

AN INVITATION TO REIMAGINE

True agency is the freedom to choose what to learn as well as how to learn it.

Exploring the Potential Future Role of
Pedagogical Technology in the
Australian Secondary School Learning
Environment.

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SUMMARY



Education (both inside + outside of school) operates as *and* within, a Complex Adaptive System

We need to reimagine education beyond the legacy worldviews & system structures we seek to break free of. We can start by accepting education as the complex adaptive system that it is. Just as children cannot be controlled through authority alone, or forced to learn without personal enrolment . . . nor can we ignore the disruptive change emerging elsewhere. The complex adaptive system that is education, in the broadest sense (including informal + formal, school + non-school), will continue to change and respond to the external global environment, whether schools innovate or not.



Edtech has largely filled a vacuum where few alternatives exist.

Edtech's "progress or success" to date, rests squarely on its ability to provide solutions to current urgent challenges within the existing frame (a need for technology integration, balanced with increasing administration, resource shortages and remote requirements). A frame in which few other alternatives are being offered. How might the dominant discourse driven by Edtech and our own worldviews, bias and epistemology of technology be shaping our imaginations? How might we move beyond that? What if we were prepared to change ourselves as much as the system?



Technology and global change is outpacing our system.

The challenge with imagining the future role of technology within education, is that it demands of us, that we reimagine education entirely. Technology, future work, culture and life is changing exponentially faster than the pace of education reform. On every front technology is and will continue, to disrupt the status quo - not just within a learning or work space, but within modes of connection, communities of practice, pathways to agency and identity, and learning as part of the transformative social connective process.

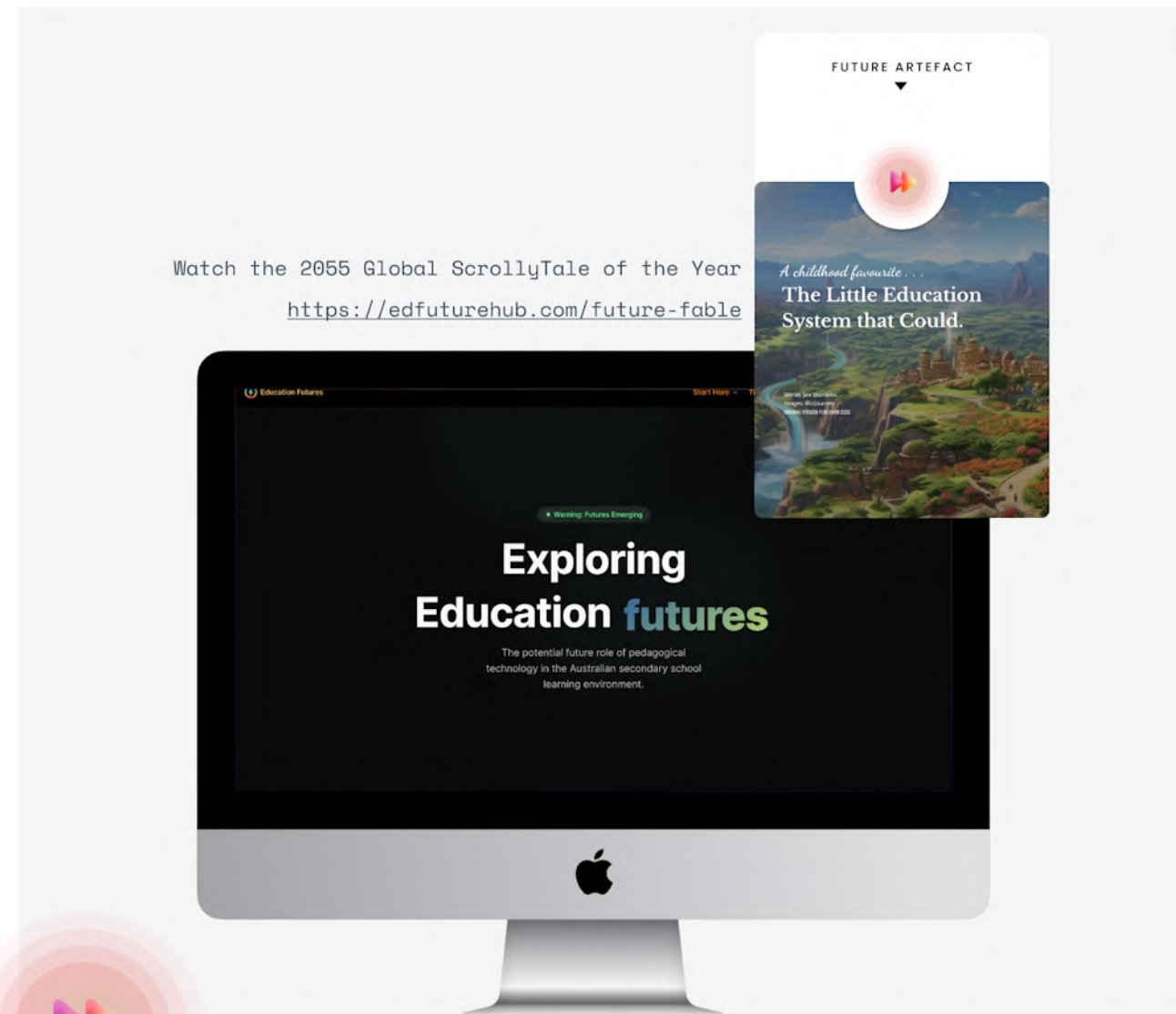


We have the opportunity to reframe how we see the present

It is only by embracing the uncertainty that exists between our ideas about historical order and future chaos, that we can hope to reshape the system with both the stability + flexibility that our potential futures demand. What if we found the unconventional experts, the committed outliers? What if we used future-focused structures and modes of operation that reflect the future possibility you seek to create? - the focus here is global, self-driven, decentralised participatory network structures and knowledge nodes, that invite a radical rethink of education as a system.

AN INVITATION TO REIMAGINE

We need to think more critically about how we might realise technology's inherent potential as a harbinger of future states.

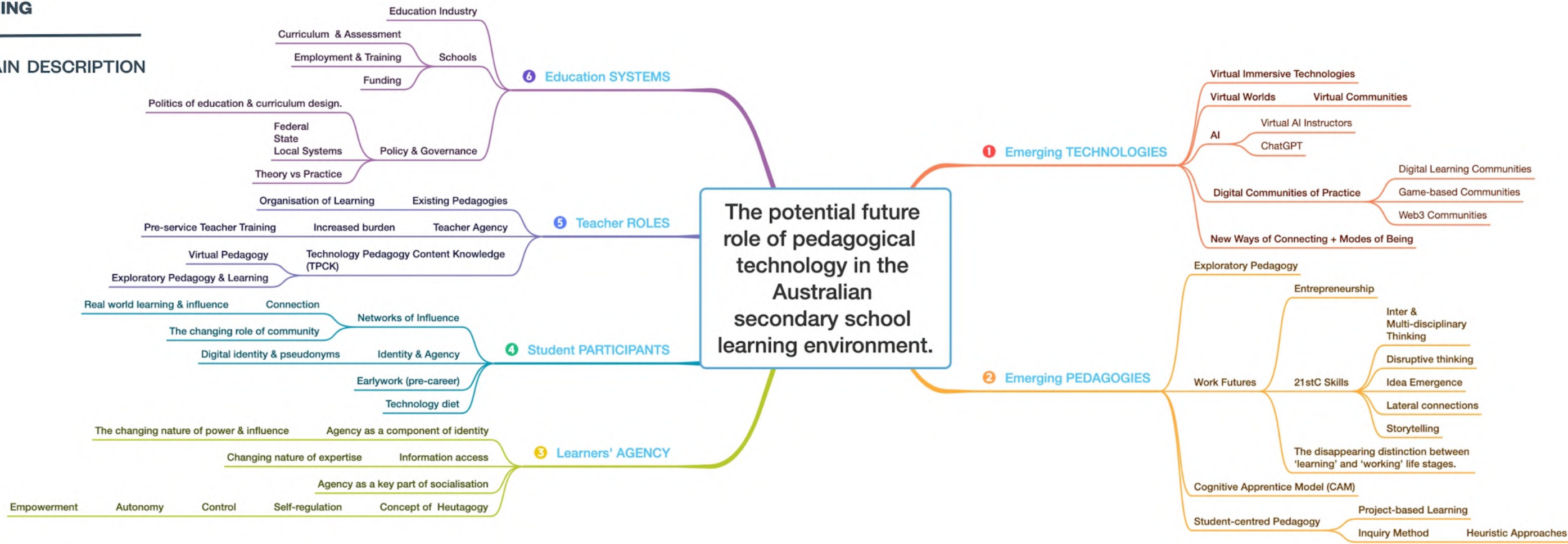


Watch the 2055 Global ScrollyTale of the Year
<https://edfuturehub.com/future-fable>

You can view the full version of this project at <https://edfuturehub.com/>

FRAMING

DOMAIN DESCRIPTION



Client

This research is being conducted to assist the Head of Preparedness and Response, at the fictional Australian Secondary School Technology Network (ASSTN) to explore how they might leverage the real potential of pedagogical technology in the future Australian secondary school learning environment.

Key Question

Project Type: EXPLORATORY

What role should pedagogical technology play in the Australian secondary school learning environment to prepare our students for potential futures ahead?

Key Outcome

Understanding how we might think more critically about the role of technology within the context of secondary school learning; and how we might realise its inherent potential as the harbinger of future states.

Lines of Enquiry

- How might future technology experiences transform pedagogies?
- What inherently human challenges does this technology surface and how might we meet them?
- Where is the key tension in the alignment of scaleable pedagogical frameworks with non-linear outcomes?
- How might an increasing future reliance on technology, shape our understanding of expertise, learning and shared value in the future?
- How might technology itself help us to navigate the uncertain futures ahead?

Geographic Scope

The scope for this project focuses on the Australian secondary school market, but given the global nature of these technologies, we will look outside of Australia as part of our horizon scanning process.

Time Horizon



FRAMING

+ STAKEHOLDERS



A QUESTION OF FRAMING

The challenge we have in front of us, is to help students imagine and experience the ways in which technology as a force will shape their future lives - not just new job roles and ways of working, but connection, augmented thought processes, information gathering and synthesis, new models of value and play. We seek to prepare them for their role as global citizens and the opportunities that await them, to engage them in the necessary reshaping of how we interact with the planet and the people we share it with. Could anything be more important?

If technology is the answer, what is the question?

Secondary school students are preparing for a work future within a post-industrialised context where their future employment will be radically different from previous generations (and most likely, radically disconnected) from the school system within which they are being prepared. The critical question I'm exploring in this project is - what future role might pedagogical technologies play within the Australian secondary learning environment? **The Australian Technology Curriculum tends to view technology as a 'tool' without understanding or realising its true potential as a harbinger of future states.** If we continue to consider technology from an instrumentalist point of view, disconnected from the broader system of social, economic, political and environmental forces within which it operates, we do both ourselves and our children a great disservice. (Beare & Slaughter, 2021)

REFERENCES

© Beare, H., & Slaughter, R. (2021). Education for the Twenty-First Century. Routledge.



The challenge here in this project, is that at its core, it is not a strictly technological problem. It's helpful to think of the education system as a complex adaptive system, and to identify the unresolved root challenge which defines the context for this technology question.

How might we reconceptualise education to prepare our students for the future?

And now we can see that technology in this context, is the proxy for a much bigger question. Given the nature of this project is to explore the potential role of technology within the Australian secondary school space; and the complexity of exploring this question within the broader context of education as a complex adaptive system - let us frame this current assessment for clarity. 3 clicks in on Google will surface a myriad of superficial solves for the relationship between technology and education. In order to provide a rigorous and disciplined exploration of the future role of technology that is both possible and plausible; it's critical that we focus on both the broader educational context and technology's current placement within it. We do this to avoid emasculating the project challenge and further down the track, jumping to simplified scenarios which neither answer the challenge in a plausible manner, nor account for the complexity in solving it.

KEY STAKEHOLDERS

SCANNING

HISTORY

Government educational reform is driven by future market-dynamics; reinforcing the idea of education as an 'output-focused' system, thus resigning technology to the role of 'enabler' . . . but enabler of what?

GLOBAL SYSTEM

1987 - A key period in the development of Technology Education in Australia eventually leading to the 1994 nationally agreed curriculum which included tech as a compulsory learning area. ⑥

AUS EDUCATION SYSTEM

Senior secondary computing subjects mirroring introductory (first-year) university subjects were introduced. ①

More generalist computing courses that appealed to a wider range of students. ①

A Statement on Technology for Australian Schools

1994 - Australian states and territories produce a nationally agreed curriculum including technology but post-1994 the political climate means the program is not adopted nationally. ⑥

The 2000 dotcom crash affects interest in computing. Secondary computer science-focused courses survived in most Australian states but became increasingly marginalised as enrolments fell. ①

Commonwealth Digital Education Revolution

The Commonwealth Digital Education Revolution gives high school students 1:1 computer access and internet. ⑥

Digital Technologies curriculum is introduced across all years of schooling, excluding the final senior years. ①

The UK Government stops computer education in schools after being criticized by the Royal Society and Eric Schmidt. This leads to a realignment towards computer science. Australia incorporates the UK's changes with the computational thinking framework. ①

Australian Digital Technologies Curriculum

The Australian Government introduces the Digital Technologies curriculum, aiming to engage students from Foundation to Year 12 - focused beyond computer usage it encompasses creative engagement with technology. ①

Australia reviews & reinforces endorsed the Digital Technologies subject with minor changes. Digital Literacy now includes a greater focus on cyber safety and artificial intelligence concepts. ①

Australian Computer Education Review

A review into Australian Computer Education identifies key challenges remain around a national approach, teacher support & training, increased investment and pedagogical transformation. ①

2021 UNESCO develops a framework to guide educational policymakers in preparing for the increasing role of AI UNESCO AI Guide for Education Policymakers

Although the Australian Curriculum, Assessment & Reporting Authority (ACARA) publishes a national curriculum, it is not mandated across all states, and many schools and teachers are struggling with the requirements of the curriculum. ①

CURRICULUM FOCUS

No generalised curriculum policy framework meant tech courses were combined with popular trends in ICT skills, website development and learning software applications.

Computer education is relegated to a subset of a vocationally based Technologies curricula, dominated by woodworking and home economics.

2000s Blended Learning

This leads to more computer use across subjects, and raised questions about the need for computer education courses.

This sees a fundamental shift, from computer education being a marginalised subset of the Technologies curriculum to becoming the first new compulsory subject since the 1960s.

The 2022 report identifies general, outdated equipment that is prone to failures reinforces teacher disengagement from using technologies to support their teaching, and results in little time being spent on Digital Technologies and Digital Literacy teaching. ①

Only 18% of schools overall reported extensive use of technologies within all subject areas (Digital Literacy) ①

ENABLING TECHNOLOGIES

Personal computers became available in schools.

1994 Web 1.0

2004 Web 2.0

Social & Virtual Learning

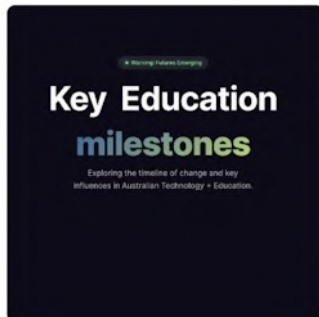
MOOCs

60% of Australian Edtech is focused on the secondary school market. ②

Australia's edtech market is projected to grow by 11% by 2025 ③

Australian Edtech expected to show an annual growth rate (CAGR 2022-2027) of 9.38%, resulting in a projected market volume of US\$174.50m by 2027. ④

EDTECH



Education is operating within a larger dynamic global system where some parts of the system are changing and increasing velocity at a faster rate than others.

The Australian EdTech sector undergoes rapid growth, doubling in size between 2014 and 2019. ⑤

Total revenue in the Education market is projected to reach US\$106.00m in 2022. ⑥

REFERENCES

- ① Computer education in Australian schools 2022 report. Enabling the next generation of IT professionals. ② Deloitte EduGrowth Report, 2020. ③ Encouraging signs for Australia's edtech market with solid growth expected. ④ Australian Market Insights, Statistica. ⑤ EduGrowth. ⑥ Technology Education in Australia 20 Years in Retrospect.

MIND THE GAP

A widening gap between pedagogy + the socio-cultural systems within which technology exists; and how those systems create and shape change, and learners' experience within it.



DRIVER: DISCONNECTION

Disconnect between pedagogy, curriculum, assessment and desired learning outcomes.

Technology use in schools remains for the most part, at a substitution / augmentation level of adoption and seems to assume a continuing status quo, driven in large part by a collective belief system about the nature of technology. New schools of thought such as e (TPACK) ¹⁵ / TEPACK ¹⁶ invite a similarly self-limiting empirical approach. Technology seems to be viewed through this historically instrumentalist lens of 'what is useful?' which orientates the domain of technology knowledge evermore toward a skills-based output-focused domain, neglecting the very shifts which make technology so important. ¹⁷



Teachers Still At The Heart

The most prominent pedagogical technology being used in Australian schools (utilising learning management systems such as Blackboard or Google Classroom) continues to reinforce a teacher-centred pedagogy model. ¹⁸ Technology in this context, is being utilised as a digital substitute for the organisation and distribution of materials. Whilst there is often a 'chat' or 'discussion' component within these programs, they simply reinforce the teacher-centric pedagogy, offering little to disrupt the traditional paradigms that a genuine student-centric or self-directed activity or a more immersive technology approach might invite. ¹⁹



Fragmentation + Reductionist Models of Technology Knowledge

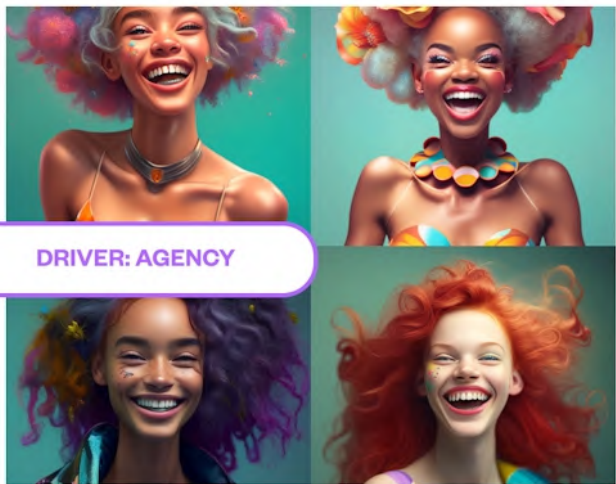
Whilst there are clearly exceptions to this (both in school approaches, teacher-led pedagogies and individual curriculum decisions), technology continues to be taught in a fragmented fashion. Historically the Australian secondary school curriculum has categorised technology according to an instrumentalist output-focused approach around skills: either computer programming or design and production OR a generalised knowledge subject.



DRIVER: DISCONNECTION

The Intentional + Cultural / Interior Component Of Students' Current And Future Technology Experience Is Missing

A disconnect between the educational experience and the shifting motivations, perceptions, goals and sense of purpose that technology invites for a younger, digitally-native generation. Further disconnection between the collective experience of existing within a multitude of social technology systems and the way in which these system experiences influence students' collective (and individual) ideas about learning, value, worldview and internal narratives of both themselves, and their possible futures.



DRIVER: AGENCY

Complex Change Cycles Demand a more Dynamic Future Work Self

We're now operating within a global system of dynamic change; where market demands, technology progress and the exponential rate of growth in access to information, multiplying of connection and global outreach is moving at a significantly faster pace than the lifecycle of educational reform. ²⁰



DRIVER: DISCONNECTION

Technology as Singular Entity

It's tempting to continue to view technology as a singular entity and discount the invitation to a wider perspective as unnecessarily complicated or confusing; and yet, it is these very realms within the human experience of technology, which are driving radical change and in the context of government-desired learning outcomes - radical economic progress to boot. How can we support students to create meaning and identity for themselves, and find purposeful work within this new future context? And what role might technologies play in enabling or facilitating this?

REFERENCES

¹⁵ The 'Future of the Classroom' report, by Google for Education, Emerging Trends in K-12 Education, Australian Edition, 2019. ¹⁶ Hernes, Gudmund & UNESCO, (2002). Emerging trends in ICT and challenges to educational planning. ¹⁷ Australian curriculum - Year 10 technology curriculum outline example]. ¹⁸ Williams, P John. (1993). Technology Education in Australia: Twenty Years in Retrospect. ECU Publications. 3. 10.1007/BF00183707. ¹⁹ Australian Digital Technologies Hub. ²⁰ Edtech in the Classroom, Simon Baddeley, 2020. ²¹ The Digital Landscapes in Australian Schools 2023 Report, Campion Education. ²² Prestridge, S. (2014). A focus on students' use of Twitter - their interactions with each other, content and interface. Active Learning in Higher Education, 15(2), 101-115. <https://doi.org/10.1177/1469787414527394>. ²³ Growing up Digital Australia, Phase 2 Technical Report, 2021, UNSW Gonski Institute for Education.

SCANNING

TIPPS (TRENDS, ISSUES, PLANS +PROJECTIONS)

The latest Campion report[®] states that 50% of Australian secondary schools are utilising both print and digital tools and resources and 30% of schools are looking to deepen their digital commitment. 92% use PDF textbooks or interactive textbooks 90% use digital learning software [®]

"I think that technologies can and should be used to free up resources for the teacher to have interactions with students, in particular those who need more support. I do think that it would be important for the technology itself to be adaptive."

Dr Hanna Dumont, Educational Psychologist and Researcher in International Education

2019 | Google Future of the Classroom Report [®]

+ PROJECTIONS

The 2023 Australian Financial Review Workforce Summit reports that tech jobs continue to rise at triple the rate of the rest of the economy and Australia has a deficit of tech-capable people which surfaces an immediate challenge for policymakers as they seek to build Australian capability for these future dynamics.

Future of Work, Education and Skills report from the OECD highlight a need to shift from a stasis linear learning progression model to a 'non-linear' dynamic model where each student has their own learning path.

+ PLANS

The Australian Govt 21st Skill Development information found online covers much of the WHAT, albeit lacking specific detail on the HOW. What is also apparent in reading these reports, is that they share little of the urgency or framing around 21stc skill development being utilised in the World Economic Forum or OECD reports. The updated (V9 2022) Technology Curriculum for all intents and purposes continues to be very similar to its predecessor developed in 2015

DRIVER: MYTH OF PROGRESS



Technology as Enabler, but of what?

DRIVER: DISCONNECTION

Education SYSTEMS

Global decentralisation

Global trends toward decentralisation of education suggest a positive relationship between increased educational performance and school autonomy.

School autonomy (2005)	School autonomy (2008)	Change	Change in educational performance (PISA Math Score, 2006-2009)
Germany	10.3	44.4	+54.1
Italy	10.9	38.4	+17.5
Japan	10.3	7.6	+20.5
Portugal	8.7	15	+48.7
Sweden	17.2	10.5	+1.9
USA	10.8	14.5	-4.3

OECD Conference

DRIVER: DISCONNECTION

Education SYSTEMS

Tech career ambitions hold steady at a low level.

The latest PISA survey reports that interest or engagement with tech-related careers has not increased. Only 4% of boys, and almost no girls, in Australia expect to work in ICT-related professions

OECD 2018 PISA survey

DRIVER: DISCONNECTION

Education SYSTEMS

Australian achievement in decline.

Australian student trends in performance in reading, maths & science continue to decline.

Acer.org

DRIVER: MYTH OF PROGRESS

Teacher ROLES

Technology as task-substitution continues

Although many teachers are using technology for numerous low-level tasks (word processing, internet research) which we know is associated with teacher-centred practices, research confirms that higher level uses continue to be very much in the minority.

DRIVER: MYTH OF PROGRESS

Teacher ROLES

Teacher shortfalls set to continue

Australia like its global counterparts, is experiencing an unprecedented shortfall of staff post-Covid. The government projects a shortfall of almost 4,000 secondary school teachers by 2025.

The UK education system is experiencing a similar trend where a 2022 survey confirmed that 7 out of 10 teachers had considered resigning in the past 12 months. Likewise a similar UK survey in 2020 reported that half of school leaders intended to leave their jobs prematurely post-Covid.

+ TRENDS

DRIVER: DECENTRALISATION

Shifting PEDAGOGY

FutureWork: decline in labour input for routine tasks

The changing task composition in the labour market highlights the critical shifts education must address to prepare students for the future work market. An MIT report on the changing task composition in the US labour market shows the continual decline of 'routine tasks', routine cognitive tasks and routine manual tasks. We also see a continued upwards trend in labour inputs for non-routine analytical tasks and non-routine manual tasks.

DRIVER: FUTURE SKILLS

DRIVER: DECENTRALISATION

Shifting PEDAGOGY

Peer to Peer Knowledge

We're moving further toward a peer-to-peer knowledge society. Wikipedia stats show continued growth of the platform compared to other information sources. Australian wikipedia users clock up around 263M pageviews per month.

Wikipedia Audience Compared With Other Information Sites

DRIVER: MYTH OF PROGRESS

Chart 4: Change in Students & Staff in NSW Public Schools, 2012-2022 (%)

Category	Primary	Secondary	Non-School
Students	8.8	1.3	-
Teaching	12.4	-3.2	-
Specialist Support	42.9	2.2	-
Admin & Clerical	48.3	31.8	-
Building & Maintenance	5.7	0.4	-
Total Non-Teaching	44.1	26.1	131.5

Source: Australian Bureau of Statistics, Schools Australia

DRIVER: MYTH OF PROGRESS

Teachers say they don't have time to prepare well for lessons

Do not have enough time to prepare for effective teaching?

Always 57%
Frequently 35%
Occasionally 6%
Rarely / Never 1.9%

Do not have sufficient time for high-quality lesson planning?

Always 37%
Frequently 49%
Occasionally 12%
Rarely / Never 2.1%

2021 Grattan survey on teachers' time. Author provided

DRIVER: AGENCY

Learner AGENCY

Microcredentials resonate with Australians

OECD reports a necessary future shift in focus to the 'quality of learning processes' over the traditional outcomes and models of assessment in current systems.

OECD 2018 PISA survey

DRIVER: AGENCY

Learner AGENCY

Makerspaces continue

Makerspaces continue to be a popular term in Australia google search trends point to a continued trend as schools seek to create spaces for student-led discovery and learning through creation.

DRIVER: MYTH OF PROGRESS

Student PARTICIPANT

Research by Gustodio notes that kids in Australia spent the most time on learning apps throughout the year, averaging 9 daily minutes across 2022.

DRIVER: MYTH OF PROGRESS

Student PARTICIPANT

Research shows kids spend an average of 4 hours per day online - no wonder parents experience an ongoing dilemma as to the role technology should play in their learning lives.

DRIVER: MYTH OF PROGRESS

Emerging TECH

Australian EdTech on the rise

The Australian domestic EdTech startup sector is now the second largest startup community in Australia, behind only FinTech, more than doubling in size since 2017.

DRIVER: MYTH OF PROGRESS

Emerging TECH

VR Tech on the rise

Statista reports that user penetration of VR technology continues its upwards trend and is expected to hit 54.9% by 2027.

DRIVER: AGENCY

Emerging TECH

Metaverse market on the rise

Statista reports that the Australian Metaverse market, the number of users is expected to amount to 10.8m users by 2030.

DRIVER: AGENCY

Emerging TECH

Tech as controller

Australian research shows that 60% of young people increasingly feel like technology gives them greater control over their lives and 44% go out of their way to learn everything they can about technology.

DRIVER: AGENCY

Emerging TECH

Increasingly sophisticated online representations of self

Anna Schneider in her research, found that 'metaverse technology users regularly built mental profiles of the people they interact with across various online services. The average respondent without prior metaverse experience was unlikely to do the same.'

Given their practical understanding of these kinds of mental profiles, metaverse users were also found to meticulously manage their online presence and were becoming increasingly sophisticated over time.

DRIVER: AGENCY

Emerging TECH

Emerging Tech Framework: Signalling Theory

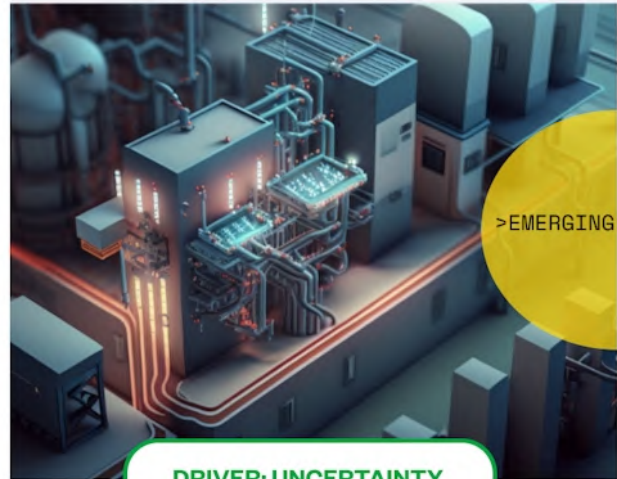
The Signalling Theory first proposed in 1973 has been gaining ground. Researchers use it to explain how people influence each other online, esp. in situations of incomplete or inadequate information - which describes the dynamics of social media influencers and virtual world / metaverse encounters.

REFERENCES

©The Digital Landscapes in Australian Schools 2023 Report, Campion Education. © The 'Future of the Classroom' report, by Google for Education, Emerging Trends in K-12 Education, Australian Edition, 2019.

SCANNING

TIPPS (TRENDS, ISSUES, PLANS +PROJECTIONS)
CURRENT + EMERGING ISSUES



DRIVER: UNCERTAINTY

Belonging to the Man

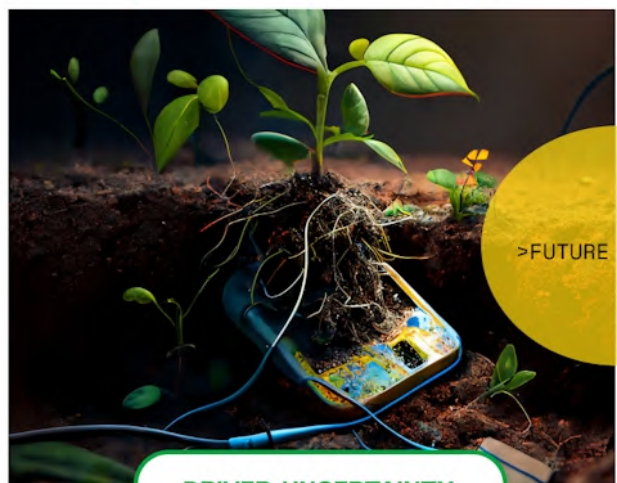
Most schools in Australia are either Google or Microsoft schools, and there is growing concern about the potential impact of a technology partner such as Google driving the emerging pedagogy via the technology as the starting point. There is also growing concern within the teaching community about the privacy rights of teachers as it pertains to their own personal information through the use of these systems.



DRIVER: DECENTRALISATION

The Decoupling of Learning Process and Assessment

With the likely further decentralisation of Education Systems and potential uncoupling of learning process / experience and assessment; how will education leaders and teachers assess and ensure the delivery of consistent quality for all students across the board?
"The risk is that the education system will be churning out humans who are no more than second-rate computers, so if the focus of education continues to be on transferring explicit knowledge across the generations, we will be in trouble." OECD



DRIVER: UNCERTAINTY

Emergent Education Policy

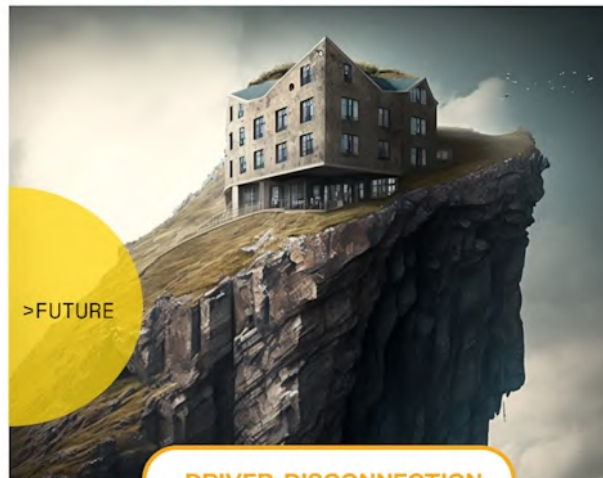
The agenda for education policy is in large part, defined by the broader labour market and economic conditions of the time. How will policymakers balance short-term government priorities with learners' longterm interests to make the meaningful and relevant curriculum shifts that are so urgently required? Increasing complexity across technologies and future work, means a multi-disciplinary or interdisciplinary approach to technology pedagogy is critical. How will govt. education policymakers grapple with increasing pressure to change the approach, cadence and transparency of educational policymaking?



DRIVER: UNCERTAINTY

Changing Teacher Roles

How will teachers grapple with the change needed to deliver true student-centred learning? As emerging technologies continue to accelerate decentralised and redistributed systems of knowledge and influence; teachers and principals will face increasing challenges unless they're able to redefine their roles from the keepers of knowledge, to the facilitators of practice and self-led learning. There's the potential here for further divide between govt. education policymakers in Canberra and teachers on the ground in schools.



DRIVER: DISCONNECTION

Human Experience VS Pedagogy Disconnect

In the face of increasingly sophisticated human technology experiences; how will schools support students to create meaning and identity for themselves, and find purposeful work within a new future context? In what ways will govt. policymakers and education support systems need to rethink their roles and responsibilities (and potentially their own internal capability) to facilitate these emerging shifts? Given the disconnect of cadence + depth between technology progression and curriculum reform; how will school leaders negotiate the ever-changing role and need to continue developing technology pedagogy to keep pace with student' real world experiences?



DRIVER: MYTH OF PROGRESS

The Slow Pace Of Oversimplification

There is growing concern amongst teachers and academia on the impacts of placing technology at the core of education innovation. Much of the dominant discourse is being driven by education technology providers (whether platform technologies like Google classroom or edtech apps such as Kahoot), and there is a real risk that the education sector falls prey to oversimplified notions of learning with technology packaged up by those who stand to commercially gain from wide acceptance. How will education policy providers ensure that the pedagogical debate is not being driven by the market whilst at the same time, acknowledging the lag in research reviews which leaves a vacuum for school leaders struggling to keep pace with teacher and / or student demand?

EMERGING ISSUES

SCANNING

PRIMARY RESEARCH

THE MYTH OF PROGRESS IS ALIVE AND WELL.

Edtech is driving much of the conversation and utilising its commercial power to produce the content, training and resources our underfunded education system so desperately needs. It's heartening to know there are people out there who have edtech's number and understand the longterm implications of a technology-market driven approach. The challenge he highlights, that there is no real clear leadership or voice of reason, is a concerning one. How do we galvanise the educational activists of the world? How do we connect and collaborate to address this challenge across a system with so many constraints?

TECHNOLOGY IS BOTH A MEANS TO AN END AND A WHOLE NEW WAY OF BEING

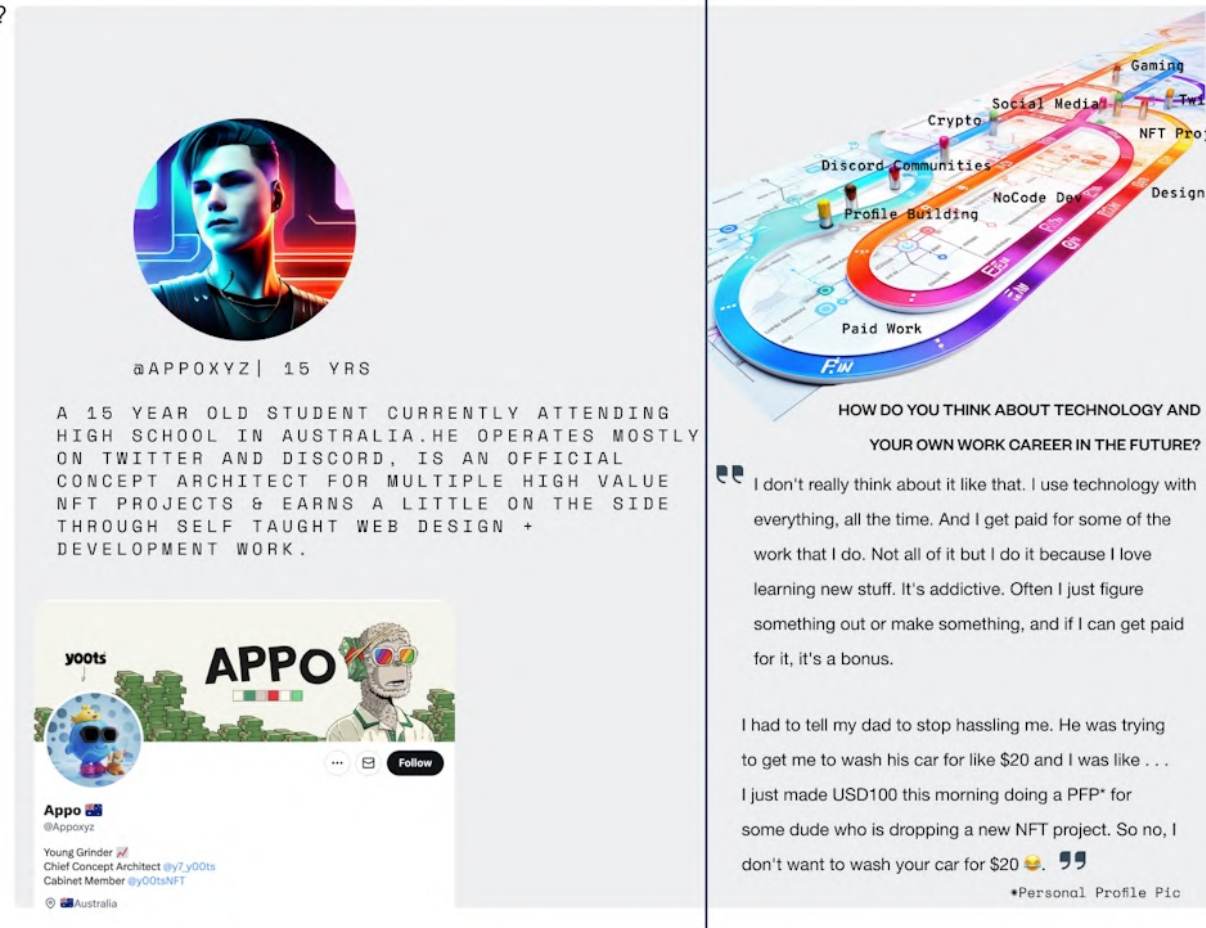
This constantly evolving digital environment necessitates not only the development of whole new sets of skills (of which there are many), but social behaviours, relational cues, workflows, habits of mind and specialised knowledge. It is both an entirely new way of being; and a transformational step towards the future. It is also just the playground for those who have grown up with the pace of change, the thrill of the new and a clear understanding that what lies on the other side of uncertainty; is opportunity. Not specifically financial (although clearly this is also true), but opportunity for deep connection, for experiencing learning and living with passion and finding your people.

INTERGENERATIONAL KNOWLEDGE TRANSFER IS DECLINING

The stark difference between the "experts" and the young learners with their colourful vibrant lived experience in this landscape is plain to see. As are the inherent paradoxes that mark the discourse. Academics muse on the lag between emerging technologies and evidence-based research to support usage and pedagogy. Teachers experiment but still believe they have to be 'a step ahead'. Ahead of what? The children? The technology? By all rights they are experts, but in understanding how to support learning and scaffold young learners on their journey. They will never be able to compete with the 15 year old kid who stays up late deeply embedded in the discourse community, riffing on NFT development and the death of X (formerly known as Twitter). So then the question becomes . . . what is their role in education's future(s)? To Luke's point, we need the language before we can articulate our thoughts. So where is that voice? That leadership?

After talking with 3 educational experts about theories and perspectives on technology's future role; what's clear is that the voices of young learners are desperately missing from this conversation. The voice of young learners on the fringes, who are already engaging in non-linear pathways and taking responsibility for their own learning.

The challenging thing is that nothing about this kind of learning . . . looks like school.



WEAK SIGNALS ON THE FRINGE

The next-best thing to being able to predict the future is listening to those who will shape it.

ALL LEARNING IS VOLUNTARY

Much has been written in academic circles about the difference between the creative thinker, the gifted learner and the high achiever. What about those learners who excel at technology? Who instinctively understand when, how and why connections matter and how to make them? Who might be average performers at school and yet, in the privacy of their own channels they are vibrant, disciplined, rigorous learners with a voracious appetite for knowledge and experiences? How do we enable kids to be 'seen' within a system that cannot grade their achievements in this space nor understand that amongst the chaos and the complexity, lies a far richer world which invites kids like this to take a different posture? How do we bring more young voices into the conversation? Why is this puzzle missing so many pieces?

THE HEAVY LIFT : SCHOOLS AND THEIR TOOLS

The interviews confirmed much of the previous research around obstacles and constraints within the current system. Even the best theories (with evidence based research) are divorced from the lived experience of technology, especially for young learners. Experts observed that many teachers are struggling with the practice of putting resilience and grit, into action . . . despite their class instructions to the contrary and that "technology brings this into focus", this resonates deeply with my initial framing - that the challenge here in this project, is that at its core, it is not a strictly technological problem. It's helpful to think of the education system as a complex adaptive system, and to identify the unresolved root challenge which defines the context for this technology question. How might we reconceptualise education to prepare our students for the future? And now we can see that technology in this context, is the proxy object for a much bigger question.

NON-LINEAR PATHWAYS TO SELF-LED LEARNING AND GROWTH.

The pathways of the young learners I spoke with started with gaming & leveraged social media to create community and find their people. Not stories we often hear amongst the parental pendulum of panic and frustration.

FUTURING

DRIVERS OF CHANGE

Decentralisation

Reports into the effectiveness of AUS school autonomy suggest this has not improved student outcomes

Homeschooling in Australia has increased 105% over the past 8 years with an annual growth rate of 9.4%.

Continued growth toward peer-to-peer knowledge networks like Wikipedia

Regular social media users and metaverse participants are becoming increasingly more sophisticated in their use of functions signalling presence and awareness within the spaces.

Research reports positive trend toward decentralisation & school autonomy

(60%) of Millennials say they'd like to visit a venue in the metaverse first

Growth in access to information

Roblox (early-stage metaverse style game) continues to be the top game for AUS kids

Regular metaverse users are displaying increasingly sophisticated online representations of self

Metaverse technology users regularly built mental profiles of the people they interact with across various online services

Increasingly research suggests that pseudonyms provide boundaries & autonomy

Homeschooling in Australia has increased 105% over the past 8 years with an annual growth rate of 9.4%.

Agency

Uncertainty

OECD states that educators need to make the shift to non-linear dynamic models and student-centred pathways?

The Concerns over job automation and future of work continues to rise

70% of AUS students use ChatGPT for schoolwork & study

The potential impact of platforms like Google driving pedagogy



90% of secondary schools use PDF textbooks & learning management software

The recently revised Digital Subjects Curriculum (2020) has developed only marginally further than its 2015 predecessor and yet, the world has changed

The focus on successful tech integration (tool substitution) distracts from the important conversations about the real potential of tech

Edtech dominates the discourse in the media about tech & education, risking an oversimplification of the challenges and negating the rigorous pedagogical discussion that needs to be had

Myth Of Progress

KEY DRIVERS OF CHANGE

The key forces that push change forward.

\ INTERNAL

UNKNOWN POTENTIAL LIVES HERE

We're operating within a complex adaptive (and human) system of policymakers, school leaders, teachers & students with a high level of uncertainty about how best to navigate the future.

Uncertainty \ EXTERNAL

THE RISE OF AN EMERGENT SYSTEM

We're facing a global system of dynamic change, where market demands, technology progress and exponential rates of growth in information, connection & creativity far outpace the current education system.

Future Skills

AN URGENT REFRAME

The need to critically reconceptualise education in order to prepare students for the possible work futures ahead is an urgent one. This urgency however, is not shared by everyone.

Future Skills

Changing task composition of labour input shows routine tasks in decline

ITFT lists collaborative AI, XR as critically important technologies for work futures

9 out of 10 jobs in the next 5 years will require a post-secondary education

47% of employment is at risk due to increasing computerisation

Tech jobs continue to rise at triple the rate of the rest of the economy

Disconnection

MIND THE GAP

The fundamental disconnect between technology pedagogy & learning experiences is further magnified by the disconnect between students' experience of tech learning & their personal experience of technology in a real world context.

Myth Of Progress

DISTRACTIONS FROM THE ENDGAME

Multi-level myths of success and progress shape much of the debate. Continued focus on core staffing issues disallows focus on the real system challenges and tech's role within it. Continued distraction allows the dominant discourse to be driven by the edtech industry's continued "learning innovation" success stories which further clouds the waters and reinforces the instrumentalist views of success that further perpetuate the myth of progress.

Agency

GLOBAL CITIZENS OF IMPACT

The urgent challenge & opportunity to build personal agency is critical to student futures. This extends beyond technology, 21st skills or future work readiness. We must prepare them for their role as global citizens and the part they'll play in reshaping our relationship with the planet and with each other. We must support them to become impactful urgent optimists.

Decentralisation

EVERYTHING IS CONNECTED

The decentralisation of educational systems, dynamic networks of power and influence, peer to peer knowledge sharing & creativity are changing the dynamics of learning. Moreover, decentralised but increasingly networked relationships and communities mean the traditional rules of power and authority (expertise) no longer apply.

Myth Of Progress

> Legacy Edtech has left the stable

The conservative bias of edtech systems responsible for the homogenising myth of the 2020s; that the delivery of historical, linear methods of learning via new technologies would satisfy changing needs, has been dismantled. The historical edtech market has long been recognised as inherently problematic in pedagogical approach (or lack thereof), and transparency, privacy, portability & interoperability.

Disconnection

> From horseless carriages

Education policymakers' historical approach of technology as an addendum to education is widely accepted as self-limiting and dangerously incorrect. Apropos to this legacy axiom, was the idea of technology as something we can shape and employ instrumentally, rather than something which shapes us. The disconnect here, is from our own history; as we come to terms with the limits of our attempts to sustain pre-digital ideas about learning and indeed, life. Technology takes its rightful place as both a lens with which to make sense of the world, and a tool to shape our possible futures within it.

Uncertainty

> Breeds emergent resilient systems of change.

Education leaders are human lighthouses amidst a sea of uncertainty and complexity, going to war on the curriculum dichotomies of fact and skill, labelling them as polarising and incomplete foundations for possible futures ahead. Education's role is redefined as one of sense-making with redefined teacher / student roles as learner and leader - interchangeable dependent on context and pedagogical domain knowledge at play.

Disconnection

> Mind the Gap

The Australian Govt.'s continued shift toward centralising school reform fails to increase changing key OECD measures, Two critical disconnects are increasing - both the gap between education policy and practice, as stretched teachers struggle to balance top heavy reforms with the realities of teaching AND the critical gap between the growing Edtech and future-work ready student populations.

Agency

> Global Citizens of Impact

Many economically-advantaged children attend virtual schools, or attend physical school part-time and supplement with online programs as more parents take their children's education into their own hands.

Future Skills

> An urgent reframe

Australia's ability to develop future-focused school graduates declines, and increased online learning through international systems results in more students choosing international post-graduate study. Australia's job market becomes disproportionately out of step with the global economy and Australia hits a skills ceiling on knowledge / science / research work on the world stage.

Future Skills

> A wholesale reframe

Historical ideas about grading and assessment are seen as bugs of the old system & the decreasing role of intergenerational knowledge transfer sparks a major shift as education leaders focus on critical sense-making skills to preparing learners for the future.

Dis Connection

> I connect. Therefore I am.

Knowledge is defined, developed, shaped, circulated, exchanged and discovered within an ever-changing network model. Learning comes from energy flows within this network. Learning and knowledge operates like a current - open, participatory and peer-driven. It moves through nodes and networks. The goal is to channel it, not covet, hoard or restrain it. School is not somewhere you go, learning is something you do and it looks markedly different for everyone.

Agency

> Agency emerges through intentional action

Agency continues to develop through self-generated intentional action. The development of personal and collective agency through passion, curiosity and connected experiences locates learning in the flow of agency building, alongside social connection, relationship, community and shared experience. **Learners connect with networked publics** both individually and through self-forming collaborative pods, engaging in passionate discovery and serendipitous scholarship. This collaborative discovery and network engagement leads to shared learning experiences and deeper community building. Learners of any age, become scholars . . . with young learners in secondary / high school commonly referred to as '**earlywork scholars**', **enjoying peer attribution and recognition on-chain**, enabling them full autonomy and ownership over their work. **Credentials are stacked**, and there is no longer a clear distinction between learning, creating, connecting + working.

Future Skills

> I AM the future employer you've been preparing me for.

Proof-of-work becomes Proof-of-Self. And by the way . . . proof of 'work', is whatever learners say it is. In the later years of the period formerly known as 'schooling', learners are required to critique, maintain and generously contribute to the Knowledge Commons.

Uncertainty

> Sees the emergence of a true autopoietic global system

Increasing uncertainty occurs as a result of the absence of a common prescribed curriculum, which in turn increases system complexity moving forward. Knowledge networks and feedback loops continue to emerge and reform, as learners unite through engagement with inter-disciplinary problem-focused subsystems. Here learning emerges through 'knowledge in use', surfaced in the flow of autonomous learning explorations, stewarded by educators. Education centres are hybrid and set up to scaffold; selected by education consumers based on access, pathway and facilitator approaches.

TECHNOLOGY EMPOWERS

NEW EQUILIBRIUM

A pedagogical pilgrimage toward shared futures of possibility.



Future Skills

POST-NORMAL FUTURES TRANSFORMATION

A Relationship of Things (RoT).

Education as an autopoietic system.



Agency

ESTABLISHED SYSTEM

BASELINE

You've been schooled.



Myth Of Progress

EMERGENT SYSTEM

Decentralisation

> You can lead from any chair. Or laptop.

A transformative shift sees the primacy of entity relationships, interactions, processes and networks as key. **Learning pathways** are **co-created by passionate learners**, domain masters and learning coaches. Students learn in their own time, asynchronously or in-person, online or off or both. Every learner's experience is different. Early models of peer-to-peer learning have given way to Peeragogy: collaborative peer-to-peer teaching and learning. Like the production of agency, learning is recognised as a socially constructive act. The co-creation of knowledge amongst individuals, groups and participant networks within the system.

TECHNOLOGY FRUSTRATES

Myth Of Progress

> Distractions from the Endgame

Australia's edtech sector continues to grow dramatically with renewed focus across content and administration technology. The legacy myth that school education's objective should continue logically, to be linked with future employers' needs continues. Productivity continues to decline and consistent curriculum / testing has been achieved at the expense of capability building. Graduate numbers decline further as teaching becomes a last choice profession further reinforcing the perceived need for centralised leadership.

FUTURING

EXPLORING MAJOR DRIVERS OF CHANGE
ACROSS 3 SCENARIO ARCHETYPES

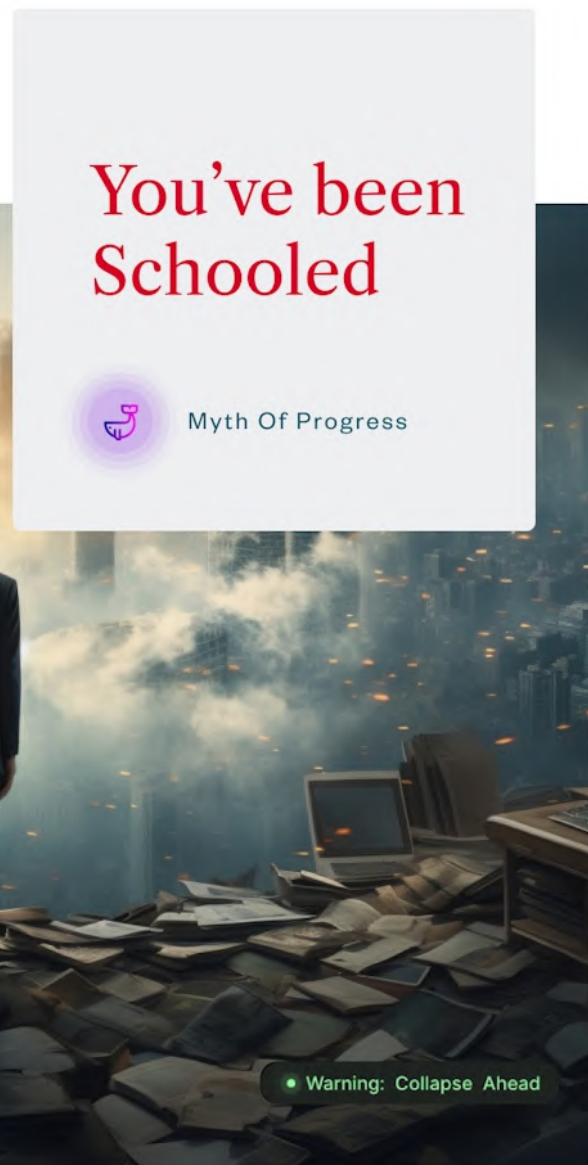


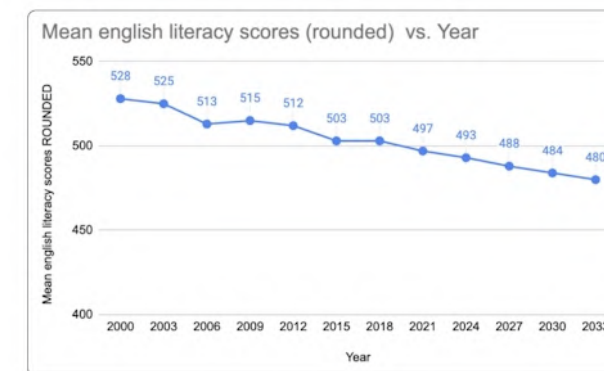
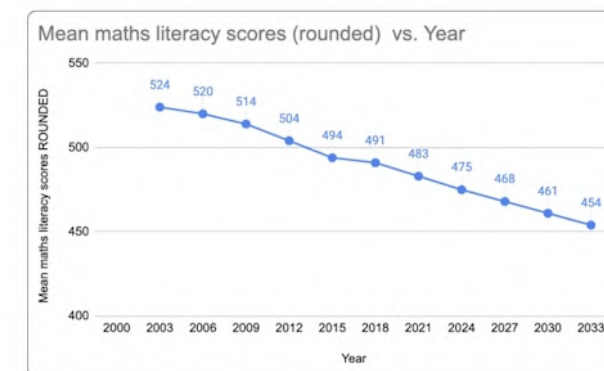
Image: AI Midjourney

Welcome to 2033. Education is now completely centralised at a national level due to productivity pressures; the curriculum is highly structured and education technology has delivered clear output, administrative efficiencies and consistent assessment metrics. The role of teacher has fast become one of 'instructing' a tightly defined syllabus as national policymakers continues to focus in on assessment testing as evidence of reform. However the centralisation of the education system has not led to an increase in productivity given the changing work environment. As the pace of edtech growth increases further, the rise of increasingly complex global markets and productivity begins to set a new pace . . the Australian education system begins to significantly lag behind its global counterparts. We see this in the 2033 OECD PISA Survey, where key metrics have been redefined globally to meet evolving future requirements, and resultantly Australian student receive their lowest scores in history.

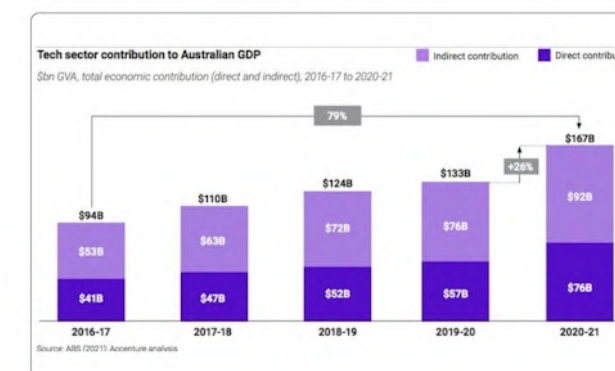
Whilst centralised policy reform and widespread education technology has increased the efficiency of communication and assessment between schools and government, educators and teachers on the front lines have struggled to adapt. Concerned parents have increasingly begun to intervene and seek alternative methods of education, either wholesale shifts to non-standard education or supplementing govt.-run education with AI tutoring and online or virtual alternatives. We see a host of international 21stC skill-based programs enter the virtual space; and the irony of the times is that whilst Edtech content management and administration technology is now Australia's number # 1 export, the majority of (socially advantaged students) are being educated by non-AUS online and virtual platforms which focus on capability development through project-based learning in a digital-native context.

Given declining productivity and stagnated teacher pay; high performing teachers are looking to international learning spaces to reskill and reconnect with future-focused educational communities and virtual educational markets. Given the large percentages of students engaged in decentralised schooling, we observe both a widening of disadvantaged and advantaged students, along with a major increase in Australia's brain drain as students are educated outside the traditional school system with a more global focus, and subsequently choose international post-graduate study. Australia's job market becomes disproportionately out of step with the global economy as Australia hits the capability ceiling inherently embedded within the current system.

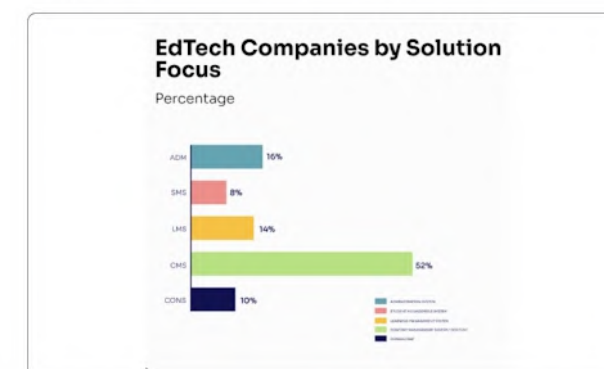
Australian students continue to decline.



Projected mean scores for Australian students calculated on existing [OECD Australian PISA Education Surveys 2000 - 2018](#).

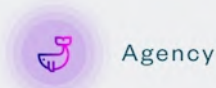


Australia's 2nd largest startup sector and 3rd biggest export continues to grow . .



. . with a continued focus on content management systems and administrative technology.

A pedagogical pilgrimage toward shared futures of possibility.



Warning: Partial Revolution Ahead

Image: AI Midjourney

LEARNING REPRESENTS A LIFELONG JOURNEY

Welcome to 2033 where the Personal Learning Paradigm (PLP) has become the single most important pedagogical framework within our learning ecosystem. Revolutionary education reform saw a global redefining of the roles of learner and leader - both now interchangeable, dependent on both the individual learner, and the context or pedagogical domain knowledge at play. Words like 'teaching' and 'instruction' have been replaced with 'coaching' and 'facilitating', and learners refer to themselves and each other as 'scholars'. Each proudly developing a digitally recorded body of work which incorporates both node-driven project work and external curiosity-driven passion projects. Education is no longer structured into primary and secondary grade groups with a definitive end. From age 14; learners' education pathway engagement time decreases marginally each year - as they connect with industry, government or thinktanks to supplement their bodies of work.

THE TECHNOLOGY OF BEST FIT WINS

Each year learners decide on their focus for the year; supported by leaders and coaches, which provides the frame through which they will naturally explore multi-discipline learning pathways on the journey towards production of an annual body of work. All learner-driven projects are developed within a real-world context and where appropriate utilise both physical maker skills, or whichever augmented reality or digital discovery tools are necessary to support the work. The choice of technology (or not), always starts with the single objective of best fit, for both project and learner.

There is no talk of the 'role of technology' or 'digital literacy', nor grading or examination. These 'bugs' of the old system have been replaced with continuous feedback loops of personal, peer and community reflection, which surface regularly in feedback sessions with personal learning coaches. Learning formats are flexible - mostly combinations of physical and virtual connection. Learners meet regularly face to face in local community-based groups, and also connect in with global virtual communities of practice that reflect both their chosen learning paths and personal interests beyond project work. Parents too, are connected with their children's learning via real-world support channels which operate asynchronously, together with community members who operate on a rotating basis, either as local connection points to provide context, guidance and support within communities, or domain masters who provide specialist support within their fields of expertise.

There is no edtech industry to speak of; but many students participate in the Critical Digital Futures Foundation (CDFF), made up of both local and global nodes, which interact with all levels of industry and government. Curriculum models are digital and dynamic, offering an ever evolving global playlist of nodes within each learning narrative, where each student is free to choose their own path.

CURRICULUM IS REPLACED BY DYNAMIC NODES OFFERING MULTI-DIMENSIONAL LEARNING EXPERIENCES

Foundational components continue to form critical parts of the pathway framework, but these revolve mostly around social emotional learning units, local & community history, and meta-learning modules (self-awareness & self-leadership as foundations for the development of agency). Like all governments, Australia contributes financially to the global learning library, but the majority of national educational spend is channeled toward the continual technology updates for every learner and leader, together with learning coaches, community node networks and system infrastructure.

Over time Australia's model shows itself to be a transformative investment for the economy. Most learners engage with formal education pathways until age 21 and continue to be engaged well beyond that in an episodic fashion. The reality is that most learners will continue to engage episodically throughout their lives, albeit within the informal education pathway program, and many will also choose to return and contribute themselves. Learners and leaders alike, embrace the idea of global citizenship through radical generosity and community-based learning, as the path to positive futures, instilled as strongly in them as the power of their own agency.

“The world is not a cul-de-sac.”

Paulo Freire

Education for Critical Consciousness

The Relationship of Things (RoT)

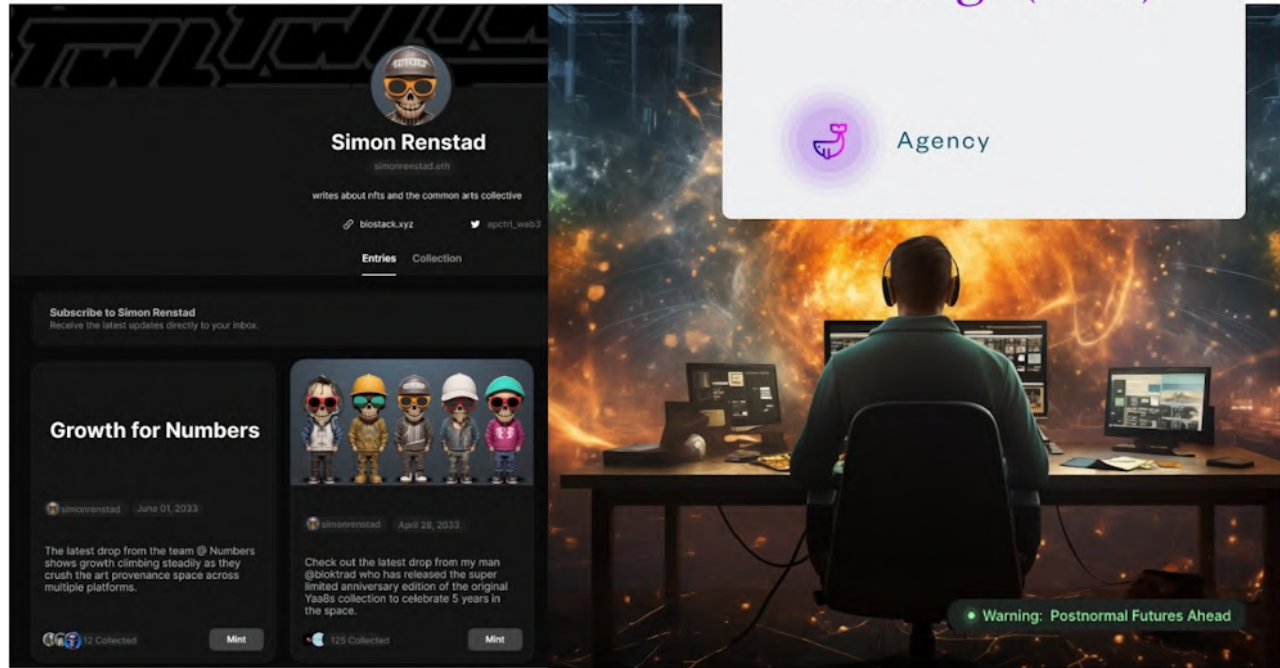



Image: AI Midjourney

It's been 10 years since I first started trading in crypto and 8 years since I parted company with what is now called OpenCampus - (the system formerly known as high school), which is almost completely unrecognisable. In 2027 a wave of privatisation swept across the educational landscape and more than 35% of private schools broke ranks with legacy church structures and pivoted to for-profit models led mostly by, you guessed it . . . Big Tech . . . By the end of 2029, these for-profit schools formed the Education Commons Collective and in 2031 expanded the Collective worldwide. OpenCampus reformed as a series of local and international networks. Learning is now available through a series of decentralised transparent blockchain-based platforms maintained by community white hats.

Peeragogy is the dominant educational approach now which doesn't surprise any of us. Content is open source and co-created by domain masters and students alike; while learners connect with personal learning coaches regularly to structure pathways that align with problem-based meta maps. These meta maps eventually form pathways towards earlywork opportunities (what we used to call careers), but unlike the school I went to, there's no age limit and people tend to get into it early nowadays. Besides, work doesn't mean what it used to. The idea of focusing your final school years training for a job with somebody else feels kind of ridiculous now. Like the education version of an old school "prepper" 🤪.

At OpenCampus kids create their own interdisciplinary work projects based around personal passions. For some kids . . . even just finding the passion can be a big step. I think one of the mandates is the selection of one wicked collaborative challenge project each year . . . you know, like water war strategy or climate refugees. But apart from that kids are free to pick almost anything, their learning coaches will help them shape it into something robust and purposeful. They mint these projects as Scholar NFTs, so they have them on-chain as proof-of-work which they can stack for subsequent connections. And by the way . . . proof of 'work', is whatever learners say it is. Facts.

Following your weird interest to the depths of its complexity is always going to be a more engaging and transformative experience than memorising sonnets. Bet . . . I still remember the security protocols I learned when I lost my first NFT buy to a rug pull. Just goes to show you remember the stuff that was meaningful. Each student belongs to a series of learning communities-of-practice, much like the unofficial ones I cultivated for myself in the old days of discord and slack. From what I can see, despite early misgivings from the NPCs, these OpenCampus hubs have been transformative. They offer a network of different learning mode spaces which learners can access at various stages of their problem-project pathways; super labs offer powerful physical technology, scientific equipment, creative production and manufacturing facilities, whilst immersive arenas and virtual cells invite exploration at every scale, time period and subject matter imaginable. The government's role has been reduced to community tech infrastructure and device supply. Who would have thought? The good news is that every region in the country has stable high speed internet and the latest fully subsidised laptops which get replaced every three years. We're all like - digital inequity? that's history man. It's hard to believe . . . had I been just a few years younger, that I could have literally developed my own path with support from inside the system. Still, I'm not feeling hard done by, there were plenty of people in my community who stepped up or reached sideways to scaffold me. Just as I've done for others along the way. As for me? . . . I'm a professional writer, can you believe that?! The guy that wouldn't dox because he was too freaked to put out his real name. Yep that guy who pretty much failed English. That's me . . . Simon Renstad and now I get paid to write for a living. Not a salary mind you, it's all attribution splits and networked commerce but it's more than enough. And it's not just about the money. When you work across these web4 platforms like I do, it's the acknowledgement from people who have read your work or better still, who have built on it and included you in their creative attribution protocols (with on-chain acknowledgement), that makes you get up in the morning.

I'm also a domain master for OpenCampus; I work across three areas - mostly Crypto, NFT design and lately, a new area I'm calling the Common Arts Collective. I co-create domain knowledge and problem-based meta maps with the hardcore students who are really into it; I hold regular digital spaces and physical meetups with students and learning coaches all over the world. All paid for by OpenCampus which is pretty rad. There's a couple of guys in my crypto class who are out of this world . . . they're teaching me stuff that would blow your mind. One of them is like sixteen I think and the other is only twelve. It's brilliant. That's the kind of stuff that makes you smile. . . I used to tell my mum I was a pioneer, and unbeknownst to me, I might actually have been right. Facts.

bet:
"yep ok", "it's on"
"for sure"

cap: a lie

mod:
to moderate in a
forum or to change
something

NPC:
non-role-playing
character. Someone
that is ready to
agree with popular
opinion
unquestioningly and
always believes
what they are told.
Someone who acts
robotic

PPP:
personal profile pic
used in spaces like
twitter + discord

yapping:
when someone talks
forever to an
uninterested
audience

white hats:
ethical hacker who
uses their skills
to identify
vulnerabilities

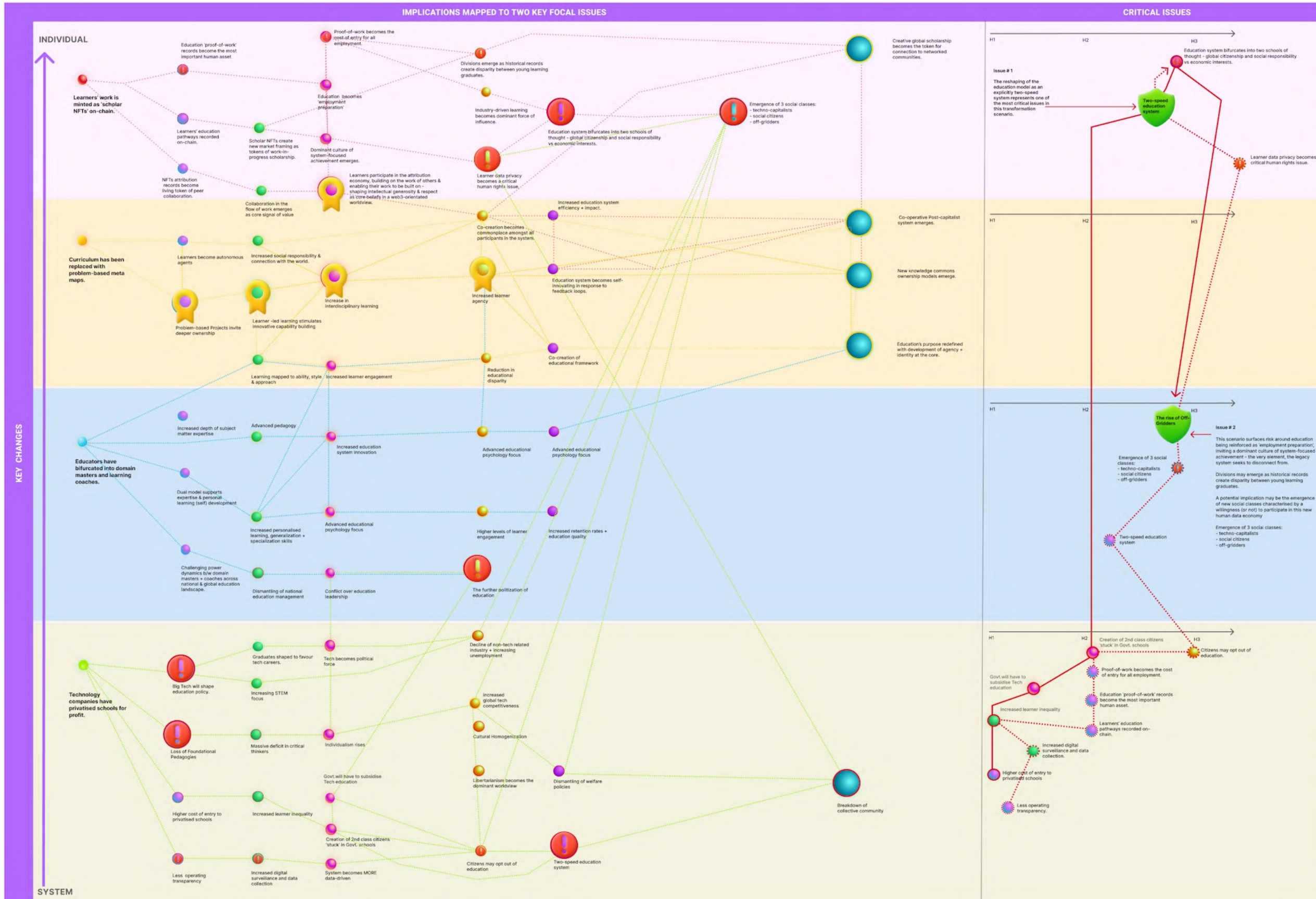
rug pull:
where fraudulent
developers lure
investors in to
what looks like a
lucrative new
project and then
disappear with the
funds.

doxxing:
revealing your own
or someone's real
identity

facts: the truth

KEY IMPLICATION MAPPING

Note: This implication map is presented in high resolution and can be viewed by enlarging the document size.



POTENTIAL FUTURE IMPLICATIONS OF A TRANSFORMATIVE SCENARIO



The Relationship of Things (RoT)

A POST-NORMAL TRANSFORMATION SCENARIO FOR 2033

The development of personal and collective agency through passion, curiosity and connected experiences locates learning in the flow of agency building, alongside social connection, relationship, community and shared experience.

- ! Most Provocative Implications
- ! Most Important Implications
- ! Key Focal Issues

By consolidating the key implications from the 4 Future Wheels we can identify the cross impacts of these emerging shifts and the most critical issues this scenario presents.

KEY CHALLENGE # 1 > TWO-SPEED EDUCATION SYSTEM.

In addressing the genuine transformation of education as a complex system; we are invited to consider opportunities for innovation and rebirth beyond the current political, economic, social and cultural discourse.

Attempting to reimagine education within the context of legacy worldviews, binds us to the very structural definitions which we seek to break free of.

Edtech's "progress or success" to date, rests squarely on its ability to provide solutions to current urgent challenges within the existing frame (a need for technology integration, balanced with increasing administration, resource shortages and remote requirements). A frame in which few other alternatives are being offered.

As we consider the most critical issues surfaced in the Transformation Scenario; it is useful to remind ourselves that the existing framing of education's challenges originates from a historical, locally constructed wellspring within which the worldviews that frame our understanding of education include:

- Knowledge as mostly singular & static
- Learning as linear
- Technology as tool
- Curriculum as pathway
- Assessment as the best measurement of progress
- Improved educational productivity as success

Accepting that these beliefs are localised historical worldviews rather than objective neutral standpoints, it follows that discussions around pedagogical adaption and technology integration become increasingly moot. Which is not to say that pedagogy itself is unimportant, but rather . . . it is necessarily not the only starting point nor pathway to a rigorous future-focused learning experience.

At this stage of the project in addressing the most critical issues and potential options moving forward; it's worth remembering that the reframe of the problem I seek to address is the one that reflects our new understanding of this future system. The possible imagined futures then, represent possibilities which are defined by how we choose to define the question. That is: How might we reconceptualise education to better prepare our students for possible futures?

The challenge with a significant proportion of schools being privatised for-profit by Big Tech, is that it partially reshapes the system, leaving a two-speed education system in its wake. This is problematic for two reasons:

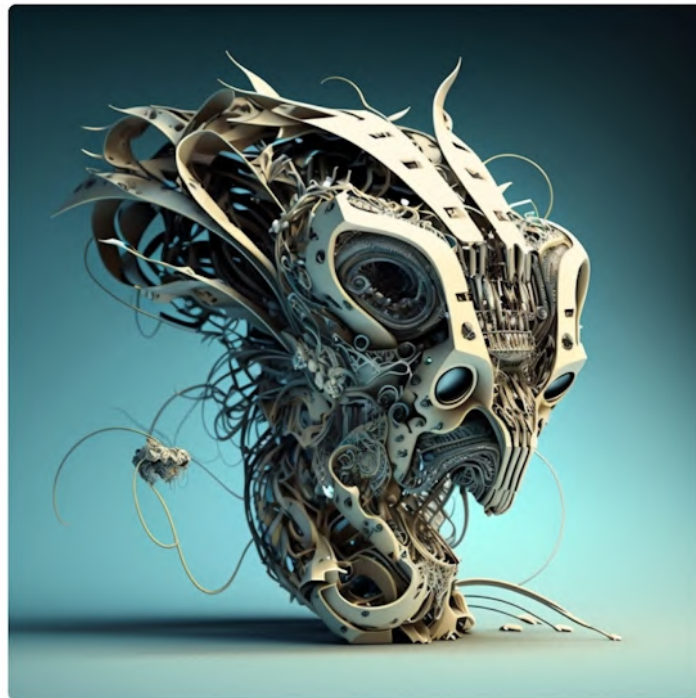
It reinforces the bipolarity of legacy power, influence and connection dynamics that might otherwise be reshaped by a wholesale multipolar educational system that surfaces increased international connectivity and cross-system collaboration. Big Tech's privatisation of a proportion of schools (leaving a proportion of govt. schools within the legacy system) sees that any possible 'transformation future' surfaces within a bipolar world context where the local tensions between dominant political and economic systems continue to interact with what can only be, a *partially reformed* education system. Unlike a multipolar system where power (connection, influence and agency) would be *distributed throughout* the system, the bipolarity of the two-speed education system likely further increases the politization of education, and makes wholesale decentralisation and networked value impossible.

It further amplifies inequality as a system feature. By partially reshaping the the old system, we are left with a vacuum through which this damaging dynamic will continue to develop. Technology, future work, culture and life is changing exponentially *faster* than the pace of education reform. On every front technology is and will continue, to *disrupt* the status quo - not just within a learning or work space, but within modes of connection, communities of practice, pathways to agency and identity, and learning as part of the transformative social connective process.

Just as children cannot be controlled through authority alone, or forced to learn without personal enrolment . . . **nor can we ignore the disruptive change emerging elsewhere.** The complex adaptive system that is education, in the broadest sense (including informal + formal, school + non-school), will continue to change and respond to the external global environment, whether schools innovate or not. As we see in the younger generation already playing at the edges of these futures; non-linear interactions are building scale and will generate their own self-organizing patterns, eventually re-organizing and/ or initiating system change *in some form*.

These emergent changes will surface and change will continue, whether the individual components (legacy schools) change or not. This is the nature of complex adaptive systems. If we accept this; then we accept that the risk of radically rethinking education and considered experimentation is no greater than the alternative. That there are no 'safe' bets. It is only by embracing the uncertainty that exists between our ideas about historical order and future chaos, that we can hope to reshape the system with both the stability + flexibility that our potential futures demand.

In short; reimaging the education system is not something we can do by halves.



“Privacy is not an “option” and it shouldn’t be the price we pay for getting on the internet”.

Gary Kovacs

KEY CHALLENGE # 2 > THE RISE OF OFF-GRIDDERS.

In the transformative scenario, the converging of several key drivers of change will potentially create internal system volatility and risk for many of its participants. The takeover of a significant proportion of schools by Big Tech sees existing (predominantly) tech-centric issues around privacy and security migrate into the education space. Assumptions around decreased operating transparency and data-driven operations elevate concerns around data security and data privacy.

The recording of learner pathways on-chain amplifies concerns around historical record keeping and digital privacy, especially for young learners as they find their way. On-chain learner records offer the potential for deeper participation in the attribution economy, building on the work of others & enabling their work to be built on - shaping intellectual generosity & respect as core beliefs in a web3-orientated worldview.

The potential development of new market framing as ‘Scholar NFTs’ become tokens of ‘work-in-progress’ and education ‘proof-of-work’ become important individual assets - foreshadows a darker underside where ‘proof-of-work’ becomes the cost of entry for employment. This scenario underbelly surfaces risk around education being reinforced as ‘employment preparation’, inviting a dominant culture of system-focused achievement - the very element, the legacy system seeks to disconnect from. Divisions may emerge as historical records create disparity between young learning graduates.

A potential implication may be the emergence of new social classes characterised by a willingness (or not) to participate in this new human data economy. Here we imagine the possible rise of:

Techno-capitalists

Those content to roll with the system to full advantage.

Social Citizens

Those who focus their work and activity on-chain around collaboration and connection, ignoring the increasing tendency toward system ‘success’ metrics or employment-focused activity.

Off-Gridders

Those who reject increased data transparency and perceived on-chain surveillance as determinants of future worth. They may revolt and opt out of education altogether, going ‘Off-Grid’ in a rejection of this new world order.

In this scenario, learner data privacy becomes a critical human rights issue and must be addressed.

How best to prepare young people for the world ahead so that they might find a purposeful place within it, to connect, contribute and participate as global citizens?

+ **CRITICAL ISSUE # 1**
Two-speed Education System

+ **RECOMMENDATION**
A Multipolar
Posture. Fake it
til you make it.

+ **ADAPTIVE CHALLENGE**
Radical Acceptance.
Unconventional Experts.
Disruptive Experimentation.
Reflect. Rinse. Repeat. Share.
• Requires new learning in order
to be addressed.

+ **WHO OWNS IT?**
This strategy should reflect a
multipolar approach,
incorporating both formal,
informal and external actors
that reflect the nature of the
challenge. That is to say,
the Education Futures Lab
should take a *multipolar*
posture, be decentralised,
autonomous, technology-
positive and community-driven
with agency for *all actors*,
at its very core.

TAKE A MULTIPOLAR POSTURE. FAKE IT TIL YOU MAKE IT.

At each point we must consider: Is this truly disruptive? How are we getting in our own way? Who wins in this scenario and who loses? Which parts make us uncomfortable? Where is the shared vision? Where else might we look for inspiration, innovation or a disruptive reframe?

FIND YOUR PEOPLE

Given the enormity, multi-faceted and complex nature of this task - cultivating a community is critical as you begin this adventure. A solid first step would be to create an Education Futures Thinktank that includes insiders, outsiders, academics, entrepreneurs, students and curious committed strategists (both inside and outside the system) who play from both the centre *and the edges*.

It is also critical that Big Tech are deeply engaged with this new process. In order to mitigate lone actors (or industry) fragmenting the existing system further, we need to ensure that they are part of the solution from the beginning. Find the unconventional experts, the committed outliers. Use future-focused structures and modes of operation that reflect the future possibility you seek to create - the focus here is global, self-driven, decentralised participatory network structures and knowledge nodes, that invite a radical rethink of education as a system.

In creating this community of practice, the sum of whose scale and innovation will be far greater than any individual part . . you will start not just to strategise and imagine, but to *experience* the future possibility ahead of you. Hire industry experts to identify, gather and cultivate deep community connection and start to build an open Knowledge Common as the foundation step. Progress moves at the speed of trust; so get serious about developing real networked relationships with people who make you uncomfortable. Gather up the incredible thinking already being disseminated across the globe, and utilise it to create new worldviews about what and how this new system might emerge.

SERIOUS PLAY

Identify those key actors who are already working to redefine challenges and redraw boundaries. Consider other projects which have tackled wicked challenges (e.g. South Africa's post-apartheid remodelling through scenarios) and charge each group with the responsibility to develop a series of hypothesis, scenarios and action plans to help us meet the future head on.

Each group will develop a series of small scale considered experiments that test the edges of their hypothesis. Their experimentation will focus around a small selection of schools, teachers and methodology. They will need funding - redirect govt. funding but also seek private contributions to bolster this think tank with both entrepreneurial input as well as financial support.

Share everything. Ask advice. Seek feedback from those who disagree. Find naysayers who push you harder. Consider the core tenets of 21stC skill building and nominate a skilled facilitator to hold each group accountable - are the pushing boundaries, is the group autonomous, merit-driven and most importantly . . are they building resilience by purposely reshaping new parts of the old system?

How are they seeing the future? How are they redrawing boundaries? What conventions have they upheld and which constraints have they ignored? How are they thinking about what 'success' or 'progress' might look like? What new language is needed to articulate this new emerging landscape? How would a multipolar posture put a different lens on the ways of working and connecting? How can we incorporate the visions and imagination of Big Tech into our thesis' about the future? This stage will be as much about development of the self within each person in the group, as development of the system.

THE FIRST 3 EXPERIMENTS

After reviewing all the current actors, their networks and participatory communities involved in the imagining, development and dissemination of alternative images of the future - select three small scale projects across the group, the three most impactful projects and scale these up across every school - public and private.

These experimental projects should not be destructive to the current system run in parallel. Just as large corporations may 'incubate' new ideas within intrapreneurial startup modules inside the larger organization - so too, can new models be incubated within the current system.

Critical requirements during this phase will be:

- Govt. + philanthropy funding for both public and private institutions. This must be a top priority and funded adequately to ensure impactful deployment. Remember the goal here
- Considerations of access, device and existing levels of digital literacy.
- Strategic scaffolding + global community building within education, Big Tech, Govt and key actors across a multitude of networks will be critical to this implementation - both for execution and feedback loops.
- This cultivation of a multi-polar global education futures community will be critical.

CRITICAL ISSUE #2
The Rise of Off-Gridders

RECOMMENDATION
The Protection of Crowds.

ADAPTIVE CHALLENGE
We have some work to do.
• Requires new learning in order to be addressed.

WHO OWNS IT?
The Government Agency responsible for citizen data protection and privacy (in collaboration with Education Futures Lab leadership) should lead this initiative.

THE PROTECTION OF CROWDS

At each point we must consider: Is this truly disruptive? How are we getting in our own way? Who wins in this scenario and who loses? Which parts make us uncomfortable? Where is the shared vision? Where else might we look for inspiration, innovation or a disruptive reframe?

A COMMUNAL META-DATA MANIFESTO

Regulation cannot keep pace with the issues emerging around privacy and security as technology increases exponentially. This first stage involves the development of a series of guiding principles around how learning (and coaching) data should be used. This includes what data is visible and to whom; which data should be recorded on-chain and the possible implications of this. It may also recommend a data strategy (and guiding schema) for individuals, learning coaches and domain masters.

The legacy system has introduced technologies and captured data (including learners' work) with little regard for the ownership, control and management of access to that data from the user POV. Further to that, there has been no consideration of ownership rights (of both coaches and learners) - this transformative scenario is likely to elevate those concerns rapidly.

A Meta-Data Manifesto should acknowledge all data belongs to the user who created it, regardless of circumstance. Likewise, it should seek to decouple from legacy ideas about 'system efficiency' and 'feedback loops' generated from learner data captured and utilised without permission as it is likely these kinds of frameworks will be looked upon no more kindly than retail chains using data for marketing in the future.

Whilst there is much to be considered, a manifesto is a solid first step towards intentions and guardrails, and will be critical for all actors within the system.

NETWORKED MECHANISMS OF INTENT

You've got your manifesto; here's where the rubber hits the road. This phase involves the proactive collaborative development of global standardised learning metadata protocols that give consideration to:

- credibility of data
- governance or compliance (both personal and collective)
- intellectual property and copyright
- attribution and compensation
- immutable content creation as standard

Technology solutions should encompass the deliberate and non-deliberate capture of information, how information is accessible / visible, how it may be queried, stored, analysed and used.

Web 3's decentralised architecture offers a solution to centralised data control and ownership, it enables the decentralization and democratization of data, empowering learners to store and share their data on decentralised networks, and will enable greater ownership and control.

Likewise the use of public blockchains will ensure greater transparency, security, and simpler data lineage tracking to establish clear chains of custody. Despite these measures, there will be a continual stream of issues around provenance, authenticity, ownership and access control that will need both proactive approaches where possible, and swift thoughtful responses when not.

THE HUMAN SOLVE

Off-Gridders' concerns in this space extend beyond data privacy protocols and provenance records. At heart, these concerns revolve around the core idea of human value. How we value each other, what that looks like and how increasingly networked data systems may become a proxy for those value equations. Publicly.

Just as we seek to decouple the current system from the legacy worldviews and mythologies around power and control, productivity and 'progress' . . . so too must we work tirelessly to ensure that in scenarios like these, tokens represent connection points, flagship marks of collaboration and craft . . . not value judgements, corporate employment entry points or filter stage gates.

Limited higher education digital passports aside; the idea that everything you've worked on during your younger years might be used to assess your 'worth' or economic value is understandably frightening. The manifesto and mechanisms will provide boundaries and stop gaps; but no one feels comforted by the thought that "they can't . . . but they might if they could".

This piece of work won't be an easy solve nor a quick fix. It will require the building of new narratives around learning, what it means to progress in your own personal learning journey both individually and as part of a global collective. It will be a long process, with many wrong turns and false starts, but even the starting of this process means it matters to you. And that's more than we can say for the current system.