peers. As such, and in order for students to develop skills in collaboration, empathy, and critical thinking, we encourage teachers to embrace screen time limits in their classrooms. Our recommendations are as follows:

Pre-K	0 mins	4th	0-30 mins/day	9th	0-60 mins/day
K	0-20 mins 2x/week	5th	0-40 mins/day	10th	0-60mins/day
1st	0-20 mins/day	6th	0-40 mins/day	11th	0-70 mins/day
2nd	0-20 mins/day	7th	0-50 mins/day	12th	0-70 mins/day
3rd	0-30 mins/day	8th	0-50 mins/day		

"P" is for PROTECTIVE

Schools should strive to create academically excellent and emotionally healthy students; The EdTech Triangle protects those goals by acknowledging that educational technology is not a neutral learning tool. Too much or the wrong kinds of educational technology impede learning and emotional development. Specific negative outcomes include:

- lowered test scores
- loss of focus
- loss of retention
- addiction to the digital world
- loss of empathy or connection with others
- sleep disturbances and eye strain
- impaired motor skills and language acquisition (for pre-K students)

"U" is for UNIVERSAL

The EdTech Triangle can and should be used in all academic settings pre-K-12. The Triangle does not show that technology is necessary for optimal learning or development; therefore, even schools that prolong or limit exposure to tech can use it as a model. And, even schools that choose to be "tech-centric," can and should follow The EdTech Triangle (again, to ensure that learning and emotional development are protected).

"S" is for SCIENCE-BASED

Teachers, administrators, and parents alike should feel comfort knowing that there is a model of educational tech use based on real facts; as such, The EdTech Triangle is a synthesis of dozens of studies and books on educational technology. EdTech research is in its infancy, though, and this model should be ever-evolving as a result.

"H" is for HUMAN-CENTRIC

Research shows that teacher-to-student and student-to-student interactions contribute best to creating academically excellent and emotionally healthy students. Moreover, even the most transformative types of tech in schools can be isolating. As such, The EdTech Triangle places human interaction at the center of education by suggesting screen time limits by grade.

The Impact of Using The EdTech Triangle

1

Clarity & Piece of Mind

When implementing any classroom tool or approach, it's helpful to have a framework to reference, and it's even more helpful knowing that framework was built from sound research. The EdTech Triangle was created expressly to convey complex research in a clear, easy-to-understand picture model similar to the Food Pyramid. If a parent has questions, simply show them the Triangle and easily start explaining your methods.

2

Smarter, Healthier Students

The research is mounting: students who read print test better and retain more than those who use an e-reader, handwritten notes are remembered better than typed ones, access to cell phones in class lowers test scores, and downtime--even boredom--creates calmer, more creative students. The EdTech Triangle takes all of that research (and more) and synthesizes it into a picture, all for the health and happiness of students.

3

Less Tech for Younger Grades, Better Tech for Older Grades

Young students need basic knowledge and skills to build on, and older students can handle the more complex skills involved in Transformative types of tech (robotics, advanced coding, advanced video, and music editing, etc.). What's more, brain science shows that young brains are more susceptible to some of the negative effects of too much or the wrong kinds of tech use. As for preschoolers, technology is linked to marked delays in motor skills and language acquisition.

4

Simplified Instructional Methods

The EdTech Triangle does not endorse a daily minimum amount of time spent with technology in the classroom; it only acknowledges where it can be the most supportive or transformative. By eliminating Restrictive and Disruptive tech types, what's left is a clear path to using (or not using!) only the more helpful types of technology.

Quick-Start Guide to Using TET

1. Set Time Parameters

Study upon study has shown that all types of screen time can have a negative impact on kids' learning and focus, and--perhaps more importantly--screen time often isolates students from their teachers and peers. This isolation impedes students' social and emotional development. Implementing screen time parameters might seem hard, but once you've filtered out the types of tech that aren't useful, it may be easier than you think.

2. Embrace Print

Some of the most robust and prolific research behind The EdTech Triangle relates to the negative impacts of e-readers on kids' retention, focus, and test scores. If we want students to learn and retain all they can, print is hands-down the best format. Thus, and especially where it's widely available, print should always be the priority. Exceptions include where e-readers can benefit students with special needs or if a special and important text is only available digitally.

3. Remove Junk

Reference the two bottom rungs of The EdTech Triangle (Restrictive and Disruptive), and simply throw out the junk. If you teach older students, start with your classroom's cell phone policy. If your policy is anything but 100% effective at restricting personal cell phone use in class, recalibrate by working with administrators or asking other teachers what's worked for them. Other types of junk to remove: points-based learning games, tech rewards, tech choice during free time (tech filler), or any type of tech use that could easily be replicated with traditional methods.

4. Categorize Your Apps

Our four categories of tech use are simple and straightforward. Use the accompanying EdTech Classification Sheet to begin sorting through which types of EdTech to include in your daily lessons, and which to avoid.

A Note About Time Limits

Generally speaking, the concept of Screen Time Limit Recommendations as laid out in The EdTech Triangle is less about exact daily amounts and more about mindfulness and intentionality. Teachers should strive to use screens when they're truly Transformative (when they produce a unique outcome or develop a high-level skill in ways that a traditional method might not) or Supportive (when they support learning in helpful ways). Why? Screen time does come at a price. As outlined in PUSH, specific negative outcomes associated with too much screen time include lowered test scores, loss of focus, addiction to the digital world, loss of connection to others, eye strain and sleep disturbances, and impaired motor skills and language acquisition (for Pre-K students).

However, it's valuable to have an estimate of the amount of time per day or class period that each student should spend with a screen. For teachers of young students, this is as simple as looking at the table of Screen Time Limit Recommendations provided in The EdTech Triangle. Teachers of older students taught by multiple teachers throughout the day might wonder how they can follow The EdTech Triangle's recommended daily screen time limits without knowing what other teachers are doing in their classrooms.

Here's the answer: simply take the number of minutes recommended for a certain grade and divide by the total number of instructional minutes the average student has in a day. You'll arrive at a percent of total instructional time a student in your class should spend with a screen. Then, multiply the number of minutes for a period of your class by that percent. For example, the recommended daily amount for a 12th grader is 70 minutes a day. If a student has 4 instructional periods at 50 minutes a day (200 minutes total), then divide 70 by 200 to reach .35, or 35%. That means that 35% of a 12th grader's day should be spent looking at screen, or roughly 35% of your 50 minute class (.35 x 50 minutes is about 18 minutes). Having that number in mind when planning daily lessons is an important part of using technology in healthy ways in the classroom.

What's more, it's useful to mention that many of the foundational concepts that underpin modern technology can often be taught without a screen. These include coding, computational thinking, and even robotics.

To Note: The EdTech Triangle does not endorse a minimum amount of screen time per grade, and research does not show that a minimum amount can increase test scores or student well-being. Teachers should not feel they need to incorporate a certain amount as a result (unless designated by their District).

Administrator's Self-Assessment
Reflecting on your current approach to technology in your District or school

1. Does your District have a written technology plan or philosophy?

2. How familiar are you with current EdTech research?

3. Are you aware of how much time students spend with screens/devices in a given grade or class?

4. Does your District or school have a written policy to restrict cell phones in class, free periods, and lunch? Is that policy enforced?

5. What types of tech use do you see working in the classroom, and why?

6. What types of tech use would you like to see removed from the classroom, and why?

7. Are you communicating your approach to technology clearly with both parents and teachers?

8. How would you sum up your personal opinion about how technology in the classroom has affected both students and teachers today?

Teacher's Self-Assessment
Reflecting on your current approach to technology in the classroom

1. What's your favorite app or method of integrating tech in the classroom, and why?

2. What's your biggest concern about how you currently integrate tech in the classroom?

3. How much time does the average student on an average day spend with tech? (For teachers who teach multiple subjects or levels, list an average for each one. If you have access to screen time aggregates through a screen-time tracking app or a platform such as Apple Classroom, great! If not, attempt a best-guess estimate.)

4. If your students are old enough to use cell phones, do they check notifications, send texts or emails, or access social media during class?

5. What's the longest stretch you've gone without integrating tech in the classroom, and how did that feel to you as a teacher?

6. If you stopped using tech in the classroom today, how would you feel? Do you think your students' grades would suffer?

7. How do the parents in your district feel about how you integrate tech in the classroom?

8. Now that you're committed to using a new model of healthy EdTech in the classroom, what do you foresee being the hardest part?

9. What do you foresee as the most positive part of integrating The EdTech Triangle in your classroom?

EdTech Classification Sheet

Using The EdTech Triangle as reference, list both specific apps and general tech tools or practices under the categories below.

TRANSFORMATIVE: Produces a unique outcome or develops a high-level skill.

Ex: Robotics, coding, computational thinking, computer animation, website design, graphic design, advanced photo, video, or music editing, digital marketing, spreadsheet creation, digital citizenship, any tech that helps students with special needs.

SUPPORTIVE: Supports learning in helpful ways

Ex: Digital images or articles not available in print, audiobooks, podcasts, supplementary videos, keyboarding, intentional use of sharing platforms used to update parents on student work, use of video conferencing or collaborative apps and platforms when the learning outcome is not easily replicated with a traditional or face-to-face method.

RESTRICTIVE: Restricts learning outcomes

Ex: E-texts in place of print, prioritizing typing over handwriting (except in final work), using software or applications that have already been mastered by the student (such as taking pictures with a tablet), points-based learning games, overcomplicated tech use by teachers, screen-based tech whose learning outcomes are easily replicated with a traditional or face-to-face method.

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Ex: Any platform that exposes students to age-inappropriate content or bullying, unrestricted access to cell phones during school hours, tech for tech's sake, needless screen-based homework assignments, using screen time as a reward, for behavior management, or as a choice during free time, too much screen time.*

UNDERSTANDING THE POSITIVES OF
JUDICIOUS TECH USE

More Transformative Tech Use

When teachers remove Restrictive or Disruptive tech types from their lessons, what's left is the truly transformative stuff, the types of tech that can't be easily taught or learned. Transformative tech produces a unique outcome or developes a high-level skill and will be increasingly useful in the 21st century workplace.

Better Learning Outcomes

The research is clear on a few things: reading print aids retention, focus, and boosts test scores. Writing notes by hand helps students remember them better, and deep learning often occurs in the physical world, where students look at an interact with their teachers and peers.

Filtering out the tech types that restrict learning and being mindful of students' screen time, then, leaves room for better learning outcomes.

Streamlined Instruction

Being more careful with when and how teachers use technology in the classroom (along with having a clear framework for implementation) means that some types of technology can be cut out or just not worried with. This can have a massively positive effect on planning lessons and making decisions about whether or not to use a certain app or platform.

UNDERSTANDING THE POSITIVES OF
JUDICIOUS TECH USE

Boredom & Creativity

Studies show that the creative brain thrives on boredom and reflection, yet the most disruptive tech types (such as tech choice during free time) impede these things. Instead of feeling like we have to engage students at all times, then, teachers should feel comfort knowing it's ok for kids to daydream or just sit quietly for a while during transition times, etc.

Young Students and Play-Based Learning

Early Childhood Professor Doris Fromberg sums it up well in her TedX Talk: "We need to consider that young children learn in quite different ways [than adults]. They learn by comparing physical experiences, by interactions with other people and their own feelings. And they learn an enormous amount through their imagination...Play is what pulls together the logical and creative parts of the brain." Study after study confirms this idea: young students need hands-on play and face time with their peers. If we accept this truth, we must also accept that screen time should be used carefully and judiciously, as students do often interact with a screen alone, without eye contact or more meaningful peer-to-peer interaction.

Soft-Skills: Empathy & Collaboration

Eye contact with another person sends off a flurry of chemicals in the human brain; neurons fire, and skills like empathy and collaboration are developed. These softer skills are increasingly necessary in our tech-centric world. Being more judicious and careful with when and how teachers use technology means holding those social interactions in high regard--and protecting them.

The Problem with Engagement

Teachers often cite student engagement as a main reason to integrate tech in the classroom, and--although engagement is a major trend in education--there are research-based red flags.

First, where it can be studied, engagement doesn't always increase performance. Second, engagement is hard to quantify. Where technology is concerned, how can a teacher be sure a student is highly engaged in a subject on a deep level versus just compelled (as in the context of addiction) to continue using a screen?
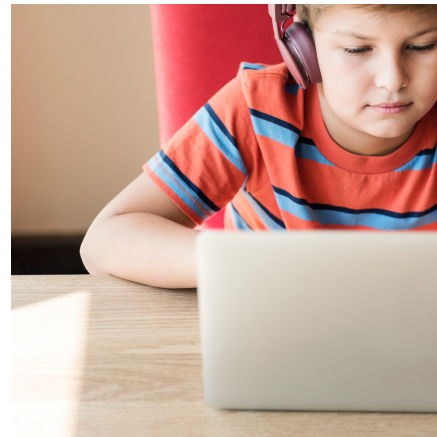
We know that even points-based learning games can be as addictive as their non-learning counterparts, and we know screen addiction is a real thing. What's more, teachers know that students can be highly engaged by traditional methods and not just tech.

A paradigm shift might be in order. Instead of asking if students will be engaged by tech, ask whether a certain type of tech can produce a unique outcome or develop a high-level skill beyond a traditional tool or method. And last, if student engagement is a high priority, consider the ways it might be accomplished with traditional methods as well.

"Google Thinking"

In their book Screen Schooled, authors Clement and Miles tell the story of a "B" student who could look any question up online and find the answer, but could not synthesize concepts in her mind on on a deep level. They called this "Google thinking." Put simply, she could source answers easily, but could not think critically about how they might relate to her own life or other concepts being discussed in class.

When technology is too pervasive in classrooms, this is a pitfall; students begin to look to a screen for answers, and aren't used to sitting with their thoughts and considering how ideas might be connected. Improved critical thinking and creativity has been linked to boredom and a low-stimulus environment, so it bears reflecting on how too much technology (which is often overstimulating and distracting) is impacting students in these areas.
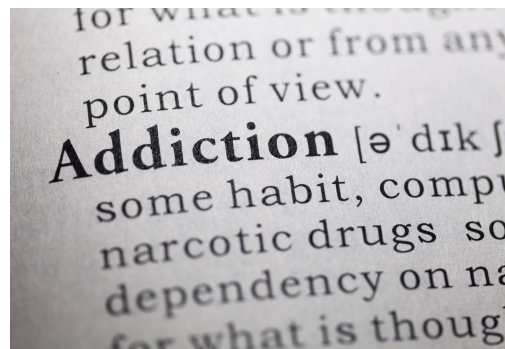
Screens & Overstimulation

Screens move faster than real life, and they're easier to manipulate. What's more, they often provide images and words where, in real life, students would have to conjure their own. Last, research shows that devices have a dopaminergic affect on the brain; in other words, they activate the same pleasure centers of the brain as a drug.

For these reasons, research has shown that screens can overstimulate young minds and lead to attention problems. School is an environment where deep focus is necessary, though. Again, another reason to be careful with when and how screens are used in the classroom.
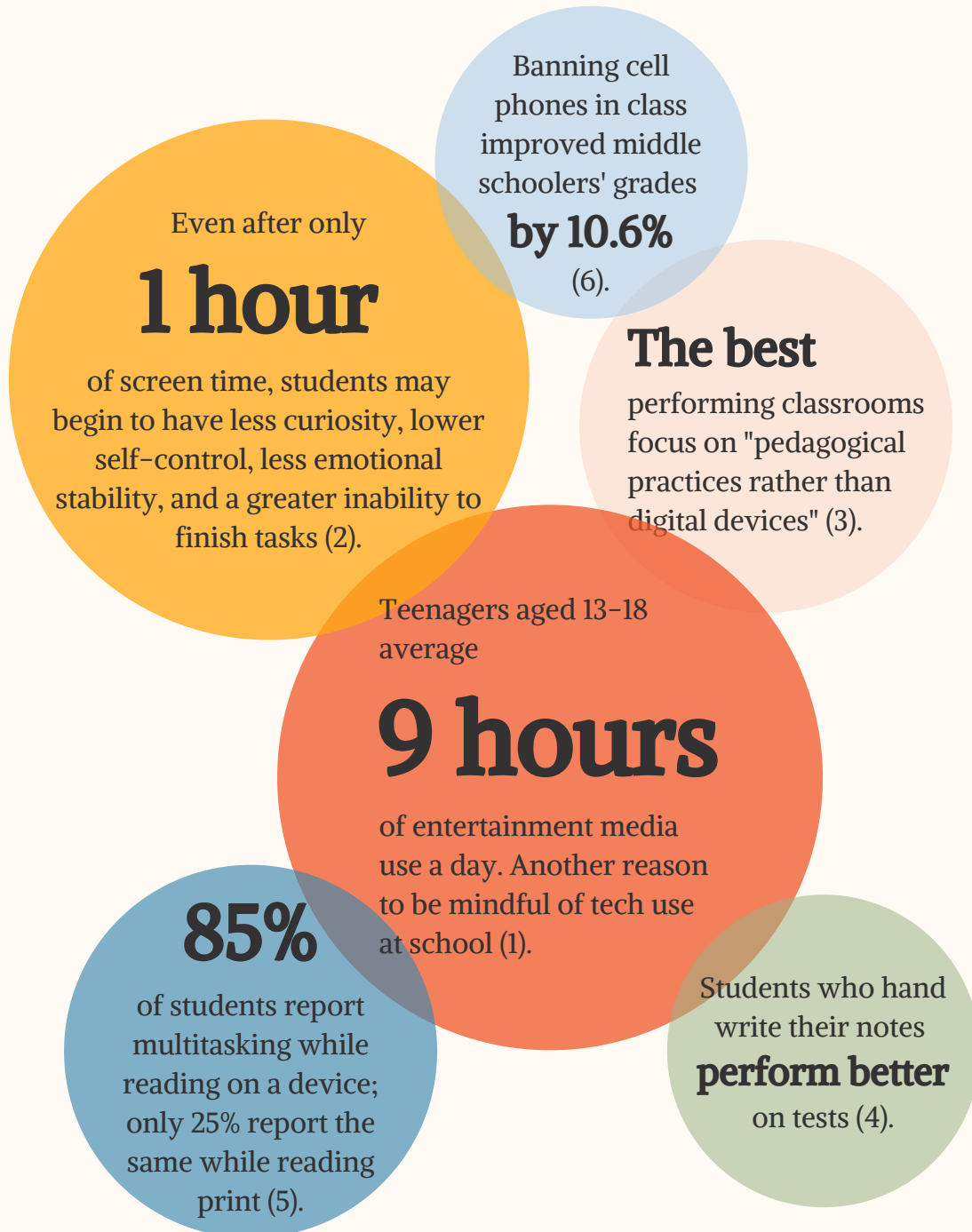
Cell Phones in School

Because cell phones have been proven to be habit-forming, distracting, and have been linked to lowered test scores, they're problematic for schools. What's more, they allow students access to social media platforms that often fuel bullying or inappropriate content.

School districts across the country have started removing access to cell phones to great effect and with much parent and teacher support, and schools should feel empowered by the numbers: for one, 82% of middle school parents don't want their kids using cell phones in school (awayfortheday.org).

COMPELLING EDTECH STATS

Banning cell phones in class improved middle schoolers' grades **by 10.6%** (6).

Even after only **1 hour** of screen time, students may begin to have less curiosity, lower self-control, less emotional stability, and a greater inability to finish tasks (2).

The best performing classrooms focus on "pedagogical practices rather than digital devices" (3).

Teenagers aged 13-18 average **9 hours** of entertainment media use a day. Another reason to be mindful of tech use at school (1).

85% of students report multitasking while reading on a device; only 25% report the same while reading print (5).

Students who hand write their notes **perform better** on tests (4).

1. Landmark Report: U.S. Teens Use An Average Of Nine Hours Of Media Per Day, Tweens Use Six Hours | Common Sense Media. Retrieved June 17, 2019, from https://www.commonsensemedia.org **2.** (2018, October 29). Reduced Screen Time For Young Highly Recommended For Well-being. Retrieved June 20, 2019, from https://www.sciencedaily.com **3.** Jenkin, M. (2015, December 2). Tablets Out, Imagination In: The Schools That Shun Technology. Retrieved July 18, 2019, from https://www.theguardian.com **4.** Mueller, P., & Oppenheimer, D. (2014). The Pen Is Mightier Than the Keyboard: Advantages of Longhand Over Laptop Note Taking, 25(6), 1159-1168. Retrieved from https://cpb-us-w2.wpmucdn.com **5.** Baron, N. (2014, July 14). How E-Reading Threatens Learning in the Humanities. Retrieved June 17, 2019, from https://www.chronicle.com **6.** https://www.awayfortheday.org

RECOMMENDED READING

A few books that directly address the research-based impacts of technology on kids today, including the impacts of screens in schools.

GLOW KIDS, by Nicholas Kardaras Ph.D.

A cultural and research-based analysis of the impact of screens on kids, including an in-depth look at screens in schools.

Teachers and administrators might be interested to understand the history of how and why educators adopted technology when it first arrived, and how some schools have corrected their approach to incorporate more balance.
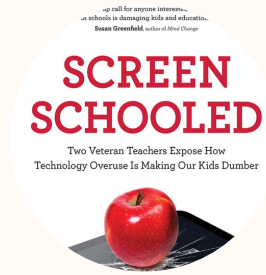
SCREEN SCHOOLED, by Joe Clement and Matt Miles

Two veteran teachers share their experiences with screens in schools, including deep research and compelling stories.

Teachers and administrators will no doubt relate to the interesting anecdotes provided by the authors. What's more, the teacher-authors connect current research quite interestingly to classroom practices and culture.

THE BIG DISCONNECT, by Catherine Steiner-Adair

Stories from the author's clinical practice combine with research to provide a context for how screens affect families today.

Steiner-Adair is a renowned clinical psychologist who has a unique and keen perspective. Educators will gain an awareness that might not be accessible otherwise, and will surely shed light on how students approach school culture.