

The Digital Delusion, 2nd Edition (2026) by Dr. Jared Cooney Horvath

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Content	Do This/Remember This
Introduction: Gen Z (1997=2012) cognitively less developed than their parents at the same age/IQ scores have begun to fall but not in countries with traditional teaching. “Beware of adopting tools designed to reshape the world without first reckoning the ultimate cost” (Luddites). Push back → Data show harm/mechanisms for harm/strategies to offset harm.	• Be not anti-tech; be pro-learning • Luddites were defending quality of life • Edtech is a \$400 billion industry • Digital tools → ½ learning in 2x time
Part 1: THE PROBLEM: 1. Wrapped in Lies: The Five Myths That Built EdTech: Myth #1: Education is Broken (Trad schools are failing, only EdTech can save it, schools kill creativity). Why it matters: Parents can pass idea to children/easy-fix solutions become attractive but risky – need to know long-term effects. Myth #2: Multimedia Enhances Learning (More stimulating = more learning). Why it matters: Children spend hours on video → don’t learn much, entertainment is a red flag. Myth #3: Free Choice Leads to Better Learning (Learners always know what’s best for learning) Why it matters: EdTech can promise ‘personalized learning’ but deliver ‘customized comfort’ = dangerous illusion of learning (learning is effortful). Myth #4: Kids Learn Best on Their Own (Increased student (S) autonomy → better outcomes) Brains learn through exposure (up to 5yo), then trial & error or (better) guidance. Why it matters: self-directed learning without expert guidance → wastes time. Myth #5: Intelligent Tutors Make Kids More Intelligent (Adaptive algorithms more effective than human teachers) Some truth- works in narrow domains → right/wrong answers, transfer is an issue. Why it matters: student learning → confined to the software.	• Crisis sells/EdTech has opportunity cost • To think creatively/flexibly you need <i>something to think with</i> • It’s not the technology is the pedagogy • Good teaching with multimedia = good teaching without it • Instruction best when aligned with content not learner • EdTech developers think all brains are toddler- like but after 5yo learning requires effort • Teachers more adaptive than adaptive tech by sensing confusion/tone/facial expression • Consider domain when using adaptive tech
2. Proof of Failure: What the Data Really Say About EdTech’s Impact on Learning: Technology is not neutral: reshapes how Ss think/behave. Data = 3 international assessments: PISA (Program for International Student Assessment), TIMSS (Trends In Mathematics and Science Study), PIRLS (Progress In Reading Literacy Study). Across all 3: greater computer use correlates with lower attainment (+opposite true), moving tests online lowered scores. Academic research: Meta-analyses combine big data sets giving effect-size (-1 to 1, negative = harm, meaningful >+0.4) BUT can be misleading as no standardized control conditions, average EdTech effect size is +0.29. Problem of mode effect → pen + paper + handwriting shows greater understanding/learning.	• Kids always learn – are they learning as much and as deeply? • Beware EdTech narrow success stories • Beware ‘mode effect’- students perform worse on screen than with pen and paper • If EdTech has positive effect-size ask compared to what? • Handwriting slows things down = good
3. Against the Brain: The Three Intractable Problems with EdTech: Mechanism #1: Attention. Switching between tasks loses time, lowers accuracy, harder to remember. What’s at Stake: Focused attention is needed for learning, devices designed to distract. Mechanism #2: Empathy. Positive student-teacher relationship effect size of +0.57 because it supports understanding + fuels motivation, arises from human interactions. ‘Physiological synchrony’ = matching biological signals between interacting individuals. What’s at Stake: Empathy = core driver for learning, cannot be coded, needs real-time interaction. Mechanism #3: Transfer. Learning is context-dependent, transfer needs variety/ is subtractive or additive, online → real life = additive, real life → online = subtractive (easier) What’s at Stake: Education needs to give Ss ability to transfer; digital learning flattens experience, makes tasks easier, learning harder + harder to transfer,	• Edtech harm needs a mechanism (or 3) • Humans can’t multitask, but most children try to do so with their devices • EdTech lacks the necessary biology for physiological synchrony • Making it easier using EdTech makes transfer (to real world) harder • EdTech is fundamentally incompatible with how we learn (would need drastic adaptations) • literate in apps, illiterate in real life.
4. Addressing the Apologists: How To Respond to Common Arguments from Tech Evangelists: Apology #1: EdTech Has so Much Potential (or Tech is the Future...) Potential is not a basis for policy. Schools should only adopt tech when it has shown clear unequivocal benefits. Fighting Back: Prove it with data! Apology #2: We Need More Time (You Can’t Rush Genius). Just give us more time is not acceptable. Fighting Back: Your Dime, Your Time. EdTech has been promising for 60 years, children aren’t test subjects, teachers aren’t beta testers. Apology #3: Digital Devices Are Ubiquitous (They Ain’t Goin’ Nowhere). Ubiquity doesn’t necessarily justify inclusion in school curriculum, teaching computer skills ≠ teach everything via a screen. Fighting Back: Difference between what we teach and how we teach. Apology #4: Kids Need Digital Skills To Be Competitive (How Will They Get A Job). Even if employability is the goal, chasing digital skills is the wrong strategy – will always be behind. Fighting Back: This Too, Shall Pass, schools aren’t meant to train for passing trends. Apology #5: Modern Students Learn Differently (Parents Just Don’t Understand). Assertion: Immersion in tech from birth → Ss learn differently → teachers should teach differently = wrong. Fighting Back: Human biology doesn’t update with software, we learn by attention, memory, transfer. Apology #6: People Are Using EdTech Incorrectly (It’s All Your Fault). Assertion: You’re fault/wrong prompts, used correctly they learn more. Fighting Back: Flip it: a good tool should work with in real conditions – only in perfect conditions = unacceptable. Apology #7: Don’t Let Your School Get Left Behind (Everybody’s Doing It). Fear of missing out drives adoption despite adverse results. Fighting Back: If they say ‘keep up’, ask ‘Keep up with what?’ Apology #8: It’s Just A Tool (Don’t Blame Us...). Usually the last ditch assertion, accurate but misleading. Fighting Back: Tools shape outcomes, always winners & losers. EdTech is a bad tool.	• It’s the responsibility of EdTech to provide evidence to support their claims • An assertion without data is a sales pitch • Teachers should not be trialing EdTech • Ubiquitous screens outside classroom does not mean they must be inside it. • Best preparation for a rapidly changing workforce is a broad general education • Thinking through knowledge better than training on tools (that change) • ‘Digital native’ is a myth • All humans learn (breathe/digest) in the same way • Digital tools take us away from what works • Are we getting those tools because they work or because they look impressive? • Being ‘future-ready’ is not a thing • Results matter more than appearances • Schools exist to educate, not impress. • EdTech doesn’t support pedagogy, it IS pedagogy • EdTech billionaires win, children lose

Part 2: SPECIAL CASES 5. Smartphones: A Special Kind of Bad: Justifications don't add up: getting in touch/shootings. Data on mental health/physical health/ learning show evidence of harm due to #1 Craving #2 Consolidation #3 Cognitive depletion. What to Remember: Dopamine habit loops can be broken, down-time from phones helps learning solidify.	• The brain doesn't recognize communication via text as genuine social interaction • Phone use in schools sustains dopamine loop • Stimulation is draining • Breaks allow for resetting
6. Artificial Intelligence, Part I: The Tool Nobody Asked For, Solving Problems Nobody Had: Initial excitement declines, data → evidence of harm because: Mechanism #1 Offloading, #2 Higher-order skills: creativity = focused/diffuse/focused thinking, #3 Identity: conflating AI output with their own, Bottom Line: AI provides detour to cognitive effort, higher-order skills emerge from deep knowledge (K) in LTM, sense of self forged with effort, AI = bypass	• Decline effect: growth mindset from +0.66 to +0.05 in 20 years • Effort needed for learning • AI → children trade authenticity for approval • Developing identity is slow, effortful
7. Artificial Intelligence, Part II: The Deeper Threat of AI to Education: How will AI redefine our-selves/abilities/schools? History stages: Tool-using (astrolabe) → technocratic (assembly line) → technopoly (solution in search of a problem). Danger: AI assumed infallible (your fault for using the wrong prompt) because humans flawed and feeble. Danger: Too much information – needs to be well organized for social cohesion, historically done by: e.g. village elders (Tool-using) → school (technocratic) → no one (technopoly). Ideology of AI: 1. Human thought best represented in language which 2. Can be statistically modelled and 3. Only AI can find the hidden patterns of human thought. Danger: erosion of shared reality, fragmentation of truth, disarray leaving opening for tech companies to claim they have the solution – the very tech causing the chaos.	• Stages: use tools → supported by them → dependent on them • 'Prompt engineering' excuses failures of AI by shifting blame to user • More abundant + decontextualized info needs stronger organizing structures • AI undermines the function of school • School must reclaim their role as meaning makers, providers of coherence
Part 3: PUSHING BACK 8. What Can We Do? Parents and Children: Parents: At school: 1. Form a Coalition, establish principles (phone free socialization after school, no phones till HS) 2. Ally With Teachers: If parents lead, teachers will follow 3. Request Opt-in/Opt-Out: Just because it's 'easier' to use tech doesn't make it right 4. Demand Evidence Not Anecdotes: ...either research or internal data, ask: 'What specific problem is this tool solving in this school?' 'How will the tool improve learning, not just logistics?' 'Why is this the best available solution?' 5. Avoid 'Digital Citizenship' curricula: Little evidence such programs change long-term behavior; focus on real world interactions/conflict resolution/etiquette At home: 6. Do a Tech Audit: Track tech type + use over a week for children AND YOU (what messages are you sending?). 7. Buy a printer: The medium matters, handwriting matters 8. Implement Tech-Free Weekends: Plan alternative activities for a tech-free Sunday 9. Ban AI From The House (At Least For School Work): Remind Ss that if that makes it harder, that's good. 10. Put It To The Test: Track schoolwork/focus/mood. Children/students: 1. Scrap the screen Use paper 2. Choose Active Recall Over Passive Review Quiz yourself 3. Set a Timer and Go All In Avoid multitasking 4. Do a Little Bit Every Night Frequency beats quantity 5. What About Music? Music without lyrics/overfamiliar is fine.	• (Unscientifically) 10% of teachers love tech, 20% indifferent, 70% quietly fed up • We thought smartphone bans were impossible... now look ← Three VERY IMPORTANT questions • We shouldn't be raising good 'digital citizens', we should be raising good citizens • Be clear what children and adults are doing with tech and why • Don't believe 'AI is the future of education' = hype • Pushing back/banning ≠ control, = care • Remember screens aren't neutral • Carry your troublemaker card with pride! • See book for useful templates
9. What Can We Do? Teachers and Education: In class: choosing a screen aways ask: Is it Deliberate? Is it Time-bound? Is it Justified? 1. Audit the Screen Know what you're doing 2. Recall, Don't Offload Turn off autocorrect/simple search/multiple-choice quizzes 3. Stretch the Context Semantic memories (indep of time/place) more useable than episodic memories (tied to time and place) 4. Find the Story Behind the Facts Stories are cognitively privileged 5. Offer Analog Alternatives Analog materials can be more intentional 6. Embrace Handwritten Notes Enough said! 7. Let Students See Real Progress Learning logs of active recall 8. Designate One Tech-Free Period Each Week Creates space for deeper, more focused lessons 9. Create Space for Slow Thinking Build moments of stillness 10. Avoid Artificial Intelligence It's a tool for expert offloading not novice learning + we need to do the slow thinking for planning/assessing. Beyond the classroom: 11. Reconsider Homework Alternatives Short, sharp analog, 12. Foundations Over Tech Focus on learning not mastering tools that will disappear, we don't need to love screens.	• Think 'how can I minimize harm?' • Knowing ≠ knowing where to find it • Memory is constructed when we recall • Alternate offline contexts/ screen breaks/ vary the digital context • Digital technologies thrive on speed – slow it down, deliberately • Homework: Optimal length for homework about 10-15 minutes per day per subject • Homework: Practice better than discovery • Homework: Frequency better than quantity • Avoid the Pokemon GO effect with tech
10. What Can We Do? Schools and Leaders: Reclaim schools for learning. Organizing principles: Start younger Ss + start small. Phase 1: Stabilize and Assess by Pause New Tech Adoption for 12 Months/Ban Data Harvesting By Default (collecting data through 'personalized learning platforms')/ Perform a Tech Audit/Conduct a Cost-Benefit Analysis/Create a Tech-Use Task Force (procurement/use, guided by cogsci) Phase 2: Begin the Journey by Demand Data (from indep. sources, proven efficacy, +monitoring)/Isolate Tech to a Lab or Cart (Reintroduce friction)/Formalize an Opt-Out Choice for Families/Give Teachers a No-Tech Veto/Recenter the Teacher (celebrate them) Phase 3: Shift the Culture by Implement a Bell-To-Bell Smartphone Ban/Introduce Tech-Free Days/Host Annual "Analog Week" (e.g. Health/ Science Week)/Cap Device Use Time (after other principles established)/ Make Long-Form Reading a Core School Value (e.g. daily reading block).	• Schools exist to build cognitive strength through hard work and struggle • Don't accept premise of individualization – it's collecting data for EdTech companies • Don't force teachers to use tech because it's more convenient for admin • Rebrand 'low-tech' as 'high-rigor' • Nothing works as well as sustained, immersive reading (in all subjects) NOT graded • Be bold → say 'it's not working, we can do better'.
Outro: Battlefield of incursion of technology affecting the quality of people's lives has shifted from factories to schools, we can reclaim education as deeply meaningful and human endeavor.	• Stand up, push back • Be a pro-learning Luddite

APPENDIX A: Additional Data and Arguments. Part 1: International Testing: 1. NEAP data: National Assessment of Education Progress, in USA, 4th/8th graders, every 2 years, math(s) & reading. Scores decline after tech adoption, indep. of COVID, 2. High-performing Asian countries: have lowest classroom use of tech, even though high-tech! 3. Specific data on at-school computer use: PISA 2012/15/18 & TIMSS 2019/23 asked Ss about how they used tech. Only positive = delivery system (e.g. accessing work), rest negative. 4. PISA 2022: shows tech has positive influence BUT conducted during COVID, tech use unrepresentative, it's an outlier. 5. Correlation or causation?: if findings triangulate across varied/indep. data sets → more likely to be causal. Part 2: Academic Research: 6. Are we getting better at using tech? Digital tool use effect size rises 0.1 per year 2019-2024 – too high! Due to studies in journals that inflate effect sizes. 7. Why analyse EdTech as a single intervention? Huge number of variables in EdTech/assessment of effect of EdTech, v. hard to replicate studies, randomized control trials almost impossible, need broad categories/look for patterns 8. Why omit certain categories? Omitted because: a. Flipped Classrooms: tech not required, usually reading first, effect size = .37, pedagogical not technological. b. Blended Learning: mixed tech/non-tech, can't separate effects. 9. What about digital literacy? Confusion: familiarity ≠ understanding, fluency ≠ literacy. Evidence that teaching tech literacy wrong approach, ICILS (International Computer & Information Literacy Study), only measure, 8th grade, 2013→2023 in 8 countries scores fell as exposure to tech increased significantly, need K-building/reasoning/disciplined thinking. 10. What about student equity? Data shows tech most benefits those who already have strong K, + self-regulation learning (SRL) skills to complete the learning programs, learn SRL skills in school. EdTech used less in high-income households → widens gap. Tech → fragmented attention → ingrained habits → poor use of tech in schools. 11. When does tech work? a. when absolutely no alternative (e.g. pandemic), b. adaptive tutoring in highly constrained domains (e.g. math(s)) c. specific learning disorder intervention (e.g. dyslexia) 12. How do I vet research studies? Check: where published (Tier 1 journal ✓)/affiliation of 1st 2nd authors (EdTech company x)/age + subject + country of participants/ outcome standardized ✓ or researcher generated x/ control group (business as usual x)/effect size (>0.4-0.5 ✓)/replicated (yes ✓), see journal Tiers above.	• Just because a country is high-tech doesn't mean they need to use tech in schools – it's a choice • COVID forced Ss online... not useful data • Causation if lots of data from different countries/ ages/systems show effect + biological mechanism • Not all published research papers are equal – some journals inflate effect sizes • Need to check status of journals included in meta-analyses of effect of tech • Journals: Tier 1 (selective/peer-reviewed), Tier 2 (variable/less stringent reviews), Tier 3 (non-indexed/weak review – be cautious) • Adding digital tool rarely adds single variable – changes environment • Issues when control is 'business as usual' • Only international study of tech literacy show students' ability to use digital tools creatively, critically, safely has declined • Literacy is about habits of mind, not exposure to make good decisions about use • Completion rates for Massive Open Online Courses about 10% • Digital platforms don't close equity gaps – gap between high/low performers widening • Better q: 'why should we expect it to work at all?' Onus is not on use to prove effective • Learning = effort, limits benefits of EdTech • Use checks to select quality evidence
APPENDIX B: The Role of Education: Form Follows Function: Decide the function of schools FIRST → is Edtech is effective in achieving that? Needs a story to give the endeavor of school meaning/provide coherence by: 1. Connecting past/present/future (how things came to be, where they might go) 2. Defining who we are (including moral framework/what it means to live well) 3. Shaping how we live together (shared expectations/goals/values). Originally (US) = Democratic Experiment. This faded → current story in schools = unspoken, sees Ss = economic consumers (prep for workforce where salary/job status matter). Cracks – meaning (not just about employment), curriculum (incl. arts/music not just math(s) & reading), evidence (strong school systems don't necessarily mean strong economies). Alternative narratives: 1. Giant Climbers (understand what has been thought, push beyond it, contribute ideas). 2. Planetary Stewards (understand choices → consequences, contribute to solutions) 3. Tool Makers (understand history of 'tool' creation/evaluation/adoption + effects, contribute to future developments). Education built on relationship between humans & planet → reason to care.	• Schools exist to 'create a public' not serve it • Most teachers identify purpose: to produce confident, curious, open-minded learners • Ss can identify meaning outside of future employment • Current use of tech justified by current (economic) narrative – needs change • Purpose ≠ vague aspirations... instead to ○ promote learning/deep comprehension/ meaningful thought ○ build systems so people + planet thrive ○ remain in control of the 'tools' so they do not control us.