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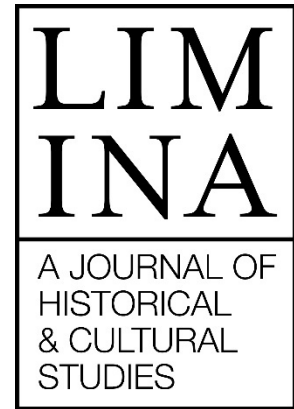
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Crises in Australian education, the push for educational technology and the medium-oriented perspective of Neil Postman

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From teacher shortages to declining literacy, the Australian education system faces multiple crises. This paper turns to the work of Neil Postman, who started as a high school teacher but later turned towards communication and media studies, to provide an alternative account of parts of this crisis, especially those around the role of technology in education. In his early works, his concern is attached to the concept of education as a 'subversive concept' and then a 'conserving concept' – first aiming to create young people engaged in civic society, then aiming to preserve written culture against television. After a middle period in which he broadened his critique of technology, Postman made a late return to education, reviving democratic critiques against the technophilic version of education that elevated the economy and individualism over civic society. This paper connects these works together as a comprehensive technology-oriented critique of education, arguing that both the principles and application of technology in Australian education have corrupted the meaning and outcomes of education.

Over the past 10 years, Australian education at all levels has lurched from crisis to crisis. In 2023 alone, Australian students slid to record lows in the international PISA testing, the national teacher shortage reached its worst ever level and the interim report of the Australian Universities Accord at one point simply stated, 'long-term planning has been completely inadequate.'² Failures across the board in Australian education have ushered forth similarly broad explanations, ranging from funding shortfalls to criticisms of the dominant pedagogical models. This article does not aim to capture all of those causes but instead report upon one widely under-examined aspect of this crisis: the impact of technology, and assumptions about technology, in education. The heart of this argument is that education technology (edtech) has been foisted upon Australian students without proper consideration of potential impacts, leading to sub-standard teaching environments, additional expense to students and schools, and an over-reliance on quantitative indicators. In pursuing this link of argument, I will be drawing heavily upon the works of Neil Postman, a teacher turned media scholar, who sustained a detailed critique of the role of technology in education between the 1970s and early 2000s.

¹ ORCID ID: 0000-0001-8790-6195

² Kate Chipperfield, 'Australian Universities Accord – Interim Report', 19 July 2023.

At the centre of this analysis is the increased focus on edtech as an apparently essential part of education in Australia and the noticeable changes that have occurred since this assumption came to prominence in the mid-2000s. In this paper, edtech specifically refers to digital tools, platforms and systems that are applied within formal education environments. This encompasses both school-mandated laptops and tablets, and bring your own device programs that may also include personal smartphone usage. This is a whole of system approach that includes both the material artefacts (e.g. hardware, software, infrastructure) and the ideologies that drive such adoptions, following the spirit of critical analyses by Neil Selwyn and Chris Bigum.³ Such a wide-ranging definition enables an analysis that moves beyond the perception of edtech as a mere pedagogical tool and orients this work around the issue of how edtech is offered as a solution to perceived challenges in education.⁴ That edtech is fundamentally a technological solution to a social problem—in this case, the performance of the Australian education system—is the primary reason I argue that a medium-oriented analysis is essential.

As such, Postman's critique is more vital than ever because it upends some of the basic tenets of national edtech assumptions. Where edtech proponents espouse an improved educational experience, Postman highlights the unique value of reading books and face-to-face conversation. And where edtech supporters claim value in standardised testing and quantification, such as the NAPLAN regime, Postman eviscerates the idea in pointing to arbitrary nature of so many grading systems and the hazards of teaching to the test. Significantly, where edtech support typically cloaks itself in the largely inconclusive field of pedagogical research, as per recent comprehensive research by UNESCO noting the low learning impact of edtech against issues with costs and the digital divide, instead basing its claims around the *content* of these new systems, Postman instead orients his analysis upon the *medium* of instruction.⁵ In practice, this means that edtech research will often discuss the merits of a new piece of software or the apparent benefits of an online means of instruction but overlook the general impacts of computers upon individual and society.

³ Neil Selwyn, *Education and Technology: Key Issues and Debates*, Third edition (London New York Oxford New Delhi Sydney: Bloomsbury Academic, 2022); Chris Bigum, 'Schools and Computers: Tales of a Digital Romance', in *Transformative Approaches to New Technologies and Student Diversity in Futures Oriented Classrooms: Future Proofing Education*, ed. Leonie Rowan and Chris Bigum (Dordrecht: Springer Netherlands, 2012), 15–28, https://doi.org/10.1007/978-94-007-2642-0_2.

⁴ Edward Hamilton and Norm Friesen, 'Online Education: A Science and Technology Studies Perspective / Éducation En Ligne: Perspective Des Études En Science et Technologie', *Canadian Journal of Learning and Technology / La Revue Canadienne de l'apprentissage et de La Technologie* 39, no. 2 (14 February 2013), <https://doi.org/10.21432/T2001C>.

⁵ UNESCO, *Global Education Monitoring Report 2023: Technology in Education: A Tool on Whose Terms?*, 1st ed. (UNESCO, 2023), <https://doi.org/10.54676/UZQV8501>.

For example, the potential implications of signing millions of Australian students up to Google Classroom environments that have been documented as selling student data have been overlooked in favour of apparent benefits of teachers being able to assign online activities to separate groups of students.⁶ Before we delve further into the divide between the edtech status quo and Postman's riposte, we must first examine the relevant scope and scale of the crises in Australian education.

Outline of a crisis in Australian education

There are three main elements to the Australian education crisis: the apparent decline in student learning, a worsening shortage in staff, and a shortfall in funding. All three are impacted by the shift to quantitative measures of student success and accelerated mass adoption of edtech, albeit to varying degrees, and will be analysed in this article. In this section, I am focusing on the nature and scale of the problems in student learning and the impacts of edtech adoption upon teachers.

Beginning with the apparent decline in student learning, Sue Thomson and her team at Australian Centre for Education Research noted that after the 2018 PISA testing, Australian students trailed China and Singapore by roughly one and a half years in literacy, three years in numeracy and between one and three years in scientific literacy.⁷ In 2022, the Australian results had further declined across all test subjects, resulting in deficits equivalent to two years of schooling as compared to national results at the beginning of testing.⁸ National news media pounced upon this news, at times with special attention paid to Australia's fall from an estimated first or near-first in literacy in the 1990s.⁹ Taken together, there is a seeming consensus that the system is underperforming.

⁶ Internet Safety Labs, 'Internet Safety Labs Research Reveals 96% of School Apps Send Student Data to Third Parties, Including Advertisers', Internet Safety Labs, 13 December 2022, <https://internetsafetylabs.org/blog/news-press/isl-research-reveals-96-of-school-apps-send-student-data-to-third-parties/>.

⁷ Sue Thomson et al., *PISA 2018: Reporting Australia's Results: Volume I: Student Performance* (Camberwell Vic: Australian Council for Educational Research (ACER), 2019).

⁸ OECD, *PISA 2022 Results (Volume I): The State of Learning and Equity in Education*, PISA (OECD, 2023), <https://doi.org/10.1787/53f23881-en>.

⁹ Caitlin Cassidy, 'Australian Students' Pisa Scores Still Declining despite Climb into OECD Top 10', *The Guardian*, 5 December 2023, sec. Australia news, <https://www.theguardian.com/australia-news/2023/dec/05/australian-students-2022-pisa-scores-results-declining-oecd>; Glenn Fahey, 'What Australia Must Do to Lift Flatlining Student Scores', *Australian Financial Review*, 5 December 2023, <https://www.afr.com/policy/health-and-education/what-australia-must-do-to-lift-flatlining-student-scores-20231129-p5enlr>; Robyn Grace, 'Australian School Students More than Four Years behind in Maths', *The Age*, 5 December 2023, <https://www.theage.com.au/national/victoria/australian-school-students-more-than-four-years-behind-in-maths-20231204-p5eosl.html>.

There are some caveats we need to add this scene, most notably the over-reliance of quantified testing regimes such as PISA and NAPLAN. These testing regimes persist despite a growing body of evidence that such testing is at least mildly detrimental to learning.¹⁰ As the Dulfer report points out, a range of behaviours that have long been attached to standardised testing, such as ‘teaching to the test,’ has been observed across a large proportion of Australian classrooms.¹¹ Meanwhile, students from low socio-economic status backgrounds and some students who speak English as a second language are disadvantaged by the testing format¹². All of these factors make NAPLAN and PISA results a flawed proxy to student achievement, and yet they are the most common metrics by which our education system is judged and adjusted. As much as we must treat these results with caution generally, there is an important irony in the fact that the system is also in decline by the same measurements the policy making apparatus prioritises.

Another key element of the crisis is the workload impact on teachers, who are abandoning the profession in record numbers, such as in New South Wales where one in five teachers are now quitting within the first five years.¹³ The response to this is telling; while teachers have cited administrative workload as one of the key drivers of job dissatisfaction, the NSW state government responded at one stage by offering to outsource lesson planning rather than reduce the administrative component.¹⁴ While it is hardly the entire issue, lesson planning is a particularly interesting dimension of the issues this paper is concerned with, as there has been a marked change in the preparation of materials following the introduction of computers across most age groups. Consider the following reporting upon the matter:

The typical teacher spends about six hours a week creating and sourcing lesson materials, and a quarter of teachers spend 10

¹⁰ Nicky Dulfer, Suzanne Rice, and John Polesel, ‘An Educator’s Perspective: The Impacts of High Stakes Testing on School Students and Their Families’, Whitlam Institute, 17 November 2012, <https://www.whitlam.org/publications/2017/10/17/an-educators-perspective-the-impacts-of-high-stakes-testing-on-school-students-and-their-families>; Pauline Roberts and Marianne Knaus, ‘Play-Based Learning Play Pedagogies for Technology Education’, in *The Bloomsbury Handbook of Technology Education* (Bloomsbury, 2023), 274.

¹¹ Dulfer, Rice, and Polesel, ‘An Educator’s Perspective’.

¹² Lisa O’Brien et al., ‘Improving Outcomes for All: The Report of the Independent Expert Panel’s Review to Inform a Better and Fairer Education System’, 2023.

¹³ Jason Gerke, ‘Record Numbers of Teachers Leaving NSW Schools’, *NSW Teachers Federation* (blog), 8 April 2023, <https://www.nswtf.org.au/news/2023/04/09/record-numbers-of-teachers-leaving-nsw-schools/>.

¹⁴ Jessica Amy Sears et al., ‘“This Is like Banging Our Heads against the Wall”: Why a Move to Outsource Lesson Planning Has NSW Teachers Hopping Mad’, *The Conversation*, 4 August 2022, <http://theconversation.com/this-is-like-banging-our-heads-against-the-wall-why-a-move-to-outsource-lesson-planning-has-nsw-teachers-hopping-mad-188081>.

hours or more. *Two-thirds of teachers scour the internet and social media websites – such as YouTube and Facebook – at least once a fortnight, looking for resources that can vary wildly in quality.*¹⁵

Textbooks and readers, for all of their flaws, are radically simple in comparison; there is no six hours of resource hunting per week when the primary text of instruction has remained stable over several years. We can go further here, when a textbook is chosen as the primary instruction resource, the question of quality is also settled, there is no variance as there is with online videos, as almost all textbooks are written by teachers in the field or academic experts, and in turn edited and vetted by the publisher or their peers. Critically, when textbooks can be taken as a constant, the teachers can spend more of their preparation time on *how* the class might be taught in terms of activities, which students should be in which group for an activity or adapting the activity to students with diverse learning needs. In all these ways, the essential stability of written texts as a medium serves as a more reliable foundation for effective teaching than the bells and whistles approach of online media, which are by their nature ephemeral and varying in quality.

The other side of edtech's impact on teachers is the administrative demands placed on teachers associated with the quantification of education that is so often linked with edtech initiative and technocratic thinking. Recent work by Rafaan Daliri-Ngametua, Sue Creagh and Ian Hardy with teachers in Queensland identified how regimes of quantification, primarily reporting associated with NAPLAN, was turned into increased stress upon individual teachers to have high performing students by principals and parents entrained to believe in the test scores as an absolute measure of achievement.¹⁶ Meanwhile, an international study of teacher conditions highlighted that 66.2% of teachers had found their administrative load had increased because of accountability measures, which are often attached to digitisation.¹⁷ Taken together, we can see the contours of a system in which quantification, often directed through digital technology, and the demands of shifting education to largely unproven edtech systems for administration and learning are contributing to system-wide increases in teacher stress and burnout. That these changes have occurred seems to be an acceptable observation, why they have occurred is a different matter that is worth further examination.

¹⁵ Jordana Hunter, 'Australian School Education Is Falling Short', *Grattan Institute* (blog), 2022, <https://grattan.edu.au/news/australian-school-education-is-falling-short/>.

¹⁶ Rafaan Daliri-Ngametua, Ian Hardy, and Sue Creagh, 'Data, Performativity and the Erosion of Trust in Teachers', *Cambridge Journal of Education* 52 (1 December 2021): 1–17, <https://doi.org/10.1080/0305764X.2021.2002811>.

¹⁷ Greg Thompson, 'The Global Report on the Status of Teachers 2021' (Brussels, Belgium: Education International, 2021).

The edtech procession

It is at this point that the question of how this crisis arose become an essential step on the path back to an education system that is fairer and kinder to all stakeholders, and can also be an invaluable contributor to the social, political and economic life of the nation. It is almost certainly a multi-causal phenomena, as highlighted in the significant federal reviews of education, such as the recent *Improving Outcomes for All* expert panel report.¹⁸ The earlier *Review to Achieve Educational Excellence in Australian Schools* (commonly known as the Gonski report) stated frankly in 2018 that there was, 'a lack of research-based evidence on what works best in education,' prefacing a broad range of findings and potential actions to improve Australian education.¹⁹ Despite this lack of evidence and ignoring the complexities of the issue, there has been a concerted push for more edtech in classrooms across the nation, and so it is essential to pause and assess where this impetus comes from. While acknowledging that edtech advocacy has a degree of heterogeneity and complexity, there are certain strands of thought that are recur in this domain. Government policymakers driven by national competitiveness agendas,²⁰ teacher-practitioners with a pragmatic approach meeting students who are perceived to be digitally oriented,²¹ and of course, the edtech providers serving their commercial interests are all part of the edtech advocacy procession.²²

In the Australian context, however, a useful starting point for this discussion is the launch of the 'Education Revolution' by the Rudd Government in 2007. The premise of the Education Revolution was that the future was digital and so every child needed to be learning on computers as soon as possible.²³ The supposed inevitability of digitisation is based on spurious reasoning, as Australia's economy has been dominated by resources while services

¹⁸ Australian Department of Education, 'Improving Outcomes for All: Australian Government Summary Report of the Review to Inform a Better and Fairer Education System.', 11 December 2023, <https://www.education.gov.au/recurrent-funding-schools/resources/review-inform-better-and-fairer-education-system-summary-report>.

¹⁹ David Gonski et al., 'Through Growth to Achievement: Report of the Review to Achieve Educational Excellence in Australian Schools' (Australian Department of Education, March 2018), p. ix, <https://www.education.gov.au/recurrent-funding-schools/resources/through-growth-achievement-report-review-achieve-educational-excellence-australian-schools>.

²⁰ Alan Reid, 'Is This a Revolution?: A Critical Analysis of the Rudd Government's National Education Agenda', *Curriculum Perspectives* 29, no. 3 (2009): 1–13.

²¹ Joanne Orlando, 'Teachers' Changing Practices with Information and Communication Technologies: An up-Close, Longitudinal Analysis', *Research in Learning Technology* 22 (8 August 2014), <https://doi.org/10.3402/rlt.v22.21354>.

²² Neil Selwyn, *Is Technology Good for Education?* (Cambridge, UK Malden, MA: Polity, 2016).

²³ Australian National Audit Office, 'Digital Education Revolution Program - National Secondary Schools Computer Fund', 2011, <https://www.anao.gov.au/work/performance-audit/digital-education-revolution-program-national-secondary-schools-computer-fund>.

and finance have declined since 2007.²⁴ This aside, since the Rudd government's decision to increase edtech use in 2007, digitisation has been an unusually bipartisan issue, especially where the idea of economic competitiveness in a global market is involved. Consider the following quotation from then-Prime Minister Malcolm Turnbull in promoting the Coalition's approach to edtech adoption, from an ABC News report:

We need to make sure ... our kids are coming out of school competitive. This is a very competitive world. We've got to make sure they've got the skills to excel and to compete and be their best.²⁵

This is a breathtaking instrumentalisation of the purpose of education, and one that seemingly went unquestioned in the main national papers at the time as, for example, coverage from the *Sydney Morning Herald* thought Turnbull's education reforms 'reward personal progress' and would 'fix the country's lagging school system.'²⁶ What Turnbull is saying, however, does not entirely relate to the adoption of technology in classrooms, though it no doubt plays a part, as behind this statement lurks the spectre of quantification once again. In essence, once competitiveness becomes a central tenet of education, we must then determine who is winning the competition and once at that stage, it is only a small step to having a system that uses quantitative measures to determine said winners. This is what I refer to as 'quantitative capture,' a state in which quantitative logic dominates questions of value across a given society.

As a concept, quantitative capture lends itself neatly to the dominant idea of what Australia considers as the most important purpose of education; that is as a tool to serve economic needs, which are quantitative in nature, rather than creating well-informed citizens and masters of their field, which are qualitative in nature. Similarly, edtech companies have no philosophical or economic interest in the promotion of qualitative outcomes, which its systems are inherently poor at measuring. Where it is easy for computers to scan and mark multiple choice quizzes or mark a maths test due to its right-wrong binary logic, it is virtually impossible for computers to assess the 'fact' and

²⁴ Reserve Bank of Australia, 'Snapshot Comparison | Composition of Australian Economy', Reserve Bank of Australia, 2024, Australia, <https://www.rba.gov.au/education/resources/digital-interactives/snapshot-comparison/index.html>.

²⁵ Natasha Robinson, 'Australia Has an "Industrial-Era Model of School Education", and the PM Agrees It Needs to Change', *ABC News*, 29 April 2018, <https://www.abc.net.au/news/2018-04-30/gonski-recommends-australian-schools-move-to-individualised-lea/9708984>.

²⁶ Michael Koziol, 'Malcolm Turnbull Backs Gonski 2.0 "blueprint" for Radical Overhaul of Australian Curriculum', *The Sydney Morning Herald*, 29 April 2018, <https://www.smh.com.au/politics/federal/malcolm-turnbull-backs-gonski-2-0-blueprint-for-radical-overhaul-of-australian-curriculum-20180429-p4zcaq.html>.

quality content of an English or Philosophy essay because there are few ‘facts’ in such fields and the quality of an argument is largely a subjective judgement. In such a manner, the limitations of edtech come to inform the curriculum as a whole, defining the limits of the possible.

There is a further political dimension to the ascendance of edtech, which is the news-friendliness of *things* over *experiences*. The delivery of laptops or ‘technology enhanced’ buildings provide a clear proof of delivery in terms of campaign promises to both a waiting media and a sceptical public. The improvement for teachers themselves, perhaps in terms of adequate time and space to prepare classes, does not deliver the same media opportunity. Similarly, the announcement of edtech aligned policies grants legitimacy to government claims about competing in the apparently digital economy of the present and future, creating the very future it is claiming to meet in a performative way. Or as technology theorist Evgeny Morozov points out with relation to the larger project of Web3, ‘we’ve got this beautiful map on our hands – all that’s missing is the territory it is supposed to refer to.’²⁷ Instead of working towards meaningful change that would retain teachers—reducing administrative workloads, for example—we are sold a vision of what education could be, if it would just adjust to whatever edtech is being sold at the moment. For example, there is no budget seemingly allocated to the reduction of administrative tasks that overburden teachers or, for that matter, pay increases across the sector but there is \$91.7m over four years to ‘to transform program administration for schools and higher education providers by developing a stable, secure, and streamlined information and communications technology platform.’²⁸

Morozov has previously provided a term for such situation, ‘technological solutionism,’ or sometimes ‘technosolutionism,’ referring to the recurrence of situations where powerful institutions prefer to solve social problems with technology rather than systemic change.²⁹ We can see technosolutionism in action when, for example, in 2021 the NSW police commissioner suggested a sexual consent app as a solution to a growing problem with sexual assault and rape,³⁰ or when the federal government used software rather than people

²⁷ Evgeny Morozov, ‘Web3: A Map in Search of Territory’, *The Crypto Syllabus*, 13 January 2022, <https://the-crypto-syllabus.com/web3-a-map-in-search-of-territory/>.

²⁸ Ry Crozier, ‘The Full List of IT Projects in the 2023-24 Federal Budget’, *iTnews*, 10 May 2023, <https://www.itnews.com.au/news/the-full-list-of-it-projects-in-the-2023-24-federal-budget-594172>.

²⁹ Evgeny Morozov, ‘To Save Everything, Click Here : Technology, Solutionism and the Urge to Fix Problems That Don’t Exist’, 1 January 2014.

³⁰ Kevin Nguyen and Paige Cockburn, ‘Sexual Consent App Proposal Might Be NSW Top Cop’s “Worst Idea All Year”’, *ABC News*, 18 March 2021, <https://www.abc.net.au/news/2021-03-18/nsw-sexual-consent-app-proposed-by-mick-fuller/100015782>.

to assess Centrelink debt in the scandal known as ‘Robodebt.’³¹ Technosolutionism provides a useful lens to think through the changes in education wrought by edtech. Rather than seeing this as a primarily pedagogical movement, we can see it as a larger capital-intensive technological movement that brought solutions to problems that did not really exist and has been part of an apparent decline in education outcomes.

The technosolutionist edtech status quo distorts what is deemed necessary for successful teaching, even in relatively poor environments, such as rural and remote schools, as mentioned in this excerpt from an *Australian Financial Review* report on Australian schools in 2022:

If you go to these rural communities to work, things like decent housing, the ability to go out on the weekend, decent Wi-Fi – all these things disappear. They don’t get proper professional development, and they don’t get psychologists and people who can work on the wellbeing of the kids.³²

It is curious to see in writing the equivalence of Wi-Fi with housing, and the implication that wi-fi is a precondition for teachers and students doing their work. Yet this is seemingly what our solutions in education have boiled down to; that the teacher is merely a guide through online resources, a shepherd of laptops and a master of standardised testing. Australia has been sold a vision of what education can and should be, which is conveniently aligned with a technosolutionism of laptops over libraries and educational games over teachers. Yet we also need to question the conditions into which technosolutionism can arise, which amount to a certain malaise around the idea of what education is for and how it should be conducted, for which Postman is an excellent starting point in thinking through our problems.

Postman’s critique

What is the necessary business of the schools? To create eager consumers? To transmit the dead ideas, values, metaphors, and information of three minutes ago? To create smoothly function-

³¹ Luke Henriques-Gomes, ‘Robodebt: Five Years of Lies, Mistakes and Failures That Caused a \$1.8bn Scandal’, *The Guardian*, 10 March 2023, sec. Australia news, <https://www.theguardian.com/australia-news/2023/mar/11/robodebt-five-years-of-lies-mistakes-and-failures-that-caused-a-18bn-scandal>.

³² Julie Hare, ‘Why Australia’s Students Keep Falling behind’, *Australian Financial Review*, 30 September 2022, <https://www.afr.com/work-and-careers/education/why-australia-s-students-keep-falling-behind-20220928-p5blna>.

ing bureaucrats? These aims are truly subversive since they undermine our chances of surviving as a viable, democratic society. And they do their work in the name of convention and standard practice. We would like to see the schools go into the anti-entropy business. Now, that is subversive, too. But the purpose is to subvert attitude, beliefs and assumptions that foster chaos and uselessness.³³

To read Postman today is to experience an inversion of political sensibilities. As the above quotation hints at, Postman is at heart a conservative, in the sense that he is preoccupied with the conservation of print culture and democratic society. In 1969, when he initially penned the lines above with co-author Charles Weingartner, as education systems were undergoing significant experimentation with a progressive bent, he would have been seen as outright atavistic. Yet to read him in 2024, against the backdrop of a technosolutionism that entrenches many of the social problems of our time, such as the reiteration of class divides in digital divides, Postman finds more common cause with today's misfits than with the establishment. This revision of political orientation ultimately comes down to the opening line of the quotation – What is the necessary business of schools? And to better understand Postman's response to that, we need to look further into his body of work on the topic.

Before continuing with an examination of Postman's work in relation to technology and education, it is worth positioning him within the field of media studies, which is the line this article seeks to follow. Postman is broadly in the same lineage as Harold Innis³⁴ and Marshall McLuhan in his insistence on the centrality of the form of media instead of its contents.³⁵ His perspective is notably different from popular contemporaries such as Jean Baudrillard in that he is more materially than semiotically oriented.³⁶ Meanwhile, he also differs from writers such as Herman and Chomsky in that his interest is not in the bias inherent in ownership structures but instead pursues the bias inherent in the mediums themselves.³⁷ In the context of this article, it is also important to note that he was a teacher before a media scholar, which explains his ongoing engagement with concepts of childhood and education that are

³³ Neil Postman and Charles Weingartner, *Teaching as a Subversive Activity* (New York: Dell, 1988), 17.

³⁴ Harold A. Innis, *The Bias of Communication*, 2nd ed (Toronto ; Buffalo, NY: University of Toronto Press, 2008).

³⁵ Marshall McLuhan, *Understanding Media: The Extensions of Man*, 5. impr (London: Routledge [and] Kegan Paul, 1975).

³⁶ Jean Baudrillard, *Simulacra and Simulation*, trans. Sheila Faria Glaser, *The Body, in Theory - Histories of Cultural Materialism* (Ann Arbor, Mich: Univ. of Michigan Press, 2019).

³⁷ Edward S. Herman and Noam Chomsky, *Manufacturing Consent: The Political Economy of the Mass Media* (New York, NY: Pantheon Books, 2002).

not as prominent in most others' in media studies work.³⁸ Taken together, Postman's value in my argument is one focused on the impact of the material form of edtech as being both critical to understand as well as fundamentally inalterable (i.e. a laptop cannot be something other than a laptop). This is not as technologically determinist as it first seems—a trait shared by Postman's fellow travellers Innis and McLuhan—because Postman's point is that we *could* choose another way to deliver and engage with education that is not so strongly oriented around edtech and yet we do not for cultural and political reasons.

One such cultural choice is the way, as discussed earlier in the article, that Australia has given itself over to quantification at all levels of education and that this is deeply problematic. I have generally identified the most overt forms of this issue in the form of PISA and NAPLAN but, to Postman, the issue runs far deeper than that. To Postman, the beginning of the decline arises in the very existence of grades themselves, as he highlights in the following way:

To say that someone should be doing better because he has an IQ of 134, or that someone is a 7.2 on a sensitivity scale, or that this man's essay on the rise of capitalism is an A- and that man's is a C+ would have sounded like gibberish to Galileo or Shakespeare or Thomas Jefferson. If it makes sense to us, that is because our minds have been conditioned by the technology of numbers so that we see the world differently than they did...Which is another way of saying that embedded in every tool is an ideological bias, a predisposition to construct the world as one thing rather than another, to value one thing over another, to amplify one sense or skill or attitude more loudly than another.³⁹

In Postman's critique, as implied above, grade systems often limit how student understanding is assessed. For example, students are typically graded in maths on their ability to sit at a desk and complete equations on paper, rather than demonstrating an understanding of geometry by being outside and building a strong treehouse or play structure. It is, in this example, far easier to mark and sort students based on the *number* of equations correctly solved than it is to assess the *quality* of a structure built out of variable components in differing environments. And yet, is either student 'better' than the other?

³⁸ Postman and Weingartner, *Teaching as a Subversive Activity*; Neil Postman, *The Disappearance of Childhood*, 1st Vintage Books ed (New York: Vintage Books, 1994); Neil Postman, *The End of Education: Redefining the Value of School*, 1st ed (New York: Knopf, 1995).

³⁹ Neil Postman, *Technopoly: The Surrender of Culture to Technology*, 1st Vintage Books ed (New York: Vintage Books, 1993), 13.

For Postman, this problem was later better expressed as he shifted his primary research concern from education to media technology, exemplified in his seminal works *Amusing Ourselves to Death*⁴⁰ and *Technopoly*.⁴¹ It is in the latter work that Postman defines his concept of Technopoly, a ‘state of culture’ consisting of the ‘deification of technology’ requiring the development of a new kind of society, one in which certain attitudes and approaches to problems that conditions people in a way that is reminiscent of what Morozov would later call technosolutionism:

Those who feel most comfortable in Technopoly are those who are convinced that technical progress is humanity’s supreme achievement and the instrument by which our most profound dilemmas may be solved. They also believe that information is an unmixed blessing, which through its continued and uncontrolled production and dissemination offers increased freedom, creativity and peace of mind. The fact that information does none of these things...seems to change few opinions, for such unwavering beliefs are an inevitable product of the structure of Technopoly.⁴²

Against this quotation, we might fruitfully consider current debates around the integration of generative AI into education. At first there was a notable clutching of pearls around the idea that students would cheat at written assessments using answers provided by ChatGPT and its ilk, ignoring the fact that if assessment were less formulaic and quantitative, the software would not be able to answer it correctly in any event. Yet in a relatively short time we have seemingly shifted, at least in the environments I have knowledge of in secondary and university education, towards the *fait accompli* that generative AI is the future and that what it provides us is a blessing for creativity and productivity. In this shift we can see the very malady Postman identified 30 years ago, in that the provision of information—in this case the responses from generative AI—for our supposed benefit is an unmixed blessing, no context need apply. What Postman is most commonly arguing against is the pervasive spread of not just the physical artefacts of technology in education—in his time, television, in ours, laptops and the internet—but the contagious nature of the thinking that comes with it. We might think that common grading systems are separate from questions of technology, but in reality they stem

⁴⁰ Neil Postman, *Amusing Ourselves to Death: Public Discourse in the Age of Show Business*, 20th anniversary ed (New York, N.Y., U.S.A: Penguin Books, 2006).

⁴¹ Postman, *Technopoly*.

⁴² Postman, 71.

from an attitude connected to the technocratic mindset that follows industrialisation and stimulated by digitisation. Or as Postman writes elsewhere:

...we learn nothing when educators ask, Will students learn mathematics better by computers than by textbooks...Such questions have an immediate, practical value to those who ask them, but they are diversionary. They direct attention away from the serious social, intellectual and institutional crises that new media foster.⁴³

We are regularly assured that edtech infused experiences are both what students want and a better means of creating active learning experiences.⁴⁴ What remains unanswered in these discussions is any earnest engagement with the 'serious social, intellectual and institutional crises that new media foster.' In this case, when teachers and administrators ask whether students learn better by laptops than by pen and paper, we ignore, for example, whether laptops are *also* conduits of distraction in the form of games and social media. We ignore that the internet *as it is currently built* is designed for the purposes of commerce, what internet historian Ben Tarnoff has described a connected series of online shopping malls, hence the overwhelming amount of advertising and the extraction of user data for sale, including student data.⁴⁵

Returning to the purely utilitarian stance, however, and thinking about the learning environment 'in itself', Postman still has serious objections, with regards to a then-current proposal to connect students and scientists virtually, that are worth heeding:

But I find it especially revealing that in the preceding scenario [about a proposal for researchers to help primary school students with science projects], we have an example of a technological solution to a psychological problem that would seem to be exceedingly serious. We are presented with a student who is "bored with the real world." What does it mean to say someone is bored with the real world, especially one so young? Can a journey into virtual reality cure such a problem? And if it can, will our troubled youngster want to return to the real world? Confronted with a student who is bored with the real world, I

⁴³ Postman, 18-19.

⁴⁴ Paulo Blikstein and Izidoro Blikstein, 'Do Educational Technologies Have Politics? A Semiotic Analysis of the Discourse of Educational Technologies and Artificial Intelligence in Education', *Works in Progress*, 29 June 2021, <https://wip.mitpress.mit.edu/pub/do-educational-technologies-have-politics/release/1>.

⁴⁵ Ben Tarnoff, *Internet for the People: The Fight for Our Digital Future* (London ; New York: Verso, 2022).

don't think we can get away so easily by making available a virtual-reality physics lab.⁴⁶

Postman here poses a very real problem that is now facing educators across mainstream contexts. When compared to all the limiting factors and difficulties of working in the real world, online and virtual learning experiences are typically designed to be extrinsically motivating in the spirit of Skinner's behaviourist model; all the stickers and merit systems that have been teacher staples for decades are now supercharged with animation and leaderboards, books are no longer confined to static ink on the page, they become multimedia experiences on iPads.⁴⁷ All with the cumulative effect that the real world becomes uninteresting in comparison. We are, in effect, training children to be at home in the eternally distracting online environment of debatable economic value and questionable resilience building capability.

Notes on a way forward: 'loving resistance fighters' and 'convivial' classrooms

At the end of *Technopoly*, Postman provides us with the rhetorical figure of the 'loving resistance fighter' that might pursue a resistance to these changes, which so often come back to the problem of how and why we educate;

A resistance fighter understands that technology must never be accepted as part of the natural order of things, that every technology...is a product of a particular economic and political context and carries with it a program, an agenda, and a philosophy that may or may not be life-enhancing...*I can say no more than this, for each person must decide how to enact these ideas.*⁴⁸

To Postman, teachers teach because they enjoy the process of teaching, the daily interactions with students and the cultivation of minds that will go on to achieve things large and small, not because we see ourselves as the reproductive apparatus of business as usual, even if this is practically what we do at present. Technology occupies an odd space with regards to this orientation because for some teachers the technology is an interesting conduit to creative expression or because students can do some interesting science projects

⁴⁶ Neil Postman, *The End of Education: Redefining the Value of School*, 1st ed (New York: Knopf, 1995), 41.

⁴⁷ Blikstein and Blikstein, 'Do Educational Technologies Have Politics?'

⁴⁸ Postman, *Technopoly*. 184-185.

with data, but for other teachers it is 'in the way', it mediates the teacher-student relationship or modifies the horizon of the pedagogically possible.⁴⁹ Furthermore, as discussed, it creates other distortions and problems in education, potentially more than it solves: the misallocation of resources that could be better spent on reducing inequality between schools and students, introducing a prime source of distraction, or the creation of a number of physical impairments during developmental years, such as the reported increase in myopia⁵⁰ and the decrease in physical strength.⁵¹

Against this, Postman offers up this loving resistance fighter. Teachers love teaching, so each must find their own way to manage the issues, good and ill, that come with technology. Yet I find this approach unsatisfactory because of the systemic imbalances that edtech creates, many of which I have introduced throughout this article. After all, there is little a single teacher can do against a program as large as the Rudd Government's Digital Education Revolution and its descendants. There is no marketing budget or sales teams supporting a teacher putting in the hours to adapt their lesson plans to a specific class. And there seems to be no politicians that will challenge the agenda of digitisation or, at the very least, support improved working conditions for teachers beyond the occasional (and begrudgingly given) incremental pay increases. Though the idea of 'loving' the experience and execution of education is an important element of resisting the corrosive changes in education of the past 20 years, what it lacks is institutional power and resources.

What is needed then is a more systematic alternative that addresses the crises that Postman correctly diagnoses. Critically, what this solution needs to provide, unlike the education administrators of 2024, is an account of the problem from a technological as well as pedagogical perspective. As a means of provoking further thought on this issue, I would propose the theories of Ivan Illich as a rich starting point for these inquiries. Firstly, as I have noted elsewhere with respect to mundane AI voice assistant systems such as Siri

⁴⁹ T. Philip Nichols and Ezekiel Dixon-Román, 'Platform Governance and Education Policy: Power and Politics in Emerging Edtech Ecologies', *Educational Evaluation and Policy Analysis* 46, no. 2 (1 June 2024): 309–28, <https://doi.org/10.3102/01623737231202469>.

⁵⁰ Carla Lanca and Seang-Mei Saw, 'The Association between Digital Screen Time and Myopia: A Systematic Review', *Ophthalmic and Physiological Optics* 40, no. 2 (March 2020): 216–29, <https://doi.org/10.1111/opo.12657>.

⁵¹ L. D. Rosen et al., 'Media and Technology Use Predicts Ill-Being among Children, Preteens and Teenagers Independent of the Negative Health Impacts of Exercise and Eating Habits', *Computers in Human Behavior* 35 (1 June 2014): 364–75, <https://doi.org/10.1016/j.chb.2014.01.036>.

and Alexa, Illich's notion of 'radical monopoly' serves as an alternative starting point for understanding the power dynamics of big tech.⁵² Radical monopoly is interested not in the economic monopoly where one company dominates the market in terms of supply, but instead signals towards the notion that certain configurations of technology monopolise *how things are done*. In the book that he introduces the concept in, *Tools for Conviviality*, Illich uses cars as an example; the particular way we have developed and used cars—private ownership, public highway building, generally lax regulations on fuel economy until recently—has created an environment in which the car absolutely dominates many cities.⁵³ This domination occurs on the level of space, as the suburb, highway and parking lot all consume arable land for the benefit of drivers, and of behaviour, where even small trips are often done by car in the first instance because there are no disincentives against the apparent convenience of car travel. We can note, for example, the decline in the number of children taking 'active transport'—walking and cycling—to schools, from 75% to 25% between 1981 and 2021, with half of those children living less than 1 km away from their school.⁵⁴ In the radical monopoly of the car, driving is the default and prioritised mode of transport, and other options are considered unusual or mildly deviant.

The application of radical monopoly in terms of edtech is related to Postman's early criticism of technology in the classroom, in that increasingly the use of technology to teach is not something done in an appropriate context but something that is becoming a 'necessary' part of all teaching, under a logic of technosolutionism. Without space for teachers to wholesale reject the use of technology in their classrooms, as part of a considered approach to their specific classes and contexts, then the edtech approach has become a radical monopoly on how we teach. As with the radical monopoly of cars, the secondary and unintended consequences of edtech are required to be ignored. The impact on student behaviour, physical health, the student-teacher connection, and more sustained modes of thought must be sacrificed for marginal and debatable gains in learning and to support an assumed shift to a digital services economy that has been on the verge of happening for thirty years at this stage.

Against radical monopoly, Illich proposed the concept of conviviality, which prioritises sustainable, vernacular, and socially responsible technology

⁵² Andrew Hutcheon, 'Domestic AI Systems, Maker Culture and the Design Ethics of Ivan Illich', in *Technology, Users and Uses: Ethics and Human Interaction through Technology and AI*, ed. Joan Casas-Roma, Jordi Conesa, and Santi Caballe (Bradford: Ethics International Press Limited, 2023), 135–161.

⁵³ Ivan Illich, *Tools for Conviviality* (Glasgow: Fontana, 1975).

⁵⁴ WA Department of Transport, 'The Declining Rate of Walking and Cycling to School in Perth' (WA Department of Transport, 2021), https://www.transport.wa.gov.au/mediaFiles/active-transport/AT_P_Declining_Rate_walking_cycling_to_school_in_Perth.pdf.

design.⁵⁵ Broadly speaking, we can view this issue through the issue of repair. In the education context, we might most concisely think about this in terms of hardware and software choices in each context. In terms of hardware, when we think about edtech, we are typically talking about laptops and tablets, loaded with the approved software, and often effectively locked to the student on account of how many devices are practically irreparable. The Illichian approach here would be to only invest in items that students could pull apart as needed, or remixed and recycle into new devices, teaching the students that computing has a necessary material component in its hardware, giving rise to discussions around sustainability and developing their confidence to repair and modify this apparently key device in their life. In software, we see proprietary solutions, such as Google Classroom and Teams, ascendant over open-source solutions, such as Moodle and Signal. If schools more regularly owned their own instances of key learning software, or used software from companies that are not driven by ad revenue, then we could eliminate the scourge of data harvesting of minors, but instead we are often stuck with the default offerings of the edtech radical monopoly. That these systems might be harder to use or require more local IT staff to help manage is precisely the point, because in return the students would presumably develop real competence in computers and more jobs would be retained in the community. Critically, a convivial approach does not deny technology in its entirety, rather it seeks to use it only where appropriate, under conditions in which the grassroots level of teachers and students maintain control and that a spirit of open-ended inquiry prevails. Yet because such an approach is unquantifiable—as in, how can one use one rubric to mark projects as diverse as upcycling broken computer parts into fashion items and the creation of open-source surf condition detection AI?—though perhaps more institutionally legible, the convivial classroom is perhaps as much a fever dream as Postman’s loving resistance fighter.

Conclusion

Taking Postman on as a serious critic of the edtech mindset sheds new light on the crisis in Australia’s education system. While much of the coverage of the crisis focuses upon conventional narratives about the content and pedagogical approaches of teaching, the creep of edtech and its associated technocratic administrative mindset has played a significant role in the quandaries around fixing the system. At best, edtech is simply an annoyance, another thing for teachers and students to learn, and an often-unnecessary mediation of the student-teacher relationship. At worst, it is defining the way the entire sector is operated, a radical monopoly of the way private corporations think

⁵⁵ Illich, *Tools for Conviviality*.

education should be operated. Yet it is perhaps Postman's more nuanced attack on the quantitative nature of contemporary teaching, the historically unprecedented nature of absolutist grading systems and administrative accountability workloads that a hypothetical Galileo or Shakespeare would have considered gibberish, that perhaps points to the largest problem. Without *deeply* understanding that education could and should be dedicated to producing a wide variety of people that could fill a wide variety of roles both communal and economic, necessitating a more open approach to assessing learning, we are committed to an all-in bet on an entirely digital future without a robust social sphere. I will close here with some hypothetical questions and a call to the reader to read Postman for themselves. What could Australia's teachers do with their time if they did not have to complete as much digitally driven administrative work? What could our students learn without having to prepare for the one-off events of NAPLAN, PISA and ATAR? What might we afford, especially in low socio-economic areas, if we did not have to pay for devices? How many students might thrive if they were allowed to step back from the screen? These are big, thorny questions but it seems they effectively go unasked because they sit outside our technologically oriented perception of what education is for and how it is done, and that is precisely the problem Postman identified long before the internet that we would best heed today, not tomorrow.