

# The Digital Delusion, 2<sup>nd</sup> Edition (2026) by Dr. Jared Cooney Horvath

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| Content                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Do This/Remember This                              |
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| <p><b>Introduction:</b> Gen Z (1997=2012) <b>cognitively less developed</b> than their parents at the same age/IQ <b>scores have begun to fall</b> but <b>not</b> in countries with <b>traditional teaching</b>. “Beware of adopting tools designed to reshape the world without first reckoning the ultimate cost” (Luddites). <b>Push back</b> → Data show harm/mechanisms for harm/strategies to offset harm.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | <ul style="list-style-type: none"> <li></li> </ul> |
| <p><b>Part 1: THE PROBLEM:</b></p> <p><b>1. Wrapped in Lies: The Five Myths That Built EdTech:</b> <b>Myth #1: Education is Broken</b> (Trad schools are failing, only EdTech can save it, schools kill creativity). <b>Why it matters:</b> Parents can pass idea to children/easy-fix solutions become attractive but risky – need to know long-term effects. <b>Myth #2: Multimedia Enhances Learning</b> (More stimulating = more learning). <b>Why it matters:</b> Children spend hours on video → don’t learn much, entertainment is a <b>red flag</b>. <b>Myth #3: Free Choice Leads to Better Learning</b> (Learners always know what’s best for learning) <b>Why it matters:</b> EdTech can <b>promise</b> ‘personalized learning’ but deliver ‘<b>customized comfort</b>’ = <b>dangerous illusion of learning</b> (learning is effortful). <b>Myth #4: Kids Learn Best on Their Own</b> (Increased student (S) autonomy → better outcomes) Brains learn through exposure (up to 5yo), then trial &amp; error or (better) guidance. <b>Why it matters:</b> self-directed learning without expert guidance → wastes time. <b>Myth #5: Intelligent Tutors Make Kids More Intelligent</b> (Adaptive algorithms more effective than human teachers) Some truth- works in narrow domains → right/wrong answers, <b>transfer is an issue</b>. <b>Why it matters:</b> student learning → <b>confined to the software</b>.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | <ul style="list-style-type: none"> <li></li> </ul> |
| <p><b>2. Proof of Failure: What the Data Really Say About EdTech’s Impact on Learning:</b> Technology is <b>not</b> neutral: reshapes how Ss think/ behave. <b>Data</b> = 3 international assessments: PISA (Program for International Student Assessment), TIMSS (Trends In Mathematics and Science Study), PIRLS (Progress In Reading Literacy Study). <b>Across all 3:</b> greater <b>computer use</b> correlates with <b>lower attainment</b> (+opposite true), moving <b>tests online</b> lowered scores. <b>Academic research:</b> Meta-analyses combine big data sets giving effect-size (-1 to 1, negative = harm, meaningful &gt;+0.4) BUT can be misleading as <b>no standardized control conditions</b>, average <b>EdTech effect size is +0.29</b>. Problem of mode effect → pen + paper + handwriting shows <b>greater understanding/learning</b>.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <ul style="list-style-type: none"> <li></li> </ul> |
| <p><b>3. Against the Brain: The Three Intractable Problems with EdTech:</b> <b>Mechanism #1: Attention.</b> Switching between tasks loses time, lowers accuracy, harder to remember. <b>What’s at Stake:</b> <b>Focused attention is needed for learning</b>, devices designed to distract. <b>Mechanism #2: Empathy.</b> Positive student-teacher <b>relationship</b> effect size of <b>+0.57</b> because it supports <b>understanding</b> + fuels <b>motivation</b>, arises from <b>human interactions</b>. ‘<b>Physiological synchrony</b>’ = matching biological signals between interacting individuals. <b>What’s at Stake:</b> Empathy = core driver for learning, <b>cannot be coded</b>, needs real-time interaction. <b>Mechanism #3: Transfer.</b> Learning is <b>context-dependent</b>, transfer needs <b>variety/</b> is <b>subtractive</b> or <b>additive</b>, online → <b>real life = additive</b>, real life → online = <b>subtractive</b> (easier) <b>What’s at Stake:</b> Education needs to give Ss ability to transfer; digital learning flattens experience, makes tasks easier, learning harder + harder to transfer,</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <ul style="list-style-type: none"> <li></li> </ul> |
| <p><b>4. Addressing the Apologists: How To Respond to Common Arguments from Tech Evangelists:</b></p> <p><b>Apology #1: EdTech Has so Much Potential (or Tech is the Future...)</b> Potential is <b>not</b> a basis for policy. Schools should only adopt tech when it has shown <b>clear unequivocal benefits</b>. <b>Fighting Back:</b> Prove it with data! <b>Apology #2: We Need More Time (You Can’t Rush Genius).</b> Just give us more time is not acceptable. <b>Fighting Back:</b> Your Dime, Your Time. EdTech has been promising for 60 years, children aren’t test subjects, teachers aren’t beta testers. <b>Apology #3: Digital Devices Are Ubiquitous (They Ain’t Goin’ Nowhere).</b> Ubiquity doesn’t necessarily justify <b>inclusion</b> in school curriculum, teaching computer skills ≠ teach everything via a screen. <b>Fighting Back:</b> Difference between <b>what</b> we teach and <b>how</b> we teach. <b>Apology #4: Kids Need Digital Skills To Be Competitive (How Will They Get A Job).</b> Even if employability is the goal, chasing digital skills is the <b>wrong strategy</b> – will always be behind. <b>Fighting Back:</b> This Too, Shall Pass, schools aren’t meant to train for passing trends. <b>Apology #5: Modern Students Learn Differently (Parents Just Don’t Understand).</b> Assertion: Immersion in tech from birth → Ss learn differently → teachers should teach differently = <b>wrong</b>. <b>Fighting Back:</b> Human <b>biology doesn’t update</b> with software, we learn by attention, memory, transfer. <b>Apology #6: People Are Using EdTech Incorrectly (It’s All Your Fault).</b> Assertion: You’re fault/wrong prompts, used correctly they learn more. <b>Fighting Back:</b> Flip it: a good tool should work with in real conditions – only in perfect conditions = unacceptable. <b>Apology #7: Don’t Let Your School Get Left Behind (Everybody’s Doing It).</b> Fear of <b>missing out</b> drives adoption despite adverse results. <b>Fighting Back:</b> If they say ‘keep up’, ask ‘Keep up with what? <b>Apology #8: It’s Just A Tool (Don’t Blame Us...).</b> Usually the last ditch assertion, accurate but misleading. <b>Fighting Back:</b> Tools shape outcomes, always winners &amp; losers. EdTech is a <b>bad tool</b>.</p> | <ul style="list-style-type: none"> <li></li> </ul> |
| <p><b>Part 2: SPECIAL CASES</b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <ul style="list-style-type: none"> <li></li> </ul> |

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| <p><b>5. Smartphones: A Special Kind of Bad:</b> Justifications <b>don't add up</b>: getting in touch/shootings. Data on mental health/physical health/ learning show <b>evidence of harm</b> due to <b>#1 Craving #2 Consolidation #3 Cognitive depletion</b>. <i>What to Remember</i>: Dopamine <b>habit loops can be broken</b>, down-time from phones helps learning solidify.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                     |
| <p><b>6. Artificial Intelligence, Part I: The Tool Nobody Asked For, Solving Problems Nobody Had:</b> Initial excitement declines, data → evidence of harm because: Mechanism <b>#1 Offloading</b>, <b>#2 Higher-order skills</b>: creativity = focused/diffuse/focused thinking, <b>#3 Identity</b>: conflating AI output with their own, <i>Bottom Line</i>: AI provides <b>detour to cognitive effort</b>, higher-order skills emerge from deep knowledge (K) in LTM, <b>sense of self forged with effort</b>, AI = bypass</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <ul style="list-style-type: none"> <li>•</li> </ul> |
| <p><b>7. Artificial Intelligence, Part II: The Deeper Threat of AI to Education:</b> How will AI <b>redefine</b> our-selves/abilities/schools? <i>History stages</i>: Tool-using (astrolabe) → technocratic (assembly line) → technopoly (solution in search of a problem). <b>Danger: AI assumed infallible</b> (your fault for using the wrong prompt) because humans flawed and feeble. <b>Danger: Too much information</b> – needs to be <b>well organized</b> for <b>social cohesion</b>, <b>historically done by</b>: e.g.village elders (Tool-using) → school (technocratic) → no one (technopoly). <i>Ideology of AI</i>: 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. <b>Danger: erosion of shared reality, fragmentation of truth, disarray</b> leaving opening for tech companies to claim they have the solution – the very tech causing the chaos.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <ul style="list-style-type: none"> <li>•</li> </ul> |
| <p><b>Part 3: PUSHING BACK</b><br/> <b>8. What Can We Do? Parents and Children:</b> <i>Parents</i>: <u>At school</u>: 1. Form a Coalition, establish principles (phone free socialization after school, no phones till HS) 2. <b>Ally With Teachers</b>: If parents lead, teachers will follow 3. <b>Request Opt-in/Opt-Out</b>: Just because it's 'easier' to use tech doesn't make it right 4. <b>Demand Evidence Not Anecdotes</b>: ...either research or internal data, ask: '<i>What specific problem is this tool solving in this school?</i>' '<i>How will the tool improve learning, not just logistics?</i>' '<i>Why is this the best available solution?</i>' 5. <b>Avoid 'Digital Citizenship' curricula</b>: Little evidence such programs change long-term behavior; focus on real world interactions/conflict resolution/etiquette <u>At home</u>: 6. <b>Do a Tech Audit</b>: Track tech type + use over a week for children AND YOU (what messages are <b>you</b> sending?). 7. <b>Buy a printer</b>: The medium matters, handwriting matters 8. <b>Implement Tech-Free Weekends</b>: Plan alternative activities for a tech-free Sunday 9. <b>Ban AI From The House (At Least For School Work)</b>: Remind Ss that if that makes it harder, that's good. 10. <b>Put It To The Test</b>: Track schoolwork/focus/mood. <i>Children/students</i>: 1. <b>Scrap the screen</b> Use paper 2. <b>Choose Active Recall Over Passive Review</b> Quiz yourself 3. Set a Timer and Go All In Avoid multitasking 4. <b>Do a Little Bit Every Night</b> Frequency beats quantity 5. <b>What About Music?</b> Music without lyrics/overfamiliar is fine.</p> | <ul style="list-style-type: none"> <li>•</li> </ul> |
| <p><b>9. What Can We Do? Teachers and Education:</b> <i>In class</i>: choosing a screen aways ask: <i>Is it Deliberate? Is it Time-bound? Is it Justified?</i> 1. <b>Audit the Screen</b> Know what you're doing 2. <b>Recall, Don't Offload</b> Turn off autocorrect/simple search/multiple-choice quizzes 3. <b>Stretch the Context</b> Semantic memories (indep of time/place) more useable than episodic memories (tied to time and place) 4. <b>Find the Story Behind the Facts</b> Stories are cognitively privileged 5. <b>Offer Analog Alternatives</b> Analog materials can be more intentional 6. <b>Embrace Handwritten Notes</b> Enough said! 7. <b>Let Students See Real Progress</b> Learning logs of active recall 8. <b>Designate One Tech-Free Period Each Week</b> Creates space for deeper, more focused lessons 9. <b>Create Space for Slow Thinking</b> Build moments of stillness 10. <b>Avoid Artificial Intelligence</b> It's a tool for expert offloading not novice learning + <b>we</b> need to do the slow thinking for planning/assessing. <u>Beyond the classroom</u>: 11. <b>Reconsider Homework</b> Alternatives Short, sharp analog, 12. <b>Foundations Over Tech</b> Focus on learning not mastering tools that will disappear, we don't need to love screens.</p>                                                                                                                                                                                                                                                                                                                                                           | <ul style="list-style-type: none"> <li>•</li> </ul> |
| <p><b>10. What Can We Do? Schools and Leaders:</b> Reclaim schools for learning. Organizing principles: Start younger Ss + start small. <b>Phase 1: Stabilize and Assess</b> by <b>Pause</b> New Tech Adoption for 12 Months/<b>Ban</b> Data Harvesting By Default (collecting data through 'personalized learning platforms')/ Perform a <b>Tech Audit</b>/Conduct a <b>Cost-Benefit Analysis</b>/Create a <b>Tech-Use Task Force</b> (procurement/use, guided by cogsci) <b>Phase 2: Begin the Journey</b> by <b>Demand</b> Data (from indep. sources,proven efficacy, +monitoring)/<b>Isolate Tech</b> to a Lab or Cart (Reintroduce friction)/Formalize an <b>Opt-Out Choice</b> for Families/Give Teachers a <b>No-Tech Veto</b>/<b>Recenter the Teacher</b> (celebrate them) <b>Phase 3: Shift the Culture</b> by Implement a Bell-To-Bell <b>Smartphone Ban</b>/Introduce <b>Tech-Free Days</b>/Host Annual "<b>Analog Week</b>" (e.g. Health/ Science Week)/<b>Cap Device Use Time</b> (after other principles established)/ Make Long-Form <b>Reading</b> a <b>Core School Value</b> (e.g. daily reading block).</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <ul style="list-style-type: none"> <li>•</li> </ul> |
| <p><b>Outro:</b> Battlefield of incursion of <b>technology affecting the quality of people's lives</b> has shifted from factories <b>to schools</b>, we can reclaim education as deeply meaningful and human endeavor.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <ul style="list-style-type: none"> <li>•</li> </ul> |

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| <p><b>APPENDIX A: Additional Data and Arguments. Part 1: International Testing:</b> 1. NEAP data: National Assessment of Education Progress, in USA, 4<sup>th</sup>/8<sup>th</sup> graders, every 2 years, math(s) &amp; 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 &amp; TIMSS 2019/23 asked Ss about <i>how</i> 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. <b>Part 2: Academic Research:</b> 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 &amp; Information Literacy Study), only measure, 8<sup>th</sup> 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 1<sup>st</sup> 2<sup>nd</sup> authors (EdTech company x)/age + subject + country of participants/ outcome standardized ✓ or researcher generated x/ control group (business as usual x)/effect size (&gt;0.4-0.5 ✓)/replicated (yes ✓), see journal Tiers above.</p> | <ul style="list-style-type: none"> <li>•</li> </ul> |
| <p><b>APPENDIX B: The Role of Education: Form Follows Function:</b> 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) &amp; 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 &amp; planet → reason to care.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <ul style="list-style-type: none"> <li>•</li> </ul> |