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.

Jen Stumbles / #2341941 / jstumbles@uh.edu / FUTURES RESEARCH / FALL 2023
UNIVERSITY HOUSTON MASTERS PROGRAM

Agenda

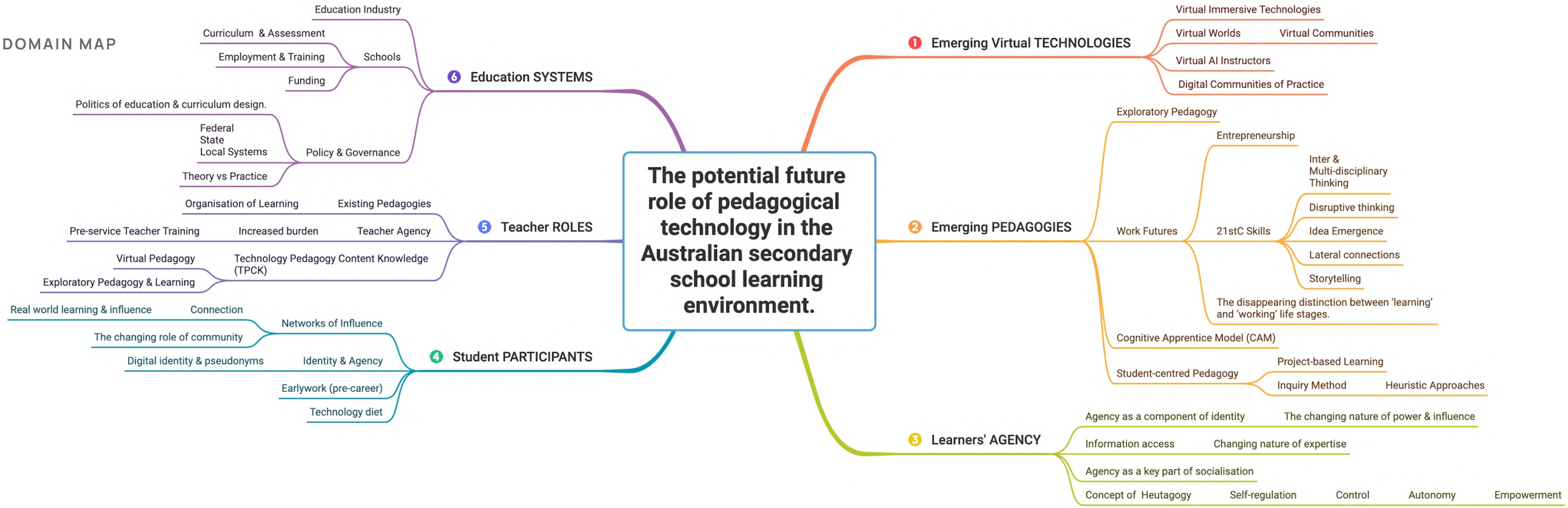
The future is not our destination. It is our great constraint: we can only build what we can imagine. The future is a story we tell ourselves about ourselves, a shared dream to be realized through shared effort, a horizon of infinite possibilities limited only by our vision.

The future consists not of atoms or bits, but imagination. It is not the endpoint of a deterministic trend, but contingent and always subject to reinvention. The future is a question to be answered by what we choose to do next.

We all imagine possible futures all the time. What do we want to be when we grow up? What should we make for lunch? What if we dropped everything to travel to a distant land? What kind of world are we leaving to our children? To be human is to speculate.

ELIOT PEPPER

DOMAIN MAP



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.

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

DOMAIN DEFINITION

The potential future role of pedagogical technology in the Australian secondary school learning environment.

The accelerating pace of disruptive technology, exponential increases in generated knowledge and the urgent need to prepare students for a dynamic and non-linear path to future work; means we need to radically accelerate the necessary shift from a teaching to a learning paradigm, with a profound focus on 21st century skill building and the technologies which enable them. This domain focuses on the potential pedagogical role technology; and its potential place in the future Australian secondary school learning environment.

TYPE: **EXPLORATORY**

KEY LINES OF ENQUIRY

How will 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?

Australia's Education System

PRIMARY SCHOOL

Year 1 to Year 6

SECONDARY SCHOOL

Year 7 to Year 12

UNIVERSITY

① Chris. (2022, August 26). *The Difference Between Virtual Worlds and MMO Video Games*. ImetMeta - a Helpful Guide to Exploring the Metaverse. https://imetmeta.com/the-difference-between-virtual-worlds-and-mmo-video-games/ Accessed 28 August, 2023.

② Appinventiv Insider. (2020). Virtuality Reality Spectrum [Image]. In *VR vs AR vs MR vs XR – An Explanatory Guide for Everyone*. https://appinventivinsider.medium.com/vr-vs-ar-vs-mr-vs-xr-an-explanatory-guide-for-everyone-2eab9d44d09b. Accessed 28 August, 2023.

③ Sibbald, S. L., Burnet, M. L., Callery, B., & Mitchell, J. (2022). Building a virtual community of practice: experience from the Canadian foundation for healthcare improvement's policy circle. *Health Research Policy and Systems*, *20*(1). https://doi.org/10.1186/s12961-022-00897-0. Accessed 28 August, 2023.

④ Southgate, E., Blackmore, K., Pieschl, S., Grimes, S., McGuire, J. & Smithers, K. (2018). Short read: Artificial intelligence and school education. Newcastle: University of Newcastle, Australia.

Current Assessment

Current Assessment

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 we're exploring in this project is - what future role might pedagogical technologies play within the Australian secondary school system?

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.

FRAMING THE CURRENT ASSESSMENT

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.

THE UNCERTAINTY OF PREPARING FOR A NEW WORK FUTURE

OCCUPATIONAL HAZARDS AHEAD

We're now operating within a global system of dynamic change, where some parts are moving quickly and increasing velocity at a faster rate than others. This is compounded by emerging technologies and global uncertainty about what the future of work will really be like. ⑨

Two Oxford researchers, Carl Benedikt Frey and Michael A. Osborne, published "The Future of Employment," in which they surveyed the likelihood of different professions being taken over by computer algorithms within the next 20 years. ⑬

Spoiler alert; it's not pretty.

DRIVER: FUTURE SKILLS

A NEW LIFESPAN MODEL

"The digital revolution needs a new model of work. For thousands of years, the model was linear. First, you learn, then you work. This model is now becoming irrelevant. People can't expect to retain the same job or even the same profession all their life. People must continually relearn skills and new professions." Yuval Noah Harari .

This idea that we have a 'learning stage' of our lives and a 'working stage' of our lives seems redundant when we're faced with a global system of dynamic change and increasing lifespans in Australia and across the developed world. We're already seeing this manifest in policy with the Australian government raising the retirement age and many expect the govt. will raise it again in time.

CASCADING DISRUPTION VIA AUTOMATION AND AI

The rapid rise of AI has fuelled concerns over job automation and what the future holds for students entering a new workforce. We can look to measures such as Robot density rises globally as evidence of this trend taking hold.

"Even if you can adjust, it might not be a long-term solution because the job market will continue to change. Automation is not a one-off event. It will be a 'cascade of ever bigger disruption'."
Yuval Noah Harari

DRIVER: UNCERTAINTY

STUDENT-LED LEARNING & AGENCY

Education leaders want students to have more autonomy, from what they learn to how the classroom operates. In fact many argue that 'student agency must become the norm, not the exception. ⑧

⑬ Frey, C. B., & Osborne, M. A. (2017). The Future of employment: How Susceptible Are Jobs to computerisation? *Technological Forecasting and Social Change, 114*(1), 254–280.

⑧ The 'Future of the Classroom' report, by Google for Education, Emerging Trends in K-12 Education, Australian Edition, 2019. ⑨ Hernes, Gudmund & UNESCO,. (2002). Emerging trends in ICT and challenges to educational planning

DESIRED LEARNING OUTCOMES ARE BOTH COMPLEX AND MULTI-FACETED

STUDENTS' 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. ⑨

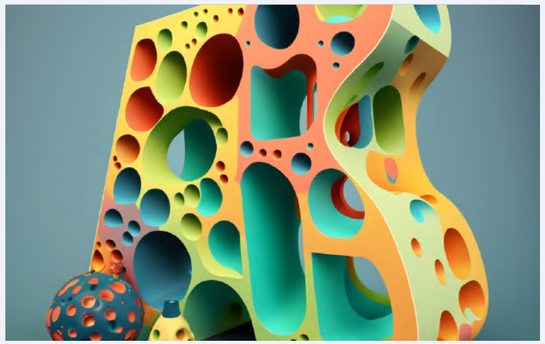
DRIVER: AGENCY

POLITICALLY-DRIVEN REFORM

Government educational reform is driven by future market-dynamics; which reinforces the idea of education as an 'output-focused' system, thus resigning technology to the role of 'enabler'.
The Australian government's defunding of liberal arts degrees is one example of this shift.

THE CHALLENGE

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 must 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.



CONSISTENTLY INCONSISTENT

The Australian states and territories are educationally and politically independent which further complicates the frame; and we know from research that the type of technology education experienced by students in some schools does not always mirror the current curriculum definitions of technology education at a national level.

We also know that when technology curriculum is introduced at national level, it can take years to be implemented in each state locally. For example, the Australian government introduced the Digital Technologies curriculum in 2014 and NSW was the last state to implement it in 2019. ⑫

⑨ Hernes, Gudmund & UNESCO,. (2002). Emerging trends in ICT and challenges to educational planning

⑫ Williams, P John. (1993). Technology Education in Australia: Twenty Years in Retrospect. ECU Publications. 3. 10.1007/BF00183707.

THE PEDAGOGY DISCONNECT

DISCONNECT BETWEEN PEDAGOGY, CURRICULUM, ASSESSMENT AND DESIRED LEARNING OUTCOMES

The education curriculum seems to assume a continuing status quo of sorts in its negotiation of the role of technology in secondary school education. Which is not to say that there is no progressive pedagogies evolving to meet this challenge (the TPACK framework is one example), but rather . . . the focus on 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 learning area and neglects the very shifts which make technology so important. ⑨

DRIVER: DISCONNECTION

FRAGMENTATION 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 it has been categorised according to an instrumentalist output-focused approach around skills - either computer programming or design and production OR a generalised knowledge subject.

The Australian secondary school curriculum presents technology through two strands 👉

TECHNOLOGY AS PROCESS AND PRODUCTION SKILL

Australian Secondary School Curriculum for Year 9/10 Design Technologies subject covers areas such as: ⑩

- Develop understanding and confidence using technology for designed solutions
- Produce designed solutions by selecting and manipulating materials, systems, processes and tools / equipment

and the Yr 9/10 Digital Technologies subject.covers areas such as: ⑩

- Relationships between hardware, software and applications
- Robotic process control systems
- Data visualisaton, modelling, protection, encryption and management

TEACHERS STILL AT THE HEART

The most prominent technology being used in Australian schools (utilising learning management systems such as Blackboard or Google Classroom) continues to reinforce a teacher-centred pedagogy model.

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 / self-directed activity or a more immersive technology approach might invite. ⑳

⑨ Hernes, Gudmund & UNESCO, (2002). Emerging trends in ICT and challenges to educational planning

⑩ Australian curriculum - Year 10 technology curriculum outline example] ⑳ 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

MIND THE GAP

DISCONNECT BETWEEN TECHNOLOGY PEDAGOGY AND THE INDIVIDUAL EXPERIENCE

The obvious gap here seems to be the lack of identification or acknowledgement, of the body of knowledge within which technology exists, and the systems which create & shape change, and human experience within it. Further to that, utilising Richard Slaughter's integral approach to environmental scanning ⑪ as a helpful lens; the current approach is unable in its current frame, to explore 👉

DRIVER: DISCONNECTION

THE INTENTIONAL / INTERIOR COMPONENT OF STUDENTS' CURRENT AND FUTURE TECHNOLOGY EXPERIENCE

The shifting motivations, perceptions, goals and sense of purpose that technology invites for a younger, digitally-native generation.

DRIVER: DISCONNECTION

THE CULTURAL / INTERIOR COMPONENT OF STUDENTS' CURRENT AND FUTURE TECHNOLOGY EXPERIENCE

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.

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. Furthermore, 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?

DRIVER: DISCONNECTION

⑪ Slaughter, R.A. (1999), "A new framework for environmental scanning", *Foresight*, Vol. 1 No. 5, pp. 441-451. https://doi.org/10.1108/14636689910802331

PARADIGM CHALLENGES

DRIVER: DISCONNECTION

> Most of what kids currently learn at school will probably be irrelevant by the time they are 40.

> 99 percent of human qualities and abilities are simply redundant for the performance of most modern jobs.

PARADIGM CONSTRAINTS

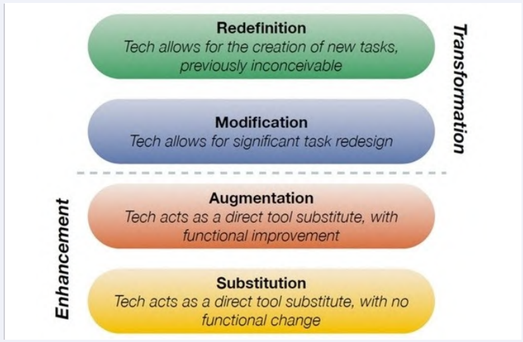
Identifying the real potential value unlock for technology in secondary school education is challenging within the current Australian secondary education framework. Historically the Australian curriculum has taken a fragmented approach to learning by breaking knowledge apart into subjects and disciplines.

"We make the assumption that the parts will add up to a coherent whole, and that the whole is indeed merely the sum of the parts." (Beare & Slaughter, 2021) ⑫

The challenge Slaughter identifies here, is that our students are preparing for a work future within a post-industrialised context where their hopeful employment will be radically different from previous generations and likely to be radically disconnected from the school system within which they are being prepared.

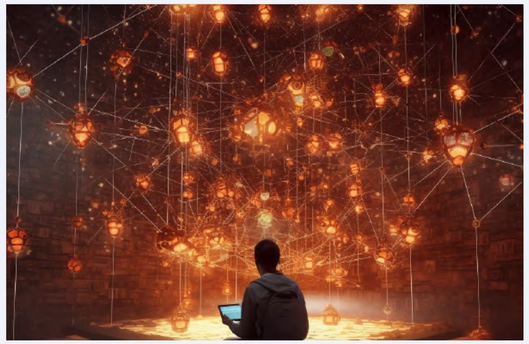
"Most of what kids currently learn at school will probably be irrelevant by the time they are 40."
(Yuval Noah Harari, ideas.TED.com)

DRIVER: MYTH OF PROGRESS



PARADIGM CEILING

Technology use in schools remains for the most part, at a substitution / augmentation level of adoption. The mainstream education system approach is driven in large part, by their collective belief system about the nature of technological pedagogical knowledge. We see the emergence of a new school of thought around technological and pedagogical content knowledge (TPACK) ⑮ which Simon Baddeley builds on further by extending the model to TEPACK: Technological Evidence-informed Pedagogical and Content Knowledge ⑯
At first glance this feels like a worthy addition to the development of a more robust frame; but upon reflection, invites the same self-limiting empirical approach to technological integration that ensures technology remains on the periphery.



The latest Campion report⑲ reinforces this limited perspective on technology's potential contribution stating 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

DRIVER: MYTH OF PROGRESS

⑫ Beare, H., & Slaughter, R. (2021). *Education for the Twenty-First Century*. Routledge. ⑭ https://ideas.ted.com/the-rise-of-the-useless-class/ ⑮ Australian Digital Technologies Hub ⑯ Edtech in the Classroom, Simon Baddeley, 2020 ⑲The Digital Landscapes in Australian Schools 2023 Report, Campion Education

INFORMAL FALLACIES CLOUDING THE DEBATE

DRIVER: DISCONNECTION

IMPROPER ASSUMPTIONS

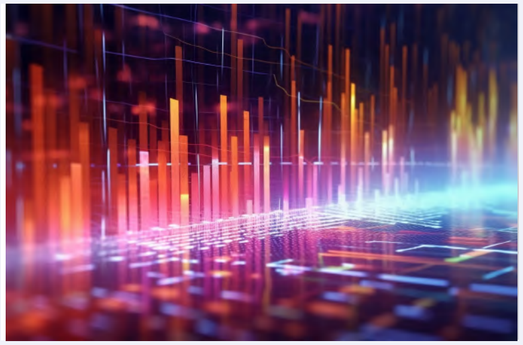
The Australian Technology Curriculum tends to view technology as a 'tool' without understanding or realising its true potential as the harbinger of future states. If we continue to consider technology from an instrumentalist point of view, disconnected from the broader system of social, economic, political and environmental forces within which it operates, we do both ourselves and our children a great disservice. (Beare & Slaughter, 2021)

Slaughter's view is that our outdated notions of Industrialism have not only driven (and continue to drive) curriculum content, but the very nature by which we consider the entire educational system.

ERRORS IN ASSIGNING CAUSATION

Some research studies exploring education within the virtual world have reported that after considerable investment of resources in virtual world learning spaces, it could be said that the use of virtual worlds (might) have reached the "plateau of productivity. (Gregory et al., 2015) ⑰

Given the multi-paradigmatic nature of virtual world experiences; education experimentation without the necessary funding, resources, training and also potentially, a lack of understanding about, to quote Slaughter, *ways of knowing,* of learning and *ways of being in these spaces,* means we should be wary about generalising any results of these early research studies.



FAULTY GENERALISATIONS : THE JEKYLL AND HYDE DUALITY

Much of the discussion around current technology use amongst Australian school children is inextricably linked to e-safety and technology concerns. The key theme of "the dual power of technology" noted in the 'Growing up Digital Report' ⑨ mirrors the latest eSafety Commissioner report ⑱ - highlighting whilst parents believe that technologies can enhance learning, they also surface a host of other concerns relating to both safety and behaviour challenges which affect their perspectives toward technology in general.

73% of parents are concerned about the negative impacts of digital technology on physical activity levels.
62% are concerned about childrens' attention spans
73% think it is harder to control their child's digital habits once the child has their own screen device (which most do).

⑨ Growing up Digital Australia, Phase 2 Technical Report, 2021, UNSW Gonski Institute for Education ⑫ Beare, H., & Slaughter, R. (2021). *Education for the Twenty-First Century*. Routledge. ⑱ Parenting in the digital age | eSafety Commissioner. (2022). ESafety Commissioner. https://www.esafety.gov.au/research/parenting-digital-age

⑰ Gregory, Sue & Scutter, Sheila & Jacka, Lisa & McDonald, Marcus & Farley, Helen & Newman, Chris. (2015). Barriers and Enablers to the Use of Virtual Worlds in Higher Education: An Exploration of Educator Perceptions, Attitudes and Experiences. Educational Technology & Society. 18. 3-12.

SCALE OR FAIL

DRIVER: MYTH OF PROGRESS

DRIVER: MYTH OF PROGRESS

SAY WHAT?

2015 | BBC

TECHNOLOGY PEDAGOGY DISCONNECT

2019 | Google Future of the Classroom Report ⑧

THE BURDEN ON TEACHERS

2019 | Google Future of the Classroom Report ⑧

TECHNOLOGY AS ENABLER BUT OF WHAT?

2019 | Google Future of the Classroom Report ⑧

FINDING A FUTURE FIT

2019 | Google Future of the Classroom Report ⑧

INCREASING DISTRACTION

2021 | Growing up Digital Australia, UNSW Gonski Institute ⑨

ENHANCED LEARNING

2021 | Growing up Digital Australia, UNSW Gonski Institute ⑨

⑧ The 'Future of the Classroom' report, by Google for Education, Emerging Trends in K-12 Education, Australian Edition, 2019.

⑨ Growing up Digital Australia, Phase 2 Technical Report, 2021, UNSW Gonski Institute for Education

Key Stakeholders

01

GOVERNMENT& POLICYMAKERS

Government Education Ministers and Policy Advisors at a National (Federal) and State / Territory level.

Educational reform is inherently political and difficult to manage between national and state governments. Pressure from Govt, educational thoughtleaders and think tanks like OECD makes for a difficult job.

02

SCHOOL PRINCIPALS

School Principals and leaders across state-funded and private independent secondary schools.

All schools are struggling with a lack of resources and teacher shortages at present. There is pressure on private independent schools to be at the forefront of educational progress and inline with international best practices, especially across career-preparation modules and technology approaches.

03

TEACHERS

Secondary school teachers across all disciplines including (but not limited to) technology or ICT.

Technology in secondary schools sits both within the curriculum subjects outlined in this assessment, and also within individual disciplines (although mostly as a substitute or augmentation tool).

04

PARENTS

Parents of secondary school aged children in Years 7 - 12 (age approx 12 - 18).

Parents have a dual perspective on technology. They are both anxious to ensure their children are being prepared for the workplaces of the future, but personal experience in the home (managing screentime) clouds their experiences.

05

STUDENTS

Students in Years 7 - 12 at state-funded or private independent secondary schools.

Students use of technology is widespread across learning, socialising and gaming. 4 out of 5 students have at least one device for their own personal use with an average of 3.5 devices per child. They are enthusiastic about technology and regularly use it within the flow of learning work.

06

EDTECH INDUSTRY LEADERS

There are approx 600 educational technology companies in Australia (both pedagogical technology and administrative academic technology).

The edtech industry in Australia is expected to grow at an annual rate of 9.38% with a projected market volume of USD174.50m by 2027. ㉑ Edtech leaders have a vested interest in maintaining the narrative of edtech driving change and increased opportunity within the education space.

㉑ Education - Australia | Statista Market Forecast. (n.d.). Statista. Retrieved September 6, 2023,

TIMELINE OF CHANGE

	2010	2011	2014	2020	2022
GLOBAL SYSTEM				2021 UNESCO develops a framework to guide educational policymakers in preparing for the increasing role of AI **UNESCO AI Guide for Education Policymakers**	
EDUCATION SYSTEM	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	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 **Australian Digital Technologies Curriculum**	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	A review into Australian Computer Education identifies key challenges remain around a national approach, teacher support & training, increased investment and pedagogical transformation. ① **AustralianComputer Education Review** 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	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.		New South Wales is the last state to introduce this curriculum in 2019		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	**Social & Virtual Learning**	**MOOCs**		60% of Australian Edtech is focused on the secondary school market . ②	
GROWTH OF EDTECH INDUSTRY			The Australian EdTech sector has undergone rapid growth, doubling in size between 2014 and 2019. ⑤	Total revenue in the Education market was projected to reach US$106.00m in 2022. ④	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

① Computer education in Australian schools 2022 Report. ② Deloitte EduGrowth Report, 2020 ③ Encouraging signs for Australia's edtech market with solid growth expected ④ Australian Market Insights, Statistica ⑤ EduGrowth

TIMELINE OF CHANGE

	2010	2011	2014	2020	2022	
GLOBAL SYSTEM				2021 UNESCO develops a framework to guide educational policymakers in preparing for the increasing role of AI **UNESCO AI Guide for Education Policymakers**		
EDUCATION SYSTEM	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	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 **Australian Digital Technologies Curriculum**	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	A review into Australian Computer Education identifies key challenges remain around a national approach, teacher support & training, increased investment and pedagogical transformation. ① **AustralianComputer Education Review**	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	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.		New South Wales is the last state to introduce this curriculum in 2019		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	**Social & Virtual Learning**	**MOOCs**		60% of Australian Edtech is focused on the secondary school market . ②		
GROWTH OF EDTECH INDUSTRY			The Australian EdTech sector has undergone rapid growth, doubling in size between 2014 and 2019. ⑤	Total revenue in the Education market was projected to reach US$106.00m in 2022. ④	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

① Computer education in Australian schools 2022 Report. ② Deloitte EduGrowth Report, 2020 ③ Encouraging signs for Australia's edtech market with solid growth expected ④ Australian Market Insights, Statistica ⑤ EduGrowth

TIMELINE OF CHANGE

	1980	1990	2000	2008
GLOBAL SYSTEM				
EDUCATION SYSTEM	Senior secondary computing subjects mirroring introductory (first-year) university subjects were introduced .①	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 More generalist computing courses that appealed to a wider range of students. ① 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 **A Statement on Technology for Australian Schools**	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	The Commonwealth Digital Education Revolution gives high school students 1:1 computer access and internet. ① **Commonwealth Digital Education Revolution**
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.	This leads to more computer use across subjects, and raised questions about the need for computer education courses.	
ENABLING TECHNOLOGIES	Personal computers became available in schools.	1994 **Web 1.0**	2000s **Blended Learning**	2004 **Web 2.0**
GROWTH OF EDTECH INDUSTRY				

① Computer education in Australian schools 2022 Report. 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.

Enabling the next generation of IT professionals.

Trends, Issues, Projections + Plans (TIPPs)

TRENDS

DRIVER: DISCONNECTION

Education SYSTEMS
Global decentralisation

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

Global trend towards decentralization

	School autonomy (2000)	School autonomy (2006)	Change	Change in educational performance (PISA-Math Score, 2003-2009)
Germany	10.3	64.4	+ 54.1	+ 10
Italy	10.9	58.4	+ 47.5	+ 17
Japan	33.3	71.6	+ 38.3	- 5
Portugal	8.3	55	+ 46.7	+ 21
Sweden	87.2	89.1	+ 1.9	- 15
USA	98.8	94.5	- 4.3	+ 5

Sources: Columns 2 and 3 from Schlicht, Teltemann, Windzio, 2011: Deregulation of Education: What does it mean for efficiency and equality? TransState Working Paper: Column 4 from OECD PISA 2009 Database, Table V.3.1.

OECD Conference

DRIVER: DECENTRALISATION

DRIVER: DISCONNECTION

Education SYSTEMS
Widening Disadvantage Gap

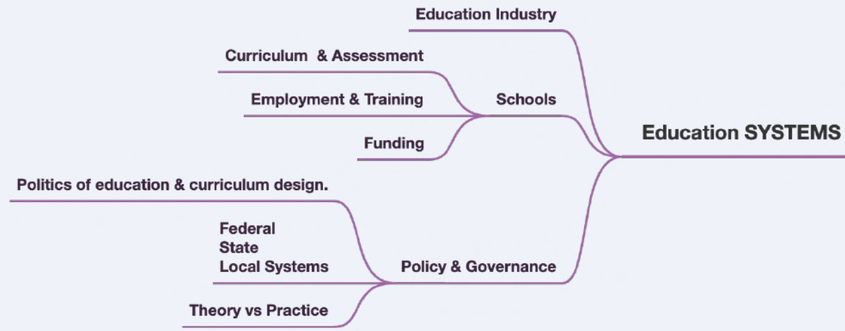
The OECD 2018 PISA survey reports that high achieving disadvantaged Australian secondary students *continue* to hold lower expectations of future study once they complete secondary school.

OECD 2018 PISA survey

Education SYSTEMS
Declining Retention Rates

In 2022 the Year 7/8 to 12 full-time retention rate for Australian students decreased to 80.5%, from 83.1% in 2021. They also noted that the retention rate for females (84.9%) was higher than for males (76.3%).

OECD 2018 PISA survey



Education SYSTEMS
Tech career ambitions hold steady at a low level.

The latest PISA survey reports that interest or engagement with techn-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

Education SYSTEMS
Tech Girls continue to lean toward caring professions.

Research shows that about one in three high-performing girls expects to work in health-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.

Figure 1: Australian achievement in PISA since 2000, measured from the first cycle in which a subject was the major focus domain

Acer.org

Education SYSTEMS
Homeschooling continues to rise.

Australian homeschooling has increased 105% in the past 8 years with an annual growth rate of 9.4%. A key driving factor cited by the Homeschooling association is parents' desire to select alternative curriculums not offered in Australia such as unschooling and Classical Conversations.

hslda.org

DRIVER: AGENCY

DRIVER: DECENTRALISATION

DRIVER: DISCONNECTION

Education SYSTEMS

Continued growth in non-teaching staff

Non-teaching staff in AUS schools increased by much more than teachers from 2012 to 2022, with the biggest increases occurring from 2016.

Total non-teaching staff in secondary schools increased by 26% while teachers fell by 3%.

Source:

https://johnmenadue.com/the-lost-decade-of-school-autonomy-in-nsw/

DRIVER: DISCONNECTION

Education SYSTEMS

Administrative staff focused on compliance, monitoring & regulation

Administrative and clerical staff increased by 48% in primary schools and by 32% in secondary schools. These increases in administrative staff far exceeded the increase in enrolments – over five times the increase in enrolments in primary schools and 30 times the increase in secondary schools.

Source:

https://johnmenadue.com/the-lost-decade-of-school-autonomy-in-nsw/

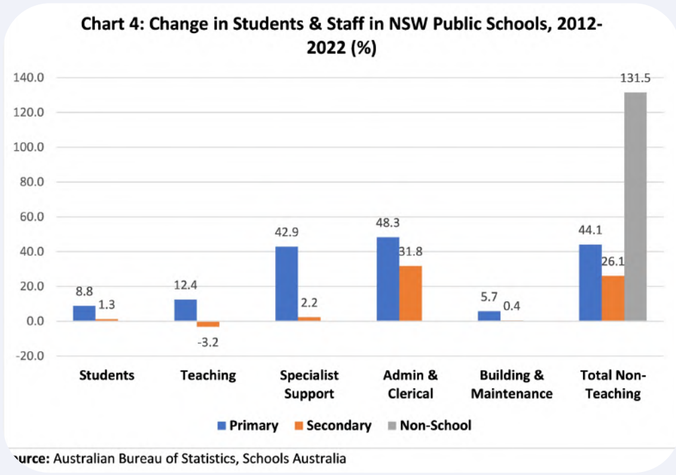
DRIVER: DISCONNECTION

Education SYSTEMS

Review reports into the effectiveness of the 'Local Schools. Local Decisions' policy showed that school autonomy does not necessarily improve social justice and equity in education. Funding clearly plays a huge role, as does diversion of funds to non-teaching staff roles.

Source:

https://johnmenadue.com/the-lost-decade-of-school-autonomy-in-nsw/



urce: Australian Bureau of Statistics, Schools Australia

TRENDS

Education SYSTEMS

Govt. executive education staff also continued to increase

Since 2015, when detailed figures were first published, executive staff increased by a massive 390% and administrative and clerical staff by 108%. Over the same period, teachers increased by only 5% and students by 6%.

Source

Education SYSTEMS

In 2012 the Govt. enlisted the help of BCG and PWC in a bid to reduce educational expenditure. What resulted was the 'Local Schools. Local Decisions' policy aimed at increasing autonomy by empowering school principals to manage school-based expenditures and drive down costs while maintaining education outcomes.

Source

Education SYSTEMS

In 2021, the NSW State Govt. introduced the Schools for Success - a centralised model to replace the autonomous 'Local Schools. Local Decisions' policy. This new change further narrowed the school curriculum, & imposed mandatory teaching methods, learning materials, classroom content and practice. It establishes annual improvement targets, with “underperforming” schools facing automatic departmental intervention, and ties teacher performance to how much “value” they add to student “learning progressions.”

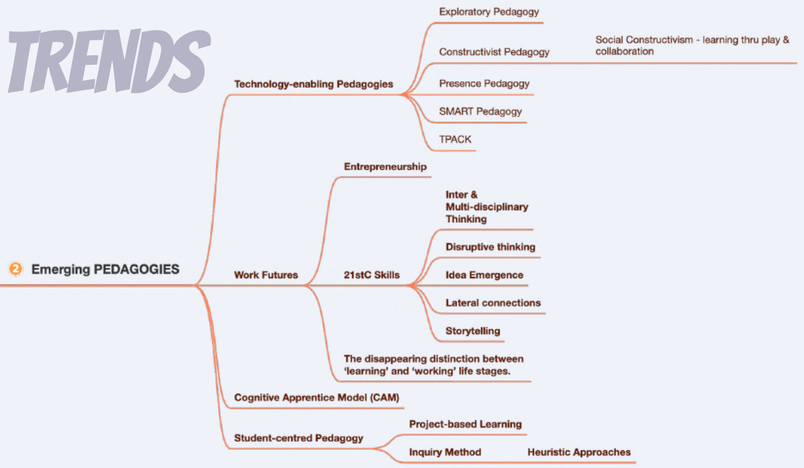
Source: https://johnmenadue.com/the-lost-decade-of-school-autonomy-in-nsw/

DRIVER: DISCONNECTION

"The Department of Education is focused primarily on reporting and compliance roles rather than curriculum, teaching and learning support. Its detailed organisational chart shows that the vast majority of its branches are devoted to administration of finance, policing compliance to regulations, performance monitoring, human resource management and other corporate functions. Of some 55 branches less than 10 could be considered as directly involved in supporting teaching and learning"

TREVOR COBBOLD
NATIONAL CONVENOR FOR SAVE OUR SCHOOLS

TRENDS

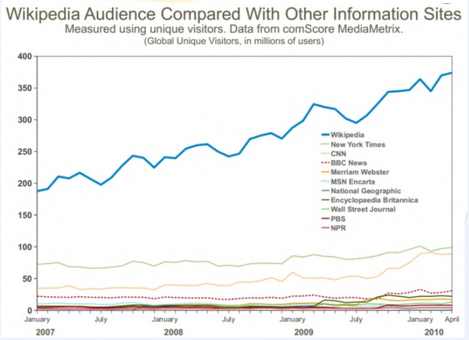


DRIVER: DECENTRALISATION

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.



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

Shifting PEDAGOGY

The rise of AI

The rapid rise of AI has fuelled concerns over job automation and what the future holds for students entering a new workforce. We can look to measures such as Robot density rises globally as evidence of this trend taking hold.

DRIVER: UNCERTAINTY

TRENDS : Edtech

- Emerging Virtual TECHNOLOGIES
  - Virtual Immersive Technologies
  - Virtual Worlds
  - Virtual Communities
  - Virtual AI Instructors
  - Digital Communities of Practice

"People will go for anything they don't understand if it's got enough hype"

MILES DAVIS

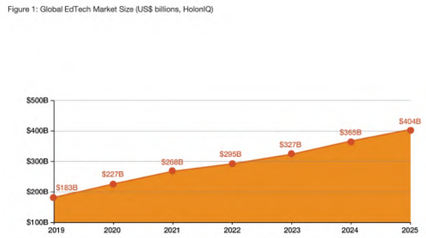
Emerging TECH
ChatGPT is everyone's friend

Research notes that 70% of Australian secondary students have used ChatGPT for study or school assignments and up to 80% of secondary school teachers are using it in their work. Regardless of Australian education leaders initial attempts to ban AI use; it's impossible to ignore the transformational nature of AI and educators will need to address AI's potential role (and potential reframe current attitudes toward it) if they are to keep pace with the real world context of student learning in the future.

DRIVER: UNCERTAINTY

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.



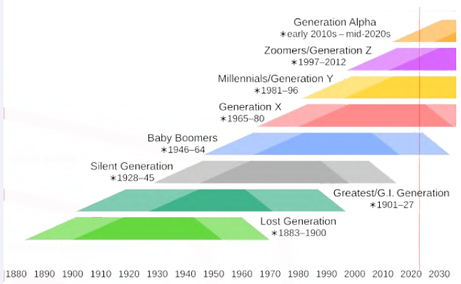
DRIVER: MYTH OF PROGRESS

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: MYTH OF PROGRESS

Emerging TECH



Emerging TECH
Digital Game Development Growth

Between 2015–16 and 2021–22, total income for digital game development businesses increased by 313.4% ($348.2m) to $459.3m.

ABS Gov Statistics

Emerging TECH
AI Tutoring Growth

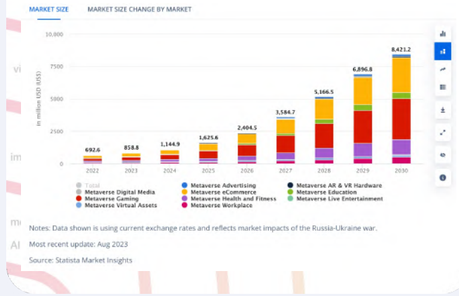
GoStudent, Europe's highest-valued EdTech company and one of the world's leading tutoring providers, has today shared its strategic vision for integrating AI into its business. Having calculated that global market size of AI in education could reach $10-20 billion by 2027,

TRENDS : Metaverse

1. Emerging Virtual TECHNOLOGIES
   - Virtual Immersive Technologies
   - Virtual Worlds
   - Virtual Communities
   - Virtual AI Instructors
   - Digital Communities of Practice

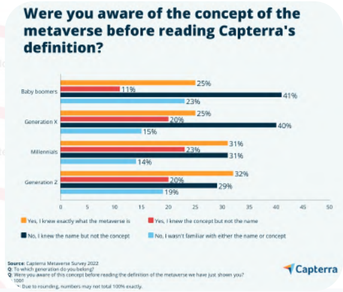
Emerging TECH
Metaverse market on the rise

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



Emerging TECH
Metaverse usage remains low

The latest Capterra survey notes that 50% of Australian millennials & Gen Z know what the metaverse is but adoption is still low with only 8% having accessed it.



Emerging TECH
Metaverse Rising

A recent report found more than 50% of Aussies would like to visit their favourite venues in the metaverse. The number is higher for Millennials (60%) who say being able to visit a venue in the metaverse first to see what it is like before visiting it in real life appeals to them.

Emerging TECH
Metaverging

Gartner Predicts 25% of People Will Spend At Least One Hour Per Day in the Metaverse by 2026 for work, shopping, education, social and/or entertainment.

Emerging TECH
Meet me in the Metaverse

Today 15% of Gen Z's 'fun' budget is spent in the metaverse and in 5 years it's expected to hit 20%. For those in the metaverse, 52% feel more like “themselves” in the metaverse than IRL and 65% believe that their online relationships are just as meaningful as offline ones.

Emerging TECH
Meet me in the Metaverse

Today 15% of Gen Z's 'fun' budget is spent in the metaverse and in 5 years it's expected to hit 20%. For those in the metaverse, 52% feel more like “themselves” in the metaverse than IRL and 65% believe that their online relationships are just as meaningful as offline ones.

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

TRENDS: Virtual Community

1. Emerging Virtual TECHNOLOGIES
   - Virtual Immersive Technologies
   - Virtual Worlds
   - Virtual Communities
   - Virtual AI Instructors
   - Digital Communities of Practice

Emerging TECH
Pseudonymity over anonymity

Identity control, an argument against real name web. Whilst much has been said about the harmful effects of anonymity online (peer-driven bullying, cyber-aggression etc) there is less dialogue about the positive effects of virtual communities, especially amongst young people. However increasingly research suggests that virtual communities enable:

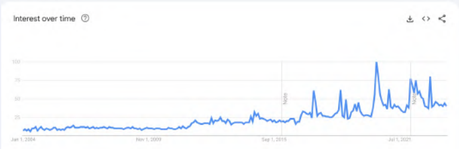
- control over personal boundaries
- ability to express judgement without concern
- greater sense of autonomy

Arguably of some importance for young people as they find their way in the world.

DRIVER: AGENCY

Emerging TECH
Doxxing on the rise

"Doxxing" is a growing online practice that weaponizes sensitive data as an attack. Google shows an increasing trend toward doxxing; a high profile example is the Capitol rioters which garnered a lot of online attention. However young people also dox themselves on platforms like Discord as a gesture of credibility.



Emerging TECH
Virtual Micro-mediated Interactions

The expansion in these sorts of functions embed a perpetual awareness of others and the ability to project our own availability to others around us. The metaverse will no doubt surface a whole host of new ways in which individuals can manage and control their presence signalling.

Read Receipts — **Online Status**

2011 — 2017

DRIVER: DECENTRALISATION

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
Emerging Tech Framework: Signalling Theory

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

Emerging TECH
Virtual Signalling skills rising

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

Anna Schneider found in her research, that 90% of users understand and utilise signalling functions to guide interaction and connection.

TRENDS

LEARNER AGENCY TRENDS

Given the somewhat intangible nature of 'learner agency'; we look for 'trending signals' that indicate shifts and substantial patterns of behaviour in areas signalling 'agency'. You'll find a collection of them here.

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: AGENCY

Learner AGENCY

Google's Future of the Classroom report notes that education leaders want students to have more autonomy, from what they learn to how the classroom operates. In fact many argue that "student agency must become the norm, not the exception.

DRIVER: AGENCY

Learner AGENCY

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

Learner AGENCY

Microcredentials resonate with Australians

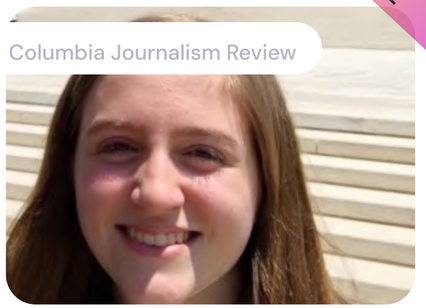
The popularity of micro-credentials provide greater autonomy over self-led learning journeys. From the introduction of the term 'micro masters' in 2004 to the term 'microcredentials' in 2013 - Australians continue to rank in the top 5 for search popularity.

DRIVER: AGENCY

Table 1: Google Trends Comparison

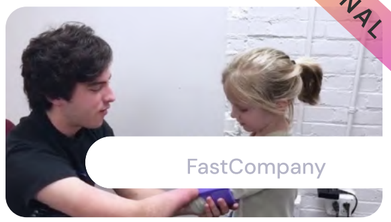
Term	First Appeared	Top Five Search Locations	Recent Related Queries
Microcredentials	2013	Australia Malaysia Canada United States United Kingdom	No data available
Micro-credential	2015	United States Canada	No data available
Digital Badge	Before 2004	United Kingdom United States Australia India Canada	Digital technology merit badge Digital technology, Blue badge What is a digital badge? IBM digital badge
Short Online Course	Before 2004	South Africa, Australia Pakistan United Arab Emirates Philippines	Free online courses Online business courses UNISA short courses Interior design course Open university Coursera
Nanodegree	2006, popularised 2014	Egypt Singapore St. Helena Nigeria India	Udacity Udacity nanodegree Data nanodegree Nanodegree android Nanodegree review
Micromasters	Before 2004	Singapore United Arab Emirates Pakistan United States Australia	Micromasters MIT EdX Micromasters EdX Micromasters program
Alternative Credential	2004	United States	No data available
Digital Credential	Before 2004	United States India	Digital Badge

SIGNAL



Anna Salvatore, a 16-year-old from Pennington, New Jersey, created the High School SCOTUS blog, which keeps tabs on the latest court cases, and, among other things, publishes interviews with judges at various levels of the system. She now has four other student collaborators from around the country.

SIGNAL

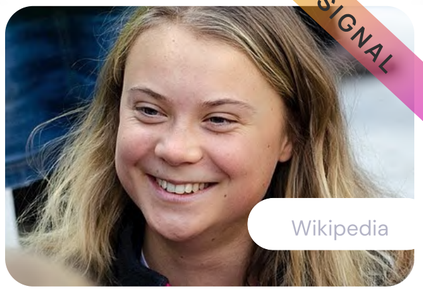


As a high school sophomore, Aaron Westbrook designed and printed a 3-D prosthetic arm to replace his own forearm, which was missing from birth, and then, for his senior project, created another for a seven-year-old girl.

SIGNAL

Emma Yang is a 14-year-old student on a mission to improve the lives of individuals with Alzheimer's. After learning how to code at a young age, Emma has now put her skills to work to create a mobile app called Timeless.

SIGNAL



Greta Thunberg was just 15 when she began skipping school in 2018 to attempt to influence the outcome of the national Swedish election. She continued to strike for climate every Friday until Sweden complied with the Paris climate agreement.

SIGNAL

Siddharth Mandala was just 12 years old in 2012 when the brutal rape of a woman in Delhi, India, by six men on a transit bus made international headlines. At 15, he set about to "create something that could stop people from becoming victims of rape" (Mandala, 2017).

SIGNALS

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

Student PARTICIPANT

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

Student PARTICIPANT

Australia lags behind on inclusive internet

76% of Australian children using either school-provided devices or a BYOD (bring your own device) system in research by Qustodio.

Australia

1. GradPoint
2. Grammarly
3. Google Classroom
4. Canvas by Instructure
5. Kahoot!
6. Education Perfect
7. ClickView
8. Stile
9. Compass
10. ABCya!

Student PARTICIPANT

Discord use is up 14% for Australian kids.

Research by Qustodio

Australia

2022		2021		2020	
1. Discord	34%	1. Discord	31%	1. Discord	24%
2. Skype	26%	2. Zoom	27%	2. Zoom	22%
3. WhatsApp	25%	3. Skype	25%	3. WhatsApp	21%
4. Messages	24%	4. WhatsApp	24%	4. Skype	17%
5. Zoom	20%	5. Messages	18%	5. Messages	14%
6. Microsoft Teams	16%	6. Google Duo	8%	6. Google Duo	5%

DRIVER: AGENCY

Student PARTICIPANT

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

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	2022 Avg	2021 Avg	2020 Avg
Global	8	8	7	7	7	8	9	8	6	6	6	6	7	8	8
US	7	7	7	7	8	10	10	7	6	6	6	6	7	8	7
UK	6	7	6	7	7	6	6	9	6	6	5	6	6	8	7
Spain	7	7	8	7	6	6	10	10	5	5	5	6	6	9	12
Australia	11	6	7	8	7	6	8	9	9	11	10	11	9	9	12

DRIVER: MYTH OF PROGRESS

Student PARTICIPANT

Recent reports on Australian social media use amongst kids shows the rise of TikTok, along with virtual connection platforms like Snapchat and Twitter as virtual connections amongst real life friends become more commonplace.

Australia

2022		2021		2020	
1. TikTok	39%	1. Facebook	34%	1. Facebook	36%
2. Facebook	38%	2. TikTok	33%	2. TikTok	31%
3. Snapchat	36%	3. Snapchat	31%	3. Instagram	28%
4. Pinterest	33%	4. Pinterest	26%	4. Snapchat	24%
5. Reddit	30%	5. Instagram	26%	5. Pinterest	23%
6. Twitter	28%	6. Reddit	23%	6. Reddit	20%

Student PARTICIPANT

Recent research also show that virtual world Roblox continues to increase in popularity with Australian kids.

Australia

2022		2021		2020	
1. Roblox	63%	1. Roblox	56%	1. Roblox	42%
2. Minecraft	29%	2. Minecraft	29%	2. Minecraft	28%
3. Clash Royale	20%	3. Clash Royale	16%	3. What would...	16%
4. Clash of Clans	12%	4. What would...	16%	4. Among Us	14%
5. What would...	11%	5. Among Us	14%	5. Fortnite	10%
6. Magic Tiles 3	9%	6. Clash of Clans	12%	6. Clash of Clans	9%

DRIVER: AGENCY

TRENDS

- Real world learning & influence
- Connection
- Networks of Influence
- The changing role of community
- Digital identity & pseudonyms
- Identity & Agency
- Earlywork (pre-career)
- Technology diet
- 4 Student PARTICIPANTS

TRENDS

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.

Teacher ROLES

Australia's domestic teacher pipeline runs on empty

Australian Institute for Teaching and School Leadership reports show that first-year enrolments in teacher education courses in 2019 had dropped by 20 per cent from 2017, while the number of completions was at its lowest in 14 years.

Teacher ROLES

Performance-based pay is anathema to the profession

Australian teachers are amongst the highest paid in the world compared to other teachers BUT they're salary plateaus out in the first 10 years of their career. 2022 saw the biggest year of action with multiple teacher strikes across all states in the country.

Teacher ROLES

Teacher shortages continue to amplify disadvantage gaps for Australian students.

In Australia, 34% of students enrolled in a disadvantaged school and 3% of students enrolled in an advantaged school attend a school whose principal reported that the capacity of the school to provide instruction is hindered at least to some extent by a lack of teaching staff.

OECD 2018 PISA survey

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

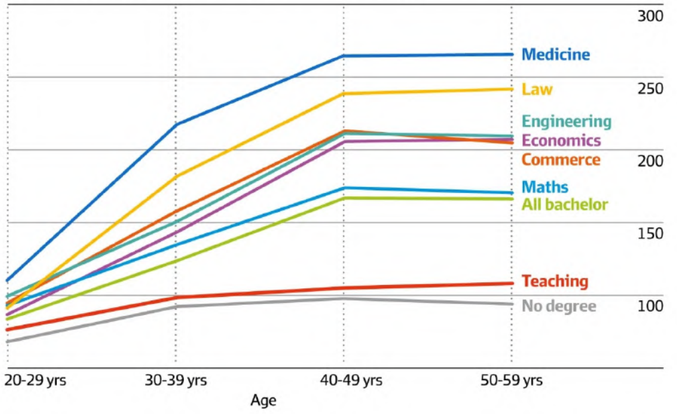
The myth of Progress

COVID disrupted teaching dramatically as teaching suddenly moved online; since then there has been a growing concern amongst education academics that techno-solutionist myths are clouding the discourse around technology's role in education.

DRIVER: MYTH OF PROGRESS

Teacher pay compared to other professions

Total yearly personal income of full-time workers holding a bachelor degree, at the 80th percentile of income distribution, 2016 ($'000)



SOURCE: GRATTAN INSTITUTE

Current & Emerging Issues

THE ROLE OF AI

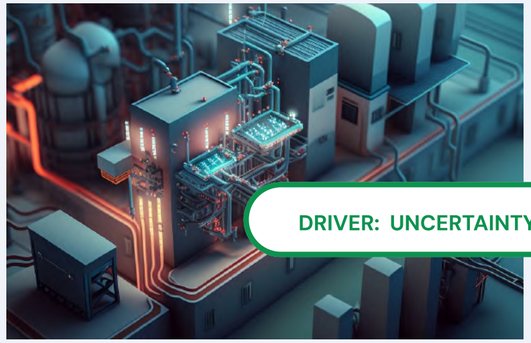
EMERGING

How will education leaders reframe curriculum in the context of futures where AI will undoubtedly play an increasing role? Understandably many educators are wary of the potential loss of learning & unclear as to how AI might fit into the flow of a new student learning workflow. Further to that, there is growing concern among teachers about the potential impacts of algorithmic bias and misrepresentation.

"AI won't replace you, but a person using AI will".

A quote shared through the 2023 ASU + GSV Summit

ASU (Arizona State University) + GSV (Global Silicon Valley) technology conference tackling the big issues for technology futures.



DRIVER: UNCERTAINTY

BELONGING TO THE MAN

EMERGING

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

UNCOUPLING OF LEARNING PROCESS AND ASSESSMENT

EMERGING

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

EMERGENT EDUCATION POLICY

FUTURE

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?

Increasingly 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?

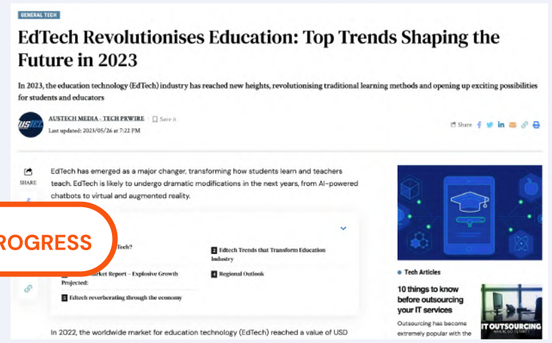
Current & Emerging Issues

DRIVER: MYTH OF PROGRESS

THE SLOW PACE OF OVERSIMPLIFICATION

EMERGING

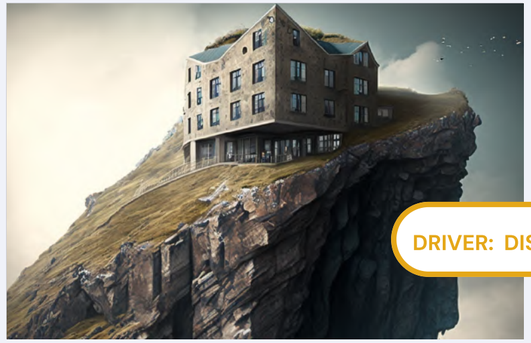
There is growing concern amongst teachers and education focused academia on the the impacts of placing technology at the core of education innovation. Much of the dominant discourse is being driven by education technology providers (whether platform technologies like Google classroom or edtech apps such as Kahoot), and there is a real risk that the education sector falls prey to 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?



THE MYTH OF EDTECH

EMERGING

Growing concern amongst education academics is centring around the potential risks as techno-solutionist myths driven by edtech marketing in the media cloud the discourse around technology's role in education.



DRIVER: DISCONNECTION

DIGITAL CURRICULUM DISCONNECT

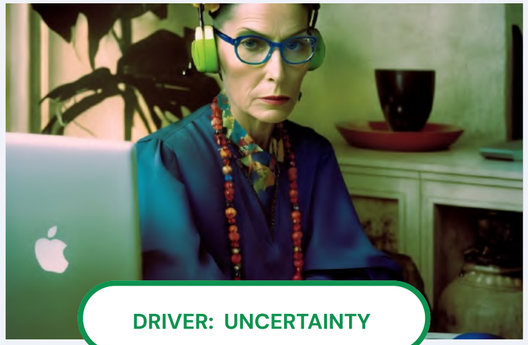
CURRENT

There's much concern about the disconnection between the digital technology curriculum and methods of assessment.

How will teachers navigate this chasm - if assessment is focused on demonstrating mastery of content description outcomes, surely the teaching practice will focus on teaching and assessing knowledge and skills outcomes...

How will school leaders and teachers navigate this gap (if in fact, its perceived as a gap at all on a wider scale)? Is the current curriculum enough to foster the thinking skills and real digital literacy skills students need for the future landscape of work?

Current & Emerging Issues



CHANGING TEACHER ROLES

EMERGING

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.

INCREASING LEARNER AGENCY

EMERGING

How will teachers provide greater levels of autonomy and agency for students; what shape does this take? how will they manage it? where is the opportunity to extend this in later secondary years? Given the teacher shortages and slow-to-change education policy and support system across government, who will take responsibility for this in a meaningful way? and how will schools shift from learning 'output' to 'learning practice' to ensure the success of this approach?

INCREASING LEVELS OF UNCERTAINTY, UNPREDICTABILITY & CONSTANT CHANGE

EMERGING

We're 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.

Will private enterprise and edtech companies continue to shape the narrative without the rigour of student-led learning at its centre? How will school leaders and teachers keep pace with these emerging futures?

CONSISTENTLY INCONSISTENT

CURRENT

Given the separation of education leaders in both national and state governments, how will the government drive the radical reforms so desperately needed throughout the entire country?

Will we see state education abandoned or a centralising of resources at the national level and increasing levels of autonomy in individual schools?

Will we see a greater divide between public govt. schools and private fee-based schools in the race to adapt?

Current & Emerging Issues

DRIVER: UNCERTAINTY

DRIVER: DISCONNECTION

VIRTUAL SELVES

FUTURE

As communication moves from the physical to the digital realm and then on to mixed reality, the information that we share through body language, tone and cadence choices is changing. The way in which we augment the expression of our identities and the way we communicate, will begin to infiltrate the offline world.

How will school principals and education leaders who may not be digitally familiar themselves, ensure they build capability within their staff beyond tech-as-tools to really understand and integrate technology as a key knowledge area?

HUMAN TECH ALIGNMENT

FUTURE

There is the potential for a widening gap not just in digital literacy, but the ability of students to develop, present and manage their digital online selves. How will school leaders and teachers support students in understanding, interpreting and synthesising their digital selves and the digital selves & presence cues of others? This is unlikely to happen at a policy level; but given its importance for future 21stC skill building in connection, collaboration and personal agency, it will be critical.

PEDAGOGY DISCONNECT

FUTURE

Given the disconnect in cadence and pace of technology progression vs 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 context?

THE HUMAN EXPERIENCE OF TECHNOLOGY

FUTURE

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 this new future context? And what role might virtual technologies play in enabling or facilitating this?

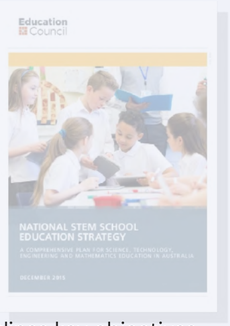
In what ways will govt. policymakers and education support systems need to rethink their roles and responsibilities (and potentially their own internal capability) to facilitate these emerging shifts?

Plans & Industry Projections

GENERATIVE AI AND INDEPENDENT SCHOOLS

The recent 2023 AHISA (Australian Heads of Independent Schools of Australia) report on Generative AI and Independent Schools makes several key recommendations to national education policymakers in govt. to support schools as they navigate the AI landscape. Their recommendations include:

- Establish an ethical framework and government guidelines to address issues such as privacy, copyright, and academic integrity.
- Upskill teachers in generative AI to accelerate teachers' acquisition of skills in the use of generative AI tools.
- Establish safeguards (rather than outright bans) to ensure all schools have access to trusted and quality generative AI tools.



NATIONAL EDUCATION STEM STRATEGY 2015

The National Australian STEM Education Strategy outlines key objectives including:

- inspire students to take on more challenging STEM subjects, particularly in the senior secondary years
- increasing student STEM ability, engagement, participation, and aspiration
- increasing teacher capacity and STEM teaching quality
- supporting STEM education opportunities within school systems
- facilitating effective partnerships with tertiary education providers, business, and industry; and building a strong evidence base

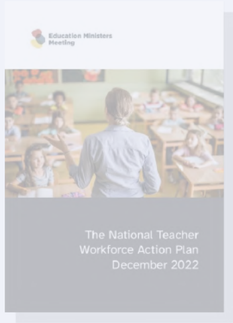
The report also emphasizes the need to establish a stronger data and evidence base over time to track national trends and improve understanding of what works in Australian contexts.

WHAT'S NOT IN THE REPORT

Funding: How will school leaders actually implement the recommendations and what resources are available?

Professional Development: Light reference is made to increasing teacher capacity, it does not provide any specific programs or guidance on professional development for educational staff.

Evaluation: The report notes that assessment tools and revision of STEM subject assessments is important but does not provide any information on how schools should assess and evaluate student progress in STEM subjects.



NATIONAL TEACHER WORKFORCE ACTION PLAN (2022)

This report outlines the government's plans to tackle teacher shortages through:

- Providing additional funding of $159 million to create 4,036 Commonwealth Supported Places (CSPs) for education courses, including early childhood, primary, and secondary education to ensure a supply of quality teachers.
- Ensuring teacher education programs support teacher supply and produce classroom-ready graduates. This includes developing micro-credentials and expanding quality professional development opportunities like Quality Teaching Rounds (QTR).
- Improving teacher retention by increasing support for teachers, enhancing career pathways, reducing unnecessary workload, and freeing up teachers to focus on core teaching tasks and collaboration

WHAT'S NOT IN THE REPORT

Specific strategies for addressing teacher shortages: especially in rural and remote areas where we know staff shortages are having a disproportionate impact on learning outcomes.

Financial incentives: while the report notes the importance of pay and fair conditions, it does not offer any specific information or financial incentives to attract and retain teachers.

Plans : Australian Government

AUS GOVT. WEBSITE: 21STC SKILL DEVELOPMENT

The Australian government national education website provides a STEM education resources Toolkit which makes mention of 21stC skill development and offers vague general advice about the importance of STEM, which students need STEM education and a general overview of STEM challenges and STEM iniatives.

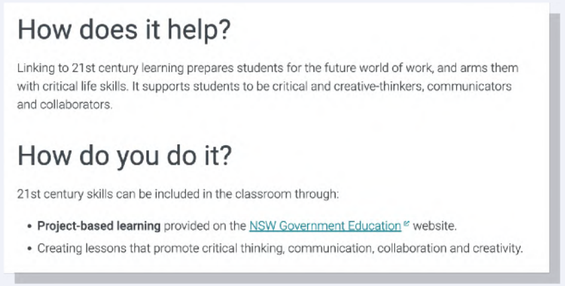
It also offers a list from the **Assessment & Teaching of 21st Century Skills** website which shows another approach to categorising these skills: 👇

Ways of thinking
- Creativity and innovation
- Critical thinking, problem-solving, decision-making
- Learning to learn, metacognition

Ways of working
- Communication
- Collaboration

Living in the world
- Citizenship — local and global
- Life and career
- Personal and social responsibility — including cultural awareness and competence

Tools for working
- Information literacy
- ICT literacy

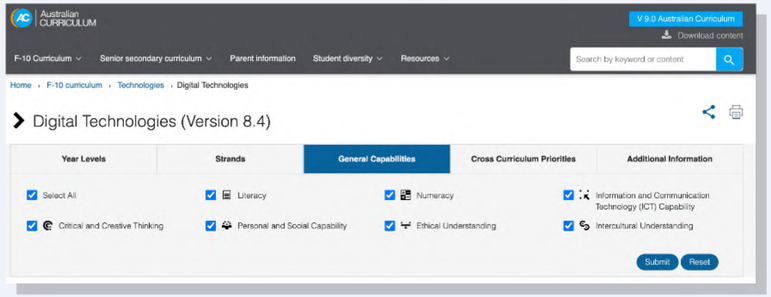


Here 👆you can see the emphasis on linking STEM to 21stC skill development, critical for the future world of work. In response to its own question "How do you do it?, the website responds with:

- creating lessons that promote critical thinking, communication, collaboration and creativity.
- Project-based learning

Feels like a tough ask for an education workforce already struggling with overwork 👇

AUS GOVT. WEBSITE: DIGITAL CURRICULUM



The Digital Technologies curriculum (8.4 - developed in2015) is featured on the main Australian curriculum website👆. After searching we also find the new updated curriculum (v9) at a separate domain address. Schools are free to implement this curriculum when they are able with an expectation all schools will have transitioned by 2025.

The main changes in the updated curriculum as they relate to technology include:
- Achievement standards are more closely linked with content
- More integration between the two strands of Knowledge & Understanding and Process & Production (skills),
- ICT Capability has been replaced with a new sub-strand: Digital Literacy. This new strand incorporates elements of ICT Capability – but integrates new content to develop online safety skills.

DRIVER: MYTH OF PROGRESS

Plans : Australian Government

AUS GOVT. WEBSITE: 21STC SKILL DEVELOPMENT

Australian Govt 21st Skill Development reports covers much of the WHAT, albeit **lacking specific detail on the HOW.** Upon searching through the govt. some further detail is available but continues to be fairly generic, lacking in detail and more importantly **lacking in tangible specific support examples or cohesive frameworks** which can be followed by schools.

What is also apparent in reading these reports, is that **they share little of the urgency or language** around 21stC skill development being utilised in the World Economic Forum or OECD reports. In fact, they're pretty light on and bear little connection to the broader global discourse around 21stC skill development and critical role of technology.

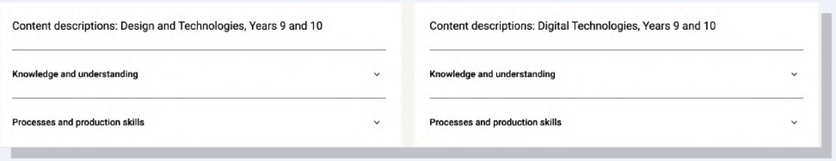
AUS GOVT. WEBSITE: DIGITAL CURRICULUM

The updated (V9 2022) Technology Curriculum for all intents and purposes continues to be very similar to its predecessor developed in 2015. It splits technological knowledge into knowledge and process, and covers a wide variety of topics including:

- data representation
- acquiring, managing and analysing data
- generating and designing algorithms
- collaborating and managing content
- privacy and security

The new curriculum provides more clarity in structure and content which is good news for teachers. It also **replaces ICT**(information communication technology) which is reminiscent of 'IT' as a tool led by function, to '**Digital Literacy**' which is a welcome shift, although the main change in content here seems to relate to digital safety and privacy online.

DRIVER: MYTH OF PROGRESS



PROVOCATION

Given the complexity of teaching technology and the the level of technology experience of many teachers, one wonders whether curriculum outcomes would be best served by educational policymakers actually defining a series of project-based learning tasks that encompass these skills with a focus on learning these skills in the flow of work on projects?

Plans : Australian Education Thinktank

GRATTAN INSTITUTE

A recent report by the Grattan Institute Improving Student Learning in Australia 2022, highlighted the most critical issues related to education staffing shortfalls, decreasing new teacher applications and declining retention rates.

The report notes the key issues as:

- Too few high achievers entering the profession
- Existing teacher paths don't recognise teaching expertise or deploy it strategically
- Teachers' struggle to find time to get to the high impact activities
- There is an urgent need for a more robust education evidence (and knowledge) base in Australia.

But much more work is needed to understand which of these innovations are the most effective, and the conditions that need to be in place for all children, irrespective of their backgrounds, to benefit. For example, equitable access to technology will be particularly important for all children, regardless of where they live. Ensuring individual teachers and schools have a similar capacity to integrate technology into their learning programs will also be important to prevent existing equity gaps widening further.

Figure 3.2: High achievers say teaching falls short on intellectual challenge, and pay

Young people who state that a career in teaching is more likely to provide a given attribute than their chosen occupation

Notes: Career attributes are ordered top-to-bottom from most to least important. The data in the chart show the difference (i.e. teaching minus chosen occupation) in the percentage of respondents who answered that a given career was likely or very likely to provide each attribute.

Source: Grattan Institute survey of high-achieving young Australians.

TECH WHO?

WHAT'S NOT IN THE REPORT

In a 2022 report from the highly respected Grattan Institute outlining the most critical issues for government to consider in improving the learning outcomes for Australian students, there is little to no mention of technology. In fact, technology is mentioned twice on page 13, . . in a 20 page document.

. . because the education system is so stretched, so underfunded and so much in need of repair; in short, there are bigger fish to fry.

Projections

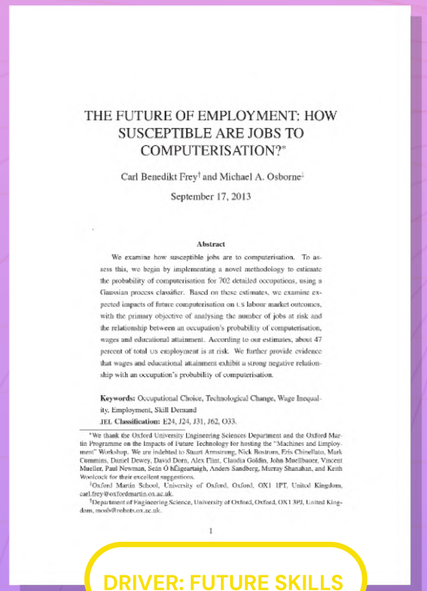
FUTURE OF EMPLOYMENT

Deloitte and Oxford University's report

The future of employment: How susceptible are jobs to automation? in their report suggest that 47% of employment is at risk due to increasing computerisation and automation. The future-facing report identifies two key emerging dynamics surfacing in the labour market:

a) the potential extent of technological unemployment , as the increasing pace of technology causes high job turnover

b) the ability of human labour to win the race against technology by means of an education



THE FUTURE OF EMPLOYMENT: HOW SUSCEPTIBLE ARE JOBS TO COMPUTERISATION?*

Carl Benedikt Frey† and Michael A. Osborne‡

September 17, 2013

Abstract

We examine how susceptible jobs are to computerisation. To address this, we begin by implementing a novel methodology to estimate the probability of computerisation for 702 detailed occupations, using a Gaussian process classifier. Based on these estimates, we examine expected impacts of future computerisation on U.S labour market outcomes, with the primary objective of analysing the number of jobs at risk and the relationship between an occupation's probability of computerisation, wages and educational attainment. According to our estimates, about 47 percent of total US employment is at risk. We further provide evidence that wages and educational attainment exhibit a strong negative relationship with an occupation's probability of computerisation.

Keywords: Occupational Choice, Technological Change, Wage Inequality, Employment, Skill Demand

JEL Classification: E24, J24, J31, J62, O33.

*We thank the Oxford University Engineering Sciences Department and the Oxford Martin Programme on the Impacts of Future Technology for hosting the "Machines and Employment" Workshop. We are indebted to Stuart Armstrong, Nick Bostrom, Fris Chinellato, Mark Cummins, Daniel Dewey, David Dorn, Alex Flint, Claudia Goldin, John Muellbauer, Vincent Mueller, Paul Newman, Seán Ó hÉigeartaigh, Anders Sandberg, Murray Shanahan, and Keith Woolcock for their excellent suggestions.

†Oxford Martin School, University of Oxford, Oxford, OX1 1PT, United Kingdom, carl.frey@oxfordmartin.ox.ac.uk.

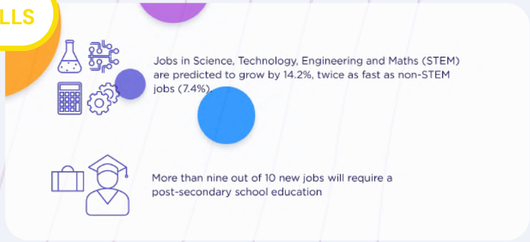
‡Department of Engineering Science, University of Oxford, Oxford, OX1 3PJ, United Kingdom, mosb@robots.ox.ac.uk.

1

DRIVER: FUTURE SKILLS

DRIVER: FUTURE SKILLS

AUS National Skills Commission report predicts that nine out of 10 new jobs to be created in the next five years will require post-secondary qualifications and STEM jobs will grow by 14%+.



FUTURE OF AI

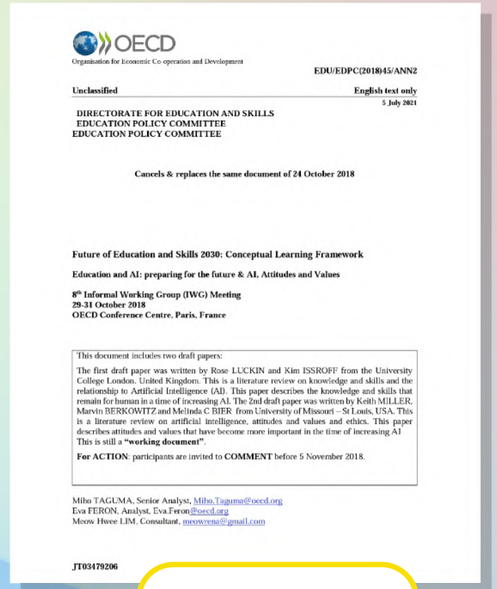
The 2021 OECD report

Education and AI: preparing for the future & AI, Attitudes and Values highlights the critical shift educators need to make in order to balance knowledge acquisition with 'meta-cognition', noting that the unknown futures and increasing complex work futures students face, mean that the role of educators is to set students' up to face these uncertainties.

They categorise 21stC skills into three categories:

- learning and innovation skills
- digital literacy skills
- career and life skills

They expand this to suggest that future education needs to address interpersonal skills, systems skills and higher order cognitive skills with an urgent focus on the high level priorities of helping students to synthesise the best of artificial intelligence and human higher order intelligence.



OECD

Organisation for Economic Co-operation and Development

EDU/EDPC(2018)45/ANN2

Unclassified — English text only — 5 July 2021

DIRECTORATE FOR EDUCATION AND SKILLS
EDUCATION POLICY COMMITTEE
EDUCATION POLICY COMMITTEE

Cancels & replaces the same document of 24 October 2018

Future of Education and Skills 2030: Conceptual Learning Framework

Education and AI: preparing for the future & AI, Attitudes and Values

8th Informal Working Group (IWG) Meeting
29-31 October 2018
OECD Conference Centre, Paris, France

This document includes two draft papers:

The first draft paper was written by Rose LUCKIN and Kim ISSROFF from the University College London, United Kingdom. This is a literature review on knowledge and skills and the relationship to Artificial Intelligence (AI). This paper describes the knowledge and skills that remain for human in a time of increasing AI. The 2nd draft paper was written by Keith MILLER, Marvin BERKOWITZ and Melinda C BIER from University of Missouri – St Louis, USA. This is a literature review on artificial intelligence, attitudes and values and ethics. This paper describes attitudes and values that have become more important in the time of increasing AI
This is still a **"working document"**.

For ACTION: participants are invited to **COMMENT** before 5 November 2018.

Miho TAGUMA, Senior Analyst, Miho.Taguma@oecd.org
Eva FERON, Analyst, Eva.Feron@oecd.org
Meow Hwee LIM, Consultant, meowwena@gmail.com

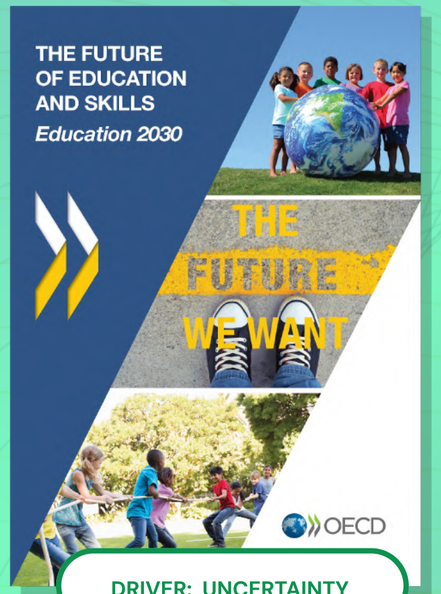
JT03479206

DRIVER: FUTURE SKILLS

Projections

FUTURE OF EDUCATION AND SKILLS

OECD Future of Education and Skills 2030 Learning Compass concept notes that meaningful and relevant changes are urgently needed within education systems. The associated OECD Future of Education and Skills project focused initially on SECONDARY SCHOOLING (Years 7 - 12) and the implications for implementing 21stC skills both in the WHAT and HOW. The report highlights the critical need to support emerging models of 'education citizenship' with a dynamic education curriculum that acknowledges the non-linear paths to future work. The report also identifies the increasingly necessary *emergent* nature of future education systems and a focus on the 'quality of learning processes' over the traditional outcomes and models of assessment in current systems



DRIVER: UNCERTAINTY

FUTURE OF STUDENT AGENCY

DRIVER: AGENCY

The OECD Future of Education and Skills ' Student Agency for 2030 Report' outlines the critical importance of developing learners' agency both as an outcome and a process of practice. The report provides frameworks, recommendations and offers guiding principles for what they believe is one of the most critical educational focuses to prepare students for the coming future.

FUTURE OF TECH JOBS

The 2023
Australian Financial Review Workforce Summit forecast 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 fo

DRIVER: FUTURE SKILLS

FUTURE OF WORK

The Institute for the Future:Future of Work Report', in its forecasting of potential work futures . . lists four emerging technologies as being critically important to how humans and machines might work together in the future.

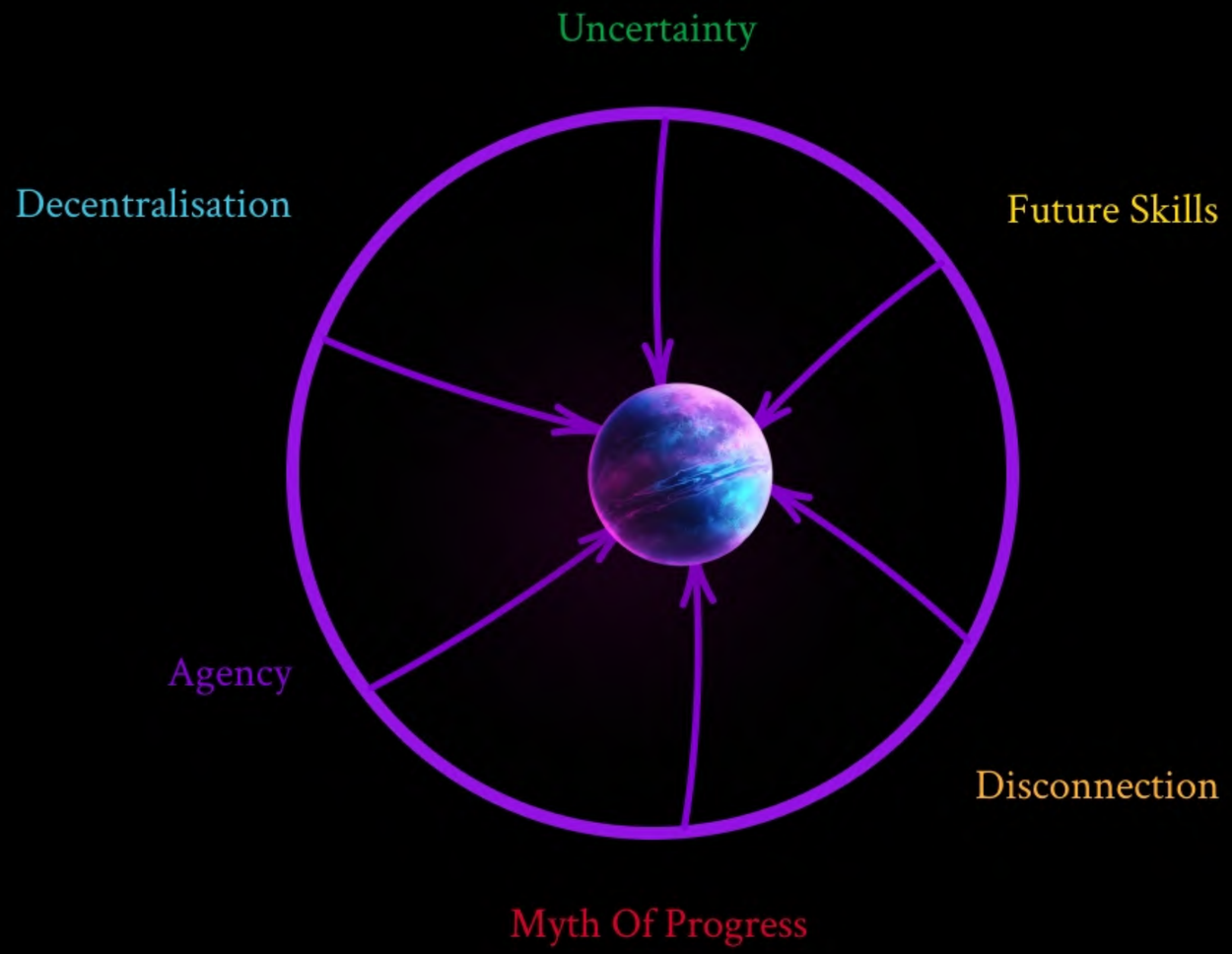
a) collaborate AI
b) multi-modal interfaces
c) extended reality (XR)
d) secure distributed ledgers

FUTURE OF LEARNING MODELS

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

DRIVER: UNCERTAINTY

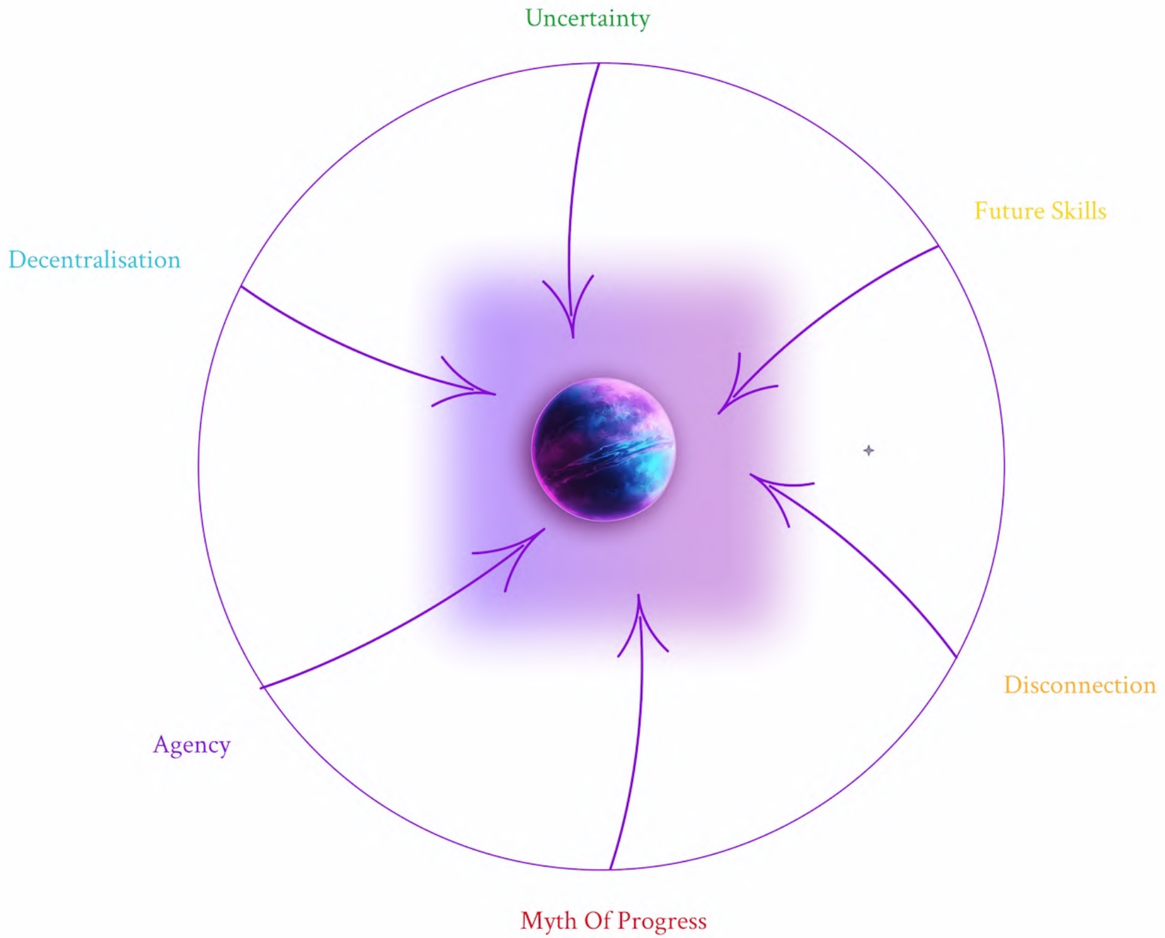
Drivers of Change



Drivers of Change

Drivers of Change

The key forces that push change forward.



Uncertainty

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

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.

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.

DRIVERS OF CHANGE

Source

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

Changing task composition of labour input shows routine tasks in decline

DECENTRALISATION

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

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

The potential impact of platforms like Google driving pedagogy

FUTURE SKILLS

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

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

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

Research reports positive trend toward decentralisation & school autonomy

Growth in access to information

Total non-teaching staff in secondary schools increased by 26% while teachers fell by 3%

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

Disconnect between pedagogy, curriculum & learning experiences continue

Disconnect between pedagogy, curriculum & learning experiences continue

Regular metaverse users are displaying increasingly sophisticated online representations of self

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

Disconnect between what kids learn in school, and what they'll need to know for the future

AGENCY

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

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

Increasingly research suggests that pseudonyms provide boundaries & autonomy

Educational definition of technology is disconnected from the broader system of social, economic, political & environmental forces from within which it operates

Increasingly research suggests that pseudonyms provide boundaries & autonomy

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

In 2020, the AUS Govt replaced autonomous school governance with the Schools Success centralised reform policy

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

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

DISCONNECTION

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

MYTHS OF PROGRESS

INTERNAL UNCERTAINTY

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.

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

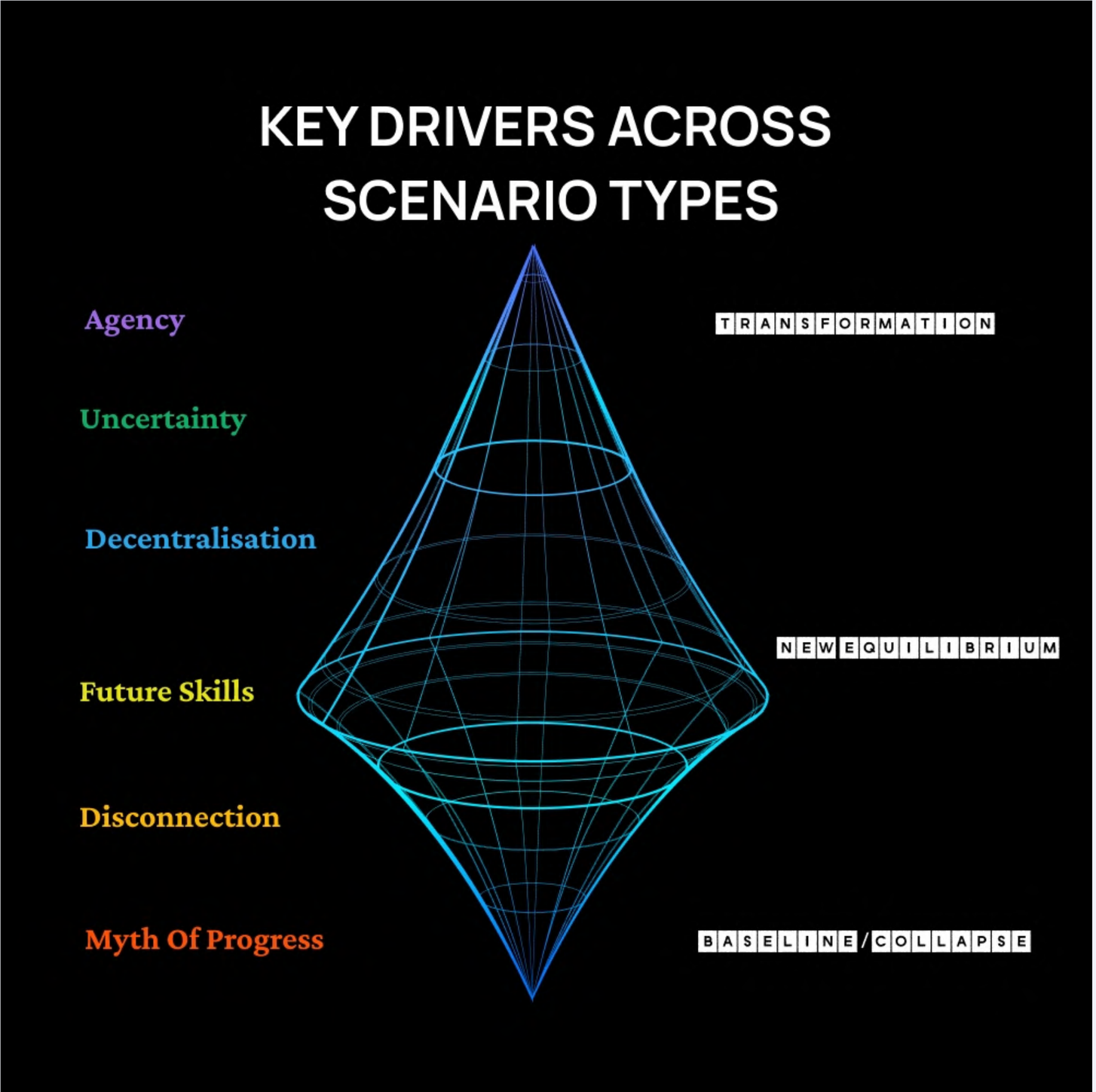
GLOBAL CITIZENS OF IMPACT

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.



Key Drivers X Scenario Archetypes

	BASELINE/COLLAPSE You've been schooled.	NEW EQUILIBRIUM A pedagogical pilgrimage toward shared futures of possibility.	Partially Post-Normal Futures TRANSFORMATION Decentralised education DAOs as complex systems dominated by uncertainty. A rewilding of the education landscape.	Post-Normal Futures TRANSFORMATION Education as an autopoietic system. A Relationship of Things (RoT)
Uncertainty The rise of an emergent system.	**Uncertainty** The rise of an emergent system. Uncertainty increases at an alarming rate both inside and outside the system. Global markets who have shifted their education systems will start to emerge as the new workforce leaders globally. The Edtech market continues to grow within Australia and becomes Australia's largest export putting Australia on the map for content management and administrative technology.	**Uncertainty** Breeds emergent resilient systems of change. Education leaders have driven major reform to reconceptualise learning in the face of new technology futures. They have been human lighthouses amidst a sea of increasing uncertainty and complexity, reminding us of the ways in which we ourselves have always made sense of the world. Education leaders go to war on the curriculum dichotomies of fact and skill, labelling them as polarising and incomplete foundations for possible futures ahead, and education's role is redefined as one of sense-making. Included in this reform is a redefinition of the roles of teacher vs student, to be redefined as learner and leader - both necessarily interchangeable roles dependent on context and pedagogical domain knowledge at play. The Online Manifesto is adopted by government leaders. Emergent learner innovations demonstrate the potential for new forms of behaviour, connection & value creation.	**Uncertainty** Breeds a local dynamic complex adaptive system model Education leadership becomes increasingly decentralised in this **dynamic complex adaptive system. The global education profession has bifurcated** into domain masters and learning coaches as private education DAOs become commonplace.Domain masters come from all over the world and co-create world-leading content for the system. Learning coaches are highly trained human facilitators who scaffold, nudge, prompt and stretch. Schools no longer exist, parents connect with learning coaches individually and create connections which last the secondary or high school season. The profession of 'learning coach' becomes a coveted role. Supply and demand regulates the market as learning coaches with low ratings find they can't make their quota of students. Domain masters are made up of academics, professionals or retired experts. The domain mastery model benefits from the extended career spans and changing work habits of older generations, who dip in and out of domain master roles over time. A current global domain mastery token (from the UEAD) is required to lead any domain pathway, and encourages significant increases in late-age learning participation amongst 70+ age groups.	**Uncertainty** Sees the emergence of a true autopoietic global system Education as an autopoietic system, 'produces and reproduces its own elements as well as its own structures'. It is the tension between the education system and the real world lived experience, which enables the sense-making for both learner and educator.The autopoietic system enables ongoing reconceptualisation of both - worldviews of learning, and the process by which those worldviews potentially transform over time. (Luhmann, N. (2012). Theory of Society, Volume 1. Trans. Rhodes Barrett. Stanford: Stanford University Press.) 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.
Future Skills An urgent reframe	**Future Skills** An urgent reframe Centralised policy and practice reform fails to increase basic maths & literacy measures and hinders the development of 21stC Future Skills amongst schools, teachers and students. Students who are able, seek more contemporary relevant skills elsewhere either through online or virtual school environments. 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 The focus shifts away from improvements in classroom teaching, toward building on the process of organic learning - using childhood sense-making as the north star. Historical ideas about grading and assessment are seen as bugs of the old system. Govt. leaders' adoption of The Online Manifesto and support of The Knowledge Commons, acknowledges the wholesale impact of the evolving hyperconnected world, and its power to shape and redefine learners' concepts of self, agency, interaction and reality. Govt. policymakers and education leaders' explicit recognition of the decreasing authority of intergenerational knowledge transfer, sparks a major cultural shift as education leaders (and parents) acknowledge that the challenge to continually identify and evolve future sense-making skills is critical to preparing learners for the future.	**Future Skills** A holistic reframe **The digital divide continues to be a focus for improvement** of governments and global education DAOs; however in this future state, the divide is no longer one of access, but rather of capability building across reflective, active, creative and critical ways of being in a digital space. **Technology is understood as a combination** of behaviours, specialised knowledge, technical know-how, workflow modelling, creative expression, connection and critical thinking. A variety of everyday technology is utilised by both learners and educators alike; acknowledging that technology choice is a deeply personal one and inextricably linked to learning style, content and current or future-desired capability. Just as airplane pilots learn to regain control by literally letting go during a plane's wild tumble, so, too, do educators and learners, need to learn to work with **the underlying context of uncertainty and change.**	**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. This is about as close to a historical textbook as they'll get. The widespread popularity of creator, hacker and startup culture has subsided as individual solo careers either independently or as part of a smaller collective subsystem within a larger system, are commonplace.
Disconnection Mind the Gap	**Disconnection** Mind the Gap The Australian Govt.'s continued shift toward centralising school operations and reform has failed to increase key OECD measures as these measures have been adjusted to better reflect 21stC skills, and contributed to declining capabilities overall within the education sector. Teachers' ability to adjust and adapt with more flexible and future-focused pedagogies is lower than ever. 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.	**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, is the idea of technology as something we can shape and employ instrumentally, rather than something which shapes us. However history has shown this to be untrue. Marshall McLuhan's theory that 'technologies are the means by which people are reinvented' has shown itself to be a pertinent theory of change in this future state. Education leaders and policymakers' reform signals the end of this disconnection between our historical denial of technology's power to shape us and our experience of technology in the real world. 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. Learning leaders have reconceptualised foundational domains of knowledge and their dynamic pedagogical models to encompass this new technology-driven operating context. 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.	**Dis Connection** Navigating the space between. Debate intensifies in the space between **human and non-human intelligence**. Definitions of intelligence, predictions about its evolution and implications for humans and non-humans are constantly evolving . Increasingly connected learning experiences surface new concerns around **data collection, analysis, privacy, security and ownership**. A 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 move 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.	**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. Students utilise different learning mode spaces 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. **Community technology infrastructure** becomes the main focus of Govt. spending as region now requires high speed broadband (cable), regularly updated hardware and technical support.
Myth Of Progress Distractions from the Endgame	**Myth Of Progress** Distractions from the Endgame Australia's edtech sector continues to grow dramatically with renewed focus across content management and administration technology platforms. The new Myth of Progress here is increasingly improved and efficient national aptitude scores (based on a national centralised curriculum) with metrics that have become irrelevant in a wider global context. The dominant framing of future-focused education objectives around 21stC skills for a 21stC workforce, perpetuates the legacy myth that school education's objective, should continue logically, to be linked with future employers' needs. Productivity continues to decline despite government's best efforts at increasing teacher efficiency. The gains in focus on consistent national curriculum and testing, have been achieved at the expense of capability building within schools and teachers themselves. Teaching numbers decline further with lower entry point requirements to attract more applicants; teaching becomes a last choice profession further reinforcing the perceived need for centralised leadership.	**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 continual decline in Australia's OECD academic measures demonstrated the fragility of the dominant narratives of the 2020s; but many education leaders now view that period in retrospect, as the necessary invitation to shape a new future. The historical edtech market has long been recognised as inherently problematic in pedagogical approach (or lack thereof), not to mention transparency, privacy, portability and interoperability. The establishment of the Critical Digital Futures Foundation (CDFF) encompasses both education and business leaders, creating a space for collaboration and consideration of second and third order implications, of any new technology applying to receive a 'responsible tech' classification. Student and teacher concern over privacy and ownership of personal data has been recognised as paramount to the production of agency, and integrated into educational law. Google classroom and other major platforms have been disestablished, as has the siloing of educational technology versus real-world technology.	**Myth Of Progress** The Mythology of the Metaverse **Learners and educators alike, begin to traverse new terrain** exploring concepts of physical and virtual self, everyday hybrid models of virtual connection / interaction, a changing sense of metaphysical reality and the ongoing development of **agency at both an individual and collective level.** Learners and educators navigate an abundance of information, relationships, connections, global change and opportunity daily, supported and guided by their own **relational nodes, networks and communities of practice.**	**Myth Of Progress** Legacy NPCs* won't survive the update. There is widespread acceptance of **hybrid reality**. Virtual reality is not a technological experience, it is an experience. Period. **New models emerge to progress the entity relationship model** of Artificial, Natural and Human Intelligence. A new balance emerges. **Technology shapes** the kinds of ideas we value, the quality of attention we pay, and our conceptions (and relationships) with our self and world. Technology creates new forms of behaviour, modes of expression, value models and forms of creativity and intelligence. Regardless of whether it is explicitly developed (or taught) to do so. **Systems thinking forms the backbone** of the meta-learning streams for both learners and educators. *Non-Playing-Characters
Agency Global Citizens of Impact	**Agency** Global Citizens of Impact Agency has increased amongst parents as homeschooling numbers skyrocket. Large percentages of (economically-advantaged) children are being homeschooled or attend an online virtual school. Of those students still physically attending school, larger numbers of advantaged children are attending part-time and supplementing with online education programs as more parents take their children's education into their own hands. Given declining productivity, teachers' pay has not increased substantially, and more teachers are shifting focus to take advantage of these new more profitable educational marketplaces.	**Agency** A Domain of One's Own It is the reimagining of education's core legacy myth which makes way for a new truth that allows us all to move toward positive future possibilities. School education's PURPOSE is to see the learner as a HUMAN person with AGENCY in a GLOBAL and CONNECTED COMMUNITY-DRIVEN world, that operates within a fast changing, uncertain and volatile context. It is this foundational understanding that invites a reimagining of how learners learn; and widespread acceptance that school education cannot remain unchanged in the face of such a disruption. Genuine learner agency and participatory power were achieved in large part, due to the tireless efforts of innovative policymakers who systematically deconstructed the hierarchies and binaries that defined the historical model. To their credit, they foresaw the pedagogical value of open dynamic educational approaches, designed to feed this autopoietic system. Inputs which embraced systemic uncertainty, and continued to evolve and re-form in response to the world around them over time. In 2032 led by these same policymakers, the Australian government passed 'The Education Agency Act' (EAA) which legislated this open dynamic systems model already underway in many independent schools, and rolled it out across the nation. Australia adopts the Domain of One's Own initiative some 15 years after its inception, creating space for learners and leaders to explore, discover and document their learning adventures. The nationwide initiative enables learners and leaders to exercise control over their work, personal data and digital identity.	**Agency** The single most important objective of education is the production of agency. **Learner Agency is no longer system dependent** and virtual relationships / networks invite the development of agency through connection and creative self-expression. Metaverse spaces and communities-of-practice offer distinct **social and relational value in the development of agency** that must be learned through authentic experience.	**Agency** Agency emerges through self-generated 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. C**redentials are stacked**, and there is no longer a clear distinction between learning, creating, connecting and working.
Decentralisation Everything is (not) Connected	**Decentralisation** Everything is (not) Connected Bucking the global trend toward decentralisation; Australian Education continues with greater centralisation at a national level due to increasing pressure to increase productivity and bring all schools into line. Curriculum is highly structured with clear output and nationally-focused assessment metrics driven down through schools to all teachers. The role of teacher becomes one of 'instructing' a tightly defined syllabus and national focus narrows in on internal assessments & testing to improve school scores as evidence of reform. Key metrics of success become more decentralised, as Australia's education system decouples from global measurements of future-readiness and capability.	**Decentralisation** The mechanistic solutions to address inequity, are equally distributed The educational challenges our society faced throughout the period of 2024 - 2029 demonstrated unequivocally, that politically driven models to address inequality were not sufficient to meet potential futures, nor to address the self-sustaining mechanisms producing such widespread inequity . The educational challenges our society faced throughout the period of 2024 - 2029 demonstrated unequivocally, that politically driven models to address inequality were not sufficient to meet potential futures, nor to address the self-sustaining mechanisms producing such widespread inequity . Contrary to our historical tendency to stretch curriculum and resources out to the margins; the transformative period post-2030 saw innovative learning policymakers re-position marginalising mechanisms at the centre of education reimagining. Drivers of marginalisation became the starting point for revolutionary reforms. The innovative solutions to address techno-poverty, structural inequity, regional and rural divides and neurodivergence paradigms, provide a starting place for this dynamic educational system.	**Decentralisation** All Learning is Voluntary. World leaders form the UEAD (United Education Alliance self-governing DAO) and decentralised education progresses at a rapid rate across the world. Over time organic autonomous networks of both learners, coaches and domain masters connect in their own **self-governing education DAOs** as they co-create future learning opportunities, pathways and opportunity networks. Govt. education budgets historically directed toward physical infrastructure are repurposed for annual technology device updates for all learners under 21. Govt. funding is also diverted to in-person meetups, which becomes the norm for both learners and educators. **Learners are supported to develop their own knowledge networks** enabling global collaboration and co-creation, **stewarded by progressive educators.**	**Decentralisation** You can lead from any chair. Or laptop. **A transformative shift from the primacy of binary relationships** and individual players, asset, nodes or parts - to the primacy of entity relationships, interactions, processes and networks. **Learning pathways** (including content, modes of interaction and proof-of-work projects) 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 and knowledge transfer such as wikipedia, 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.

KEY DRIVERS ACROSS FOUR SCENARIOS

BASELINE
NEW EQUILIBRIUM
PARTIALLY-NORMAL TRANSFORMATION
POST-NORMAL TRANSFORMATIO

+ + STRONGLY REINFORCES + REINFORCES 0 NEUTRAL - - STRONGLY CONTRADICTS - CONTRADICTS

THE FUTURE OF PEDAGOGICAL TECHNOLOGY WITHIN THE AUSTRALIAN SECONDARY SCHOOL MARKET.

https://www.youtube.com/watch?v=3_aJsQ7zeK8

	Uncertainty	FutureSkills	Disconnection	Myth of Progress	Agency	Decentralisation	
Uncertainty		++	+	+	+	+	Rising uncertainty has the **biggest impact** on futureskills needs.
Future Skills	+ /–		–	– –	++	+	Increasingly transformed future skills **strongly contradicts** the myth of progress and **strongly reinforces** Agency.
Disconnection	+ +	––		+	–	0	Rising disconnection b/w pedagogy & potential futures **strongly contradicts** Futures kills and **strongly reinforces** Uncertainty.
Myth of Progress	+	–	+		–	–	Rising growth in the Myth of Progress **contradicts** Future Skills and Agency.
Agency	– –	++	–	–		+	Rising Agency **strongly reinforces** Future Skills needs and **strongly contradicts** Uncertainty.
Decentralisation	0	+	–	0	++		Decentralisation **strongly reinforces** Agency.
	Uncertainty both **reinforces** risk (Disconnection) and **contradicts** Agency.	Future Skills **contradicts** risk (Uncertainty, Disconnection) and **reinforces** Agency.			Rising Agency has the **highest dependance** on Future Skills & Decentralisation, and **contradicts** Disconnection and Myths of Progress.	Decentralisation has the **lowest dependence** on other variables.	

KEY RISK DRIVERS REINFORCE EACHOTHER : UNCERTAINTY, MYTHS OF PROGRESS AND DISCONNECTION

THE FUTURE OF PEDAGOGICAL TECHNOLOGY (WITH A FOCUS ON VIRTUAL, IMMERSIVE AND AI) WITHIN THE AUSTRALIAN SECONDARY SCHOOL MARKET.

	Uncertainty	FutureSkills	Disconnection	Myth of Progress	Agency	Decentralisation	
Uncertainty		++	+	+	+	+	Rising uncertainty has the **biggest impact** on futureskills needs.
Future Skills	+ /–		–	– –	++	+	Increasingly transformed future skills **strongly contradicts** the myth of progress and **strongly reinforces** Agency.
Disconnection	+ +	––		+	–	0	Rising disconnection b/w pedagogy & potential futures **strongly contradicts** Futures kills and **strongly reinforces** Uncertainty.
Myth of Progress	+	–	+		–	–	Rising growth in the Myth of Progress **contradicts** Future Skills and Agency.
Agency	– –	++	–	–		+	Rising Agency **strongly reinforces** Future Skills needs and **strongly contradicts** Uncertainty.
Decentralisation	0	+	–	0	++		Decentralisation **strongly reinforces** Agency.

Uncertainty both **reinforces** risk (Disconnection) and **contradicts** Agency.

Future Skills **contradicts** risk (Uncertainty, Disconnection) and **reinforces** Agency.

Rising Agency has the **highest dependance** on Future Skills & Decentralisation, and **contradicts** Disconnection and Myths of Progress.

Decentralisation has the **lowest dependence** on other variables.

POSITIVE DRIVERS ALSO REINFORCE EACHOTHER : FUTURE SKILLS & AGENCY

THE FUTURE OF PEDAGOGICAL TECHNOLOGY (WITH A FOCUS ON VIRTUAL, IMMERSIVE AND AI) WITHIN THE AUSTRALIAN SECONDARY SCHOOL MARKET.

	Uncertainty	FutureSkills	Disconnection	Myth of Progress	Agency	Decentralisation	
Uncertainty		++	+	+	+	+	Rising uncertainty has the **biggest impact** on futureskills needs.
Future Skills	+ /–		–	– –	++	+	Increasingly transformed future skills **strongly contradicts** the myth of progress and **strongly reinforces** Agency.
Disconnection	+ +	––		+	–	0	Rising disconnection b/w pedagogy & potential futures **strongly contradicts** Futures kills and **strongly reinforces** Uncertainty.
Myth of Progress	+	–	+		–	–	Rising growth in the Myth of Progress **contradicts** Future Skills and Agency.
Agency	– –	++	–	–		+	Rising Agency **strongly reinforces** Future Skills needs and **strongly contradicts** Uncertainty.
Decentralisation	0	+	–	0	++		Decentralisation **strongly reinforces** Agency.

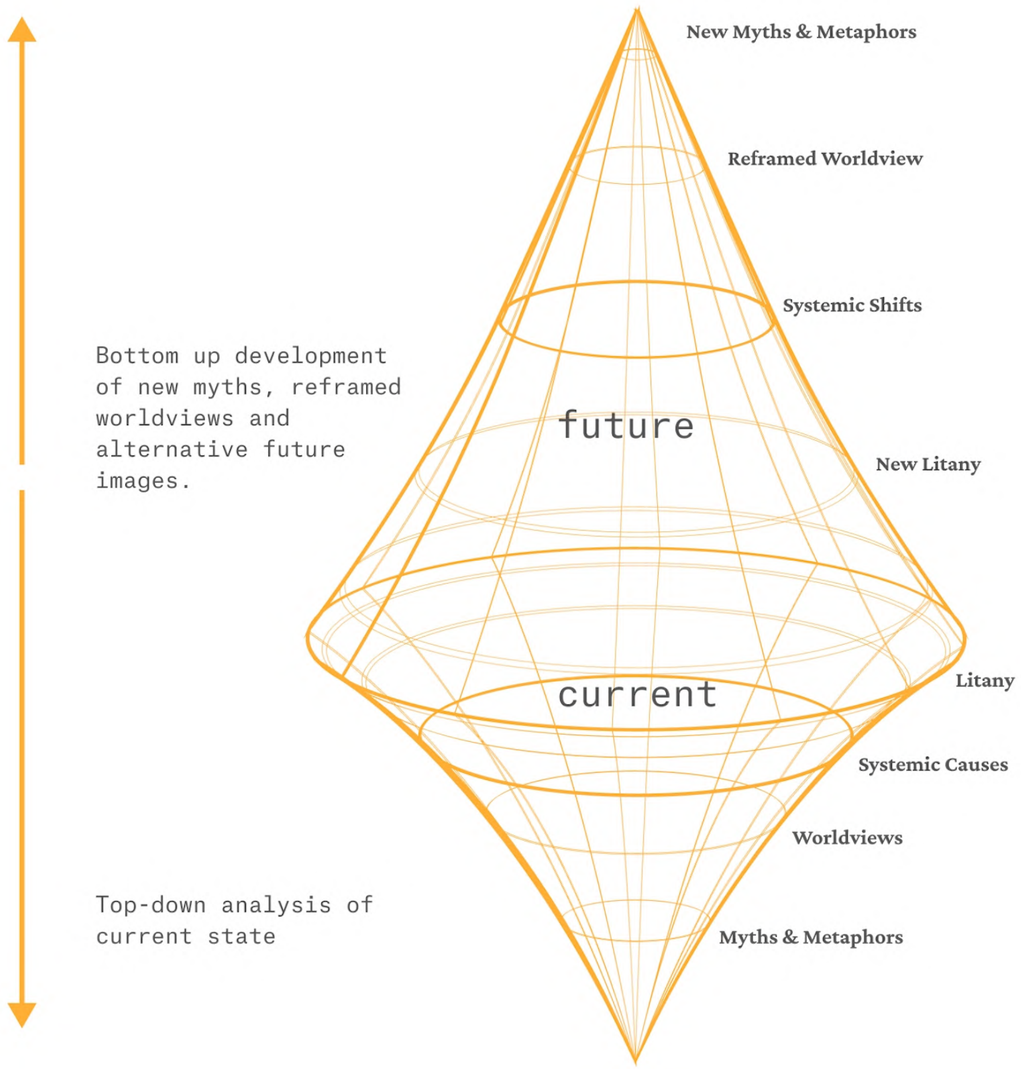
Uncertainty both **reinforces** risk (Disconnection) and **contradicts** Agency.

Future Skills **contradicts** risk (Uncertainty, Disconnection) and **reinforces** Agency.

Rising Agency has the **highest dependance** on Future Skills & Decentralisation, and **contradicts** Disconnection and Myths of Progress.

Decentralisation has the **lowest dependence** on other variables.

Causal Layered Analysis



Adapted from Hao Wang | Sebastien's model of 'Envisaging futures by Causal Analysis', 2015

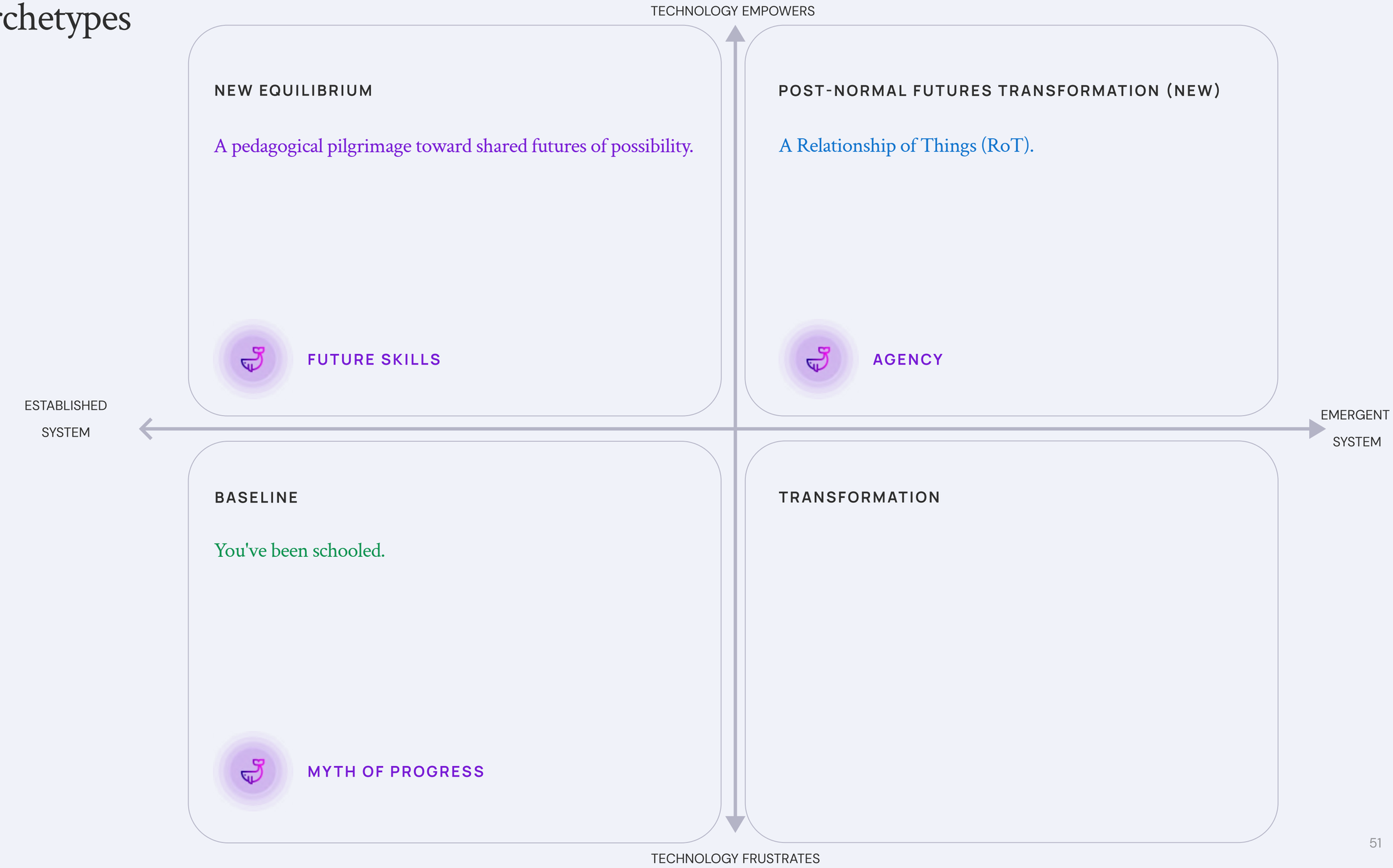
	Provocative Questions	EDUCATION SYSTEM REALITY *Govt. policymakers and Educational Advisors*	TEACHER REALITY *Educators, Teachers on the Front Line*	STUDENT WORLDVIEW *Early Adopters on the Edge*	TRANSFORMATIVE FUTURES *Post-normal Futures*
Litany - 'The Buzz' The official description of the problem. Externalised reality. Often disconnected to other perspectives.	What's the obvious problem? What might we see in news headlines or common posts?	Technology is dramatically changing the future of work landscape. **Solution**: Technology must be integrated into educational curriculum to help students develop 21stC skills and prepare them for the future of work.	The integration of technology as an administrative and learning enabler is an important part of student 21stC skill development. **Solution**: Integrate technology with existing education frameworks, curriculum and content with adaptions where necessary. Look for opportunities to teach digital skills, use digital tools and provide students with a general understanding of the technology landscape.	The school education experience of technology and possible futures no longer matches my own lived experience. **Solution:** School is something I'll endure (if I have to) to tick the box. I will continue to develop and shape my online self outside of school.	Technology is an amplifier of human intent and capacity. (Kentaro Toyama) **Solution**: 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.
Systemic Causes Why is this happening? Often short-term analysis, either single or multi-variable. Historical variables can be explored here inc. policy.	What systems are sustaining this problem or issue? How are existing structures, policy or mechanisms perpetuating this issue?	The unrelenting pace of technological innovation, AI and automation is changing the skill base required for future work. More educational technology platforms, devices, teacher training and tech-focused curriculum content is required to prepare students for the future.	Curriculum and pedagogy based on information control and teacher-as-mediator / conduit. Teacher shortages and lack of teacher training makes technology a heavy lift for many. The education system has asked . . and Edtech has answered with training, resources and support for educators.	Information abundance. Knowledge is being developed, produced and disseminated faster than ever before. Edtech has little in common with real world technology and represents another kind of lock-in and disconnect - of which even teachers themselves, are unaware. Virtual relationships and networks invite the development of agency through connection and creative self-expression. Metaverse spaces and communities-of-practice have distinct social and relational value in the development of agency that must be learned through authentic experienced.	Technology shapes the kinds of ideas we value, the quality of attention we pay, and our conceptions (and relationships) with our self and world. Technology creates new forms of behaviour, modes of expression, value models and forms of creativity and intelligence. Regardless of whether it is explicitly developed (or taught) to do so. No clear distinction between learning, creating, connecting and working.
Worldviews Discerning deeper assumptions behind the problem. Critically viewing the issue through multiple worldviews.	What culture of ideas or norms legitimates this issue in its current form? What cultural values support this issue or current state? What are the underlying assumptions or models which support this issue?	Post-Industrialist / Instrumentalist - students must be taught. Education produces students who can participate and contribute to the future economy. Knowledge is transferred from one generation to the next, albeit with some updating. There are no 'shot cuts'. Education is ideologically neutral, therefore existing pedagogical frameworks can be adapted to incorporate technology. Technology is an enabler, a tool to be understood and mastered.	Teachers need to be one step ahead. The primacy of individual players, asset, nodes or parts. The primacy of binary relationships. *The Online Manifesto* A fine line between curiosity, collaboration and chaos. Agency develops through growth mindsets, models of enquiry, learning and engaging with the world.	Post-normal futures. You can lead from any chair. Or laptop. The primacy of interactions, processes and networks. *The Online Manifesto* The new value being exchanged online is uniquely expressed, exchanged and developed within these spaces of shifting power, expertise, influence and interaction. It's messy, non-linear and open source. In online / virtual spaces, the development of personal agency is a uniquely social, connective act.	Open source life. Legacy Non-Playing-Characters (NPCs) won't survive the update. 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. I connect therefore I am.
Myths & Metaphors These are the deeper stories that surface the assumptions underneath a challenge. This is where deep inner transformation is required, and solutions emerge from new narratives.	What are the underlying unconscious belief systems or archetypal thinking that underpins the cultural worldviews and beliefs?	Grownups know best. Students learn and teachers teach. Education is an output-focused system responding to future market needs. Virtual UNreality Digital avatars as fantasy.	Grownups know best. Students learn and teachers teach. Education is an output-focused system to prepare students for the employers of their future. Virtual UNreality Digital avatars as fantasy.	Respect, credibility and expertise is earned not learned. We must unlearn in order to go forward. We are all learners and we are all educators, depending on the context. I am most likely the employer in my future. I will shape the future of work as much as I respond to it. Blurring between reality and virtuality Blurring between humans and machines. Digital avatar as another authentic expression of self.	All learning is voluntary. Generous contributions are the currency of all future-state value networks. Proof-of-work becomes Proof-of-self. Widespread acceptance of Hybrid Reality. Artificial Intelligence and Human Intelligence. Permanently : ONLINE

Adapted from Sohail Inayatullah's CLA Model: a 4 step approach, 2019

Scenarios

Scenario Archetypes

SUMMARY

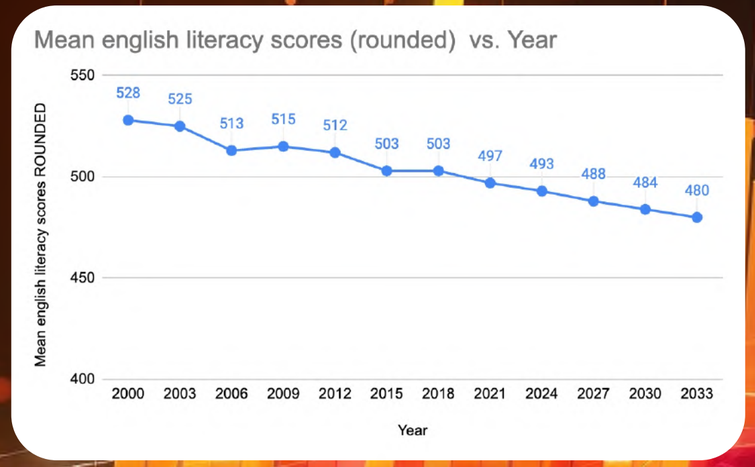


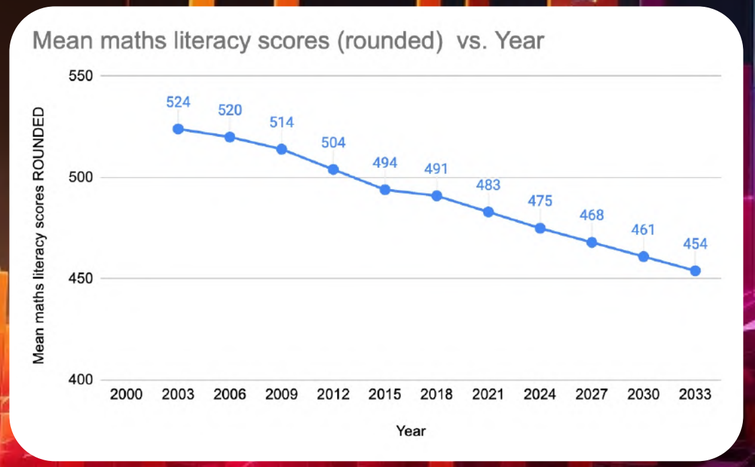
You've been schooled.

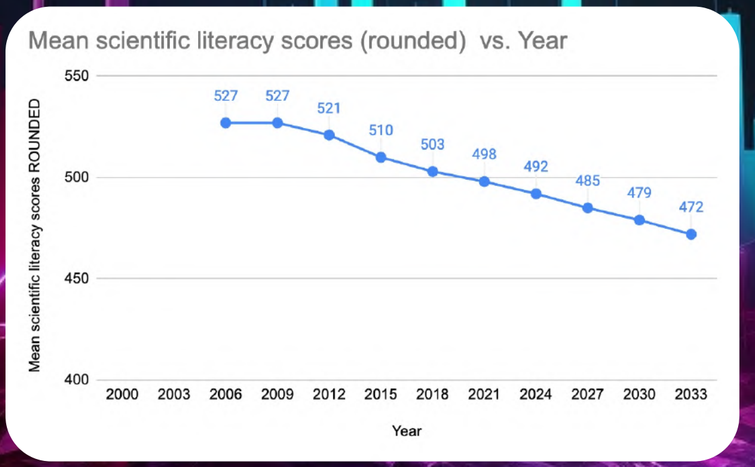
BASELINE SCENARIO TRENDS

HOW CURRENT TRENDS TRENDS PLAY OUT

AUSTRALIA'S STUDENTS CONTINUE TO DECLINE OVERALL IN MATHS, SCIENCE AND ENGLISH LITERACY SCORES.





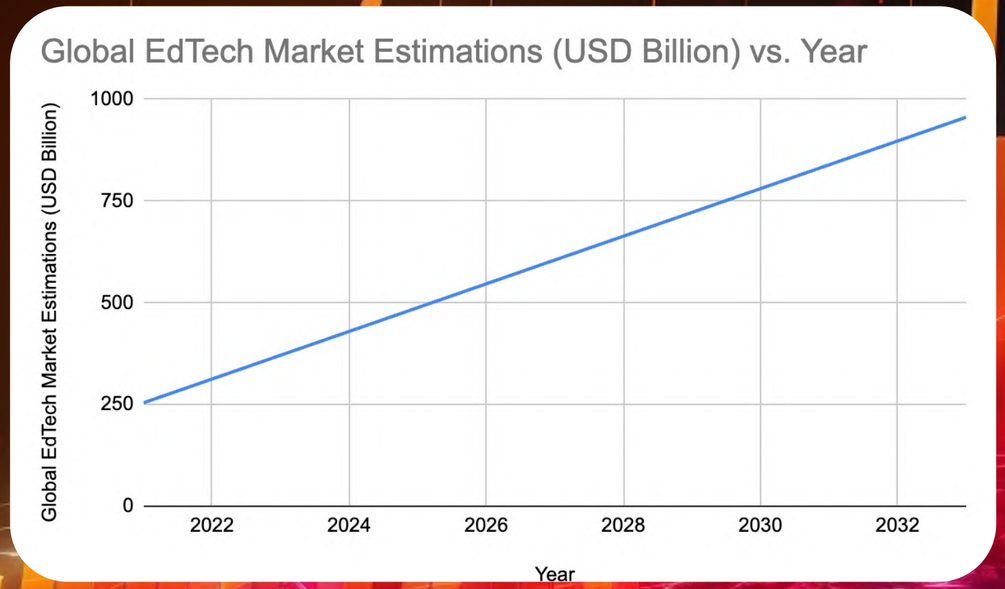


PROJECTED MEAN SCORES FOR AUSTRALIAN STUDENTS CALCULATED ON EXISTING OECD AUSTRALIAN PISA EDUCATION SURVEYS 2000 - 2018.

BASELINE SCENARIO TRENDS

HOW CURRENT TRENDS TRENDS PLAY OUT

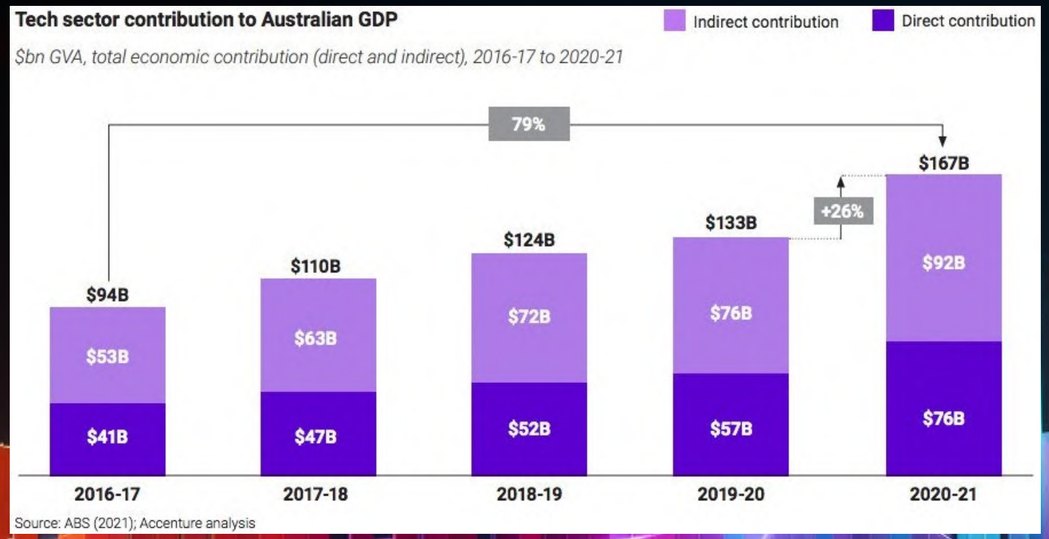
GLOBAL EDTECH GROWTH CONTINUES



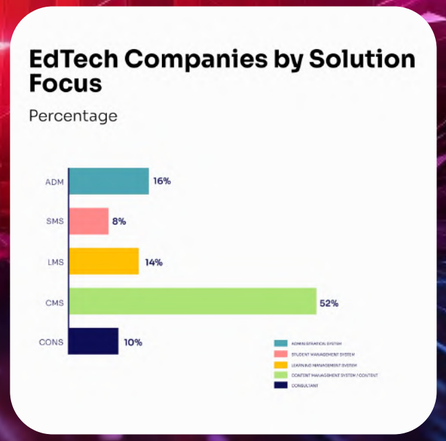
PROJECTED FIGURES BASED ON RESEARCHANDMARKETS TREND PROJECTIONS (FOR PROVOCATIVE PURPOSES ONLY).

FURTHER REFERENCE: AUS EDTECH MARKET CENSUS 2017, 2019

AUSTRALIA'S 2ND LARGEST STARTUP SECTOR AND 3RD BIGGEST EXPORT CONTINUES TO GROW…



ACCENTURE ANALYSIS VIA CONSULTANCY.COM.AU



WITH A CONTINUED FOCUS ON CONTENT MANAGEMENT SYSTEMS AND ADMINISTRATIVE TECHNOLOGY.

EDUGROWTH AUSTRALIA

BASELINE SCENARIO SUMMARY

BASELINE FUTURE DRIVER OUTCOMES

BASELINE I 2033

UNCERTAINTY
THE RISE OF AN EMERGENT SYSTEM

BASELINE I 2033

Uncertainty increases at an alarming rate both inside and outside the system.
Global markets who have shifted their education systems will start to emerge as the new workforce leaders globally.
The Edtech market continues to grow within Australia and becomes Australia's largest export putting Australia on the map for content management and administrative technology.

FUTURE SKILLS
AN URGENT REFRAME

Centralised policy and practice reform fails to increase basic maths & literacy measures and hinders the development of 21stC Future Skills amongst schools, teachers and students. Students who are able, seek more contemporary relevant skills elsewhere either through online or virtual school environments. 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.

DISCONNECTION
MIND THE GAP

The Australian Govt.'s continued shift toward centralising school operations and reform has failed to increase key OECD measures as these measures have been adjusted to better reflect 21stC skills, and contributed to declining capabilities overall within the education sector. Teachers' ability to adjust and adapt with more flexible and future-focused pedagogies is lower than ever. 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.

MYTH OF PROGRESS
DISTRACTIONS FROM THE ENGAME

Australia's edtech sector continues to grow dramatically with renewed focus across content management and administration technology platforms. The new Myth of Progress here is increasingly improved and efficient national aptitude scores (based on a national centralised curriculum) with metrics that have become irrelevant in a wider global context.
Productivity continues to decline despite government's best efforts at increasing teacher efficiency. The gains in focus on consistent national curriculum and testing, have been achieved at the expense of capability building within schools and teachers themselves. Teaching numbers decline further with lower entry point requirements to attract more applicants; teaching becomes a last choice profession further reinforcing the perceived need for centralised leadership.

AGENCY
GLOBAL CITIZENS OF IMPACT

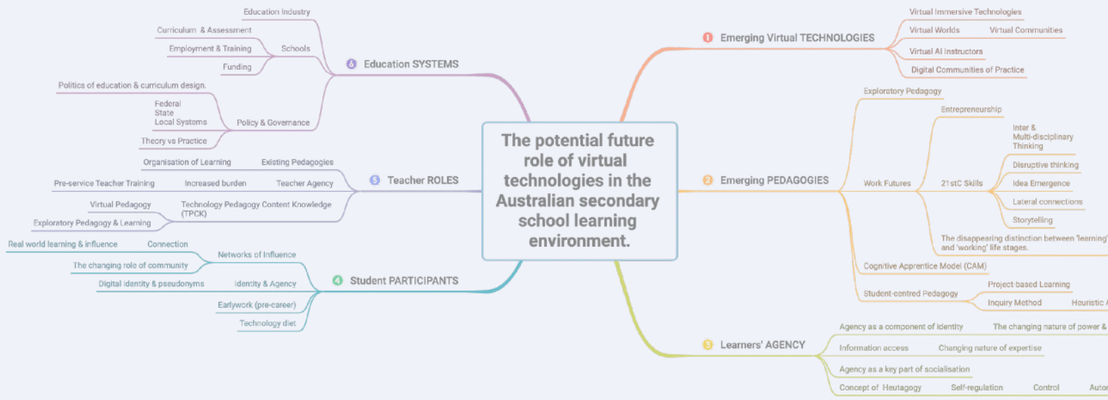
Agency has increased amongst parents as homeschooling numbers skyrocket. Large percentages of (economically-advantaged) children are being homeschooled or attend an online virtual school. Of those students still physically attending school, larger numbers of advantaged children are attending part-time and supplementing with online education programs as more parents take their children's education into their own hands. Given declining productivity, teachers' pay has not increased substantially, and more teachers are shifting focus to take advantage of these new more profitable educational marketplaces.

DECENTRALISATION
EVERYTHING IS (NOT)CONNECTED

Bucking the global trend toward decentralisation; Australian Education continues with greater centralisation at a national level due to increasing pressure to increase productivity and bring all schools into line. Curriculum is highly structured with clear output and nationally-focused assessment metrics driven down through schools to all teachers. The role of teacher becomes one of 'instructing' a tightly defined syllabus and national focus narrows in on internal assessments & testing to improve school scores as evidence of reform. Key metrics of success become more decentralised, as Australia's education system decouples from global measurements of future-readiness and capability.

MYTH OF PROGRESS

You've been schooled.



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 increasing 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.

Baseline

A pedagogical pilgrimage toward shared futures of possibility.

UNCERTAINTY

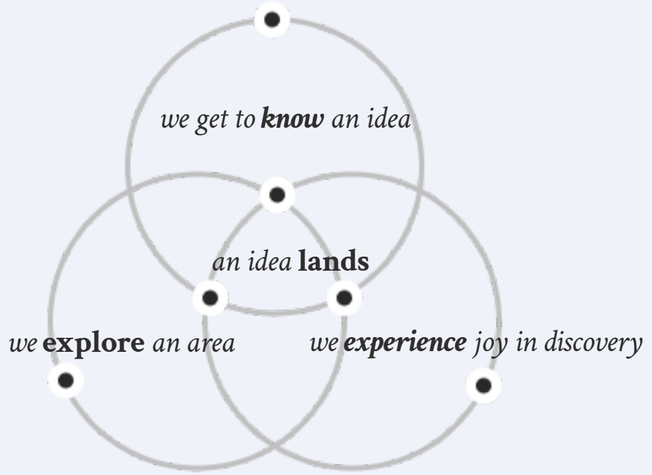
BREEDS EMERGENT RESILIENT SYSTEMS OF CHANGE

"Agency, dialogue, self-actualization, and social justice are not possible in a hierarchical system that pits teachers against students and encourages competition by ranking students against one another."

JESSE STROMMEL

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, is the idea of technology as something *we* can shape and employ *instrumentally*, rather than something which shapes us. However the past impacts of social media and the increasingly virtual experiences of younger generations, have showed this to be unquestionably false.

In this transformative state, education leaders have driven major reform to reconceptualise learning in the face of new technology futures. They have been human lighthouses amidst a sea of increasing uncertainty and complexity, reminding us of the ways in which *we* ourselves have always made sense of the world . . .



Corporate learning leaders bolstered by the motivation of economic output, have accepted this to be true for some time as we observed their swift bypassing of linear learning systems and tech fads. In the early 2030s we see education leaders go to war on the curriculum dichotomies of fact and skill, labelling them as polarising and incomplete foundations for possible futures ahead, and education's role is redefined as one of sense-making. Included in this reform is a redefinition of the roles of teacher vs student, to be redefined as learner and leader - both necessarily interchangeable roles dependent on context and pedagogical domain knowledge at play.

UNCERTAINTY

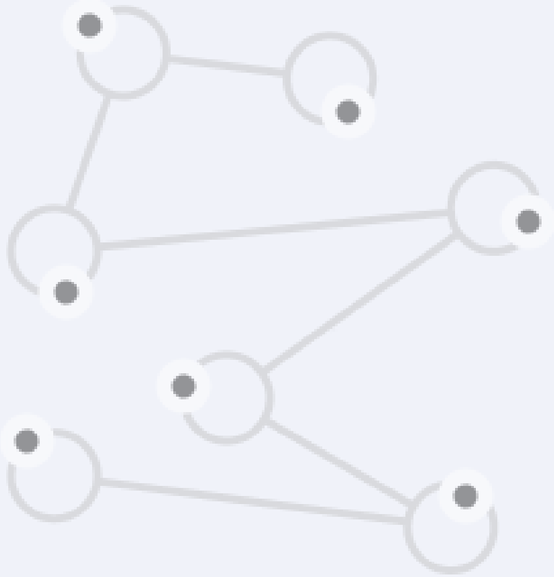
BREEDS EMERGENT RESILIENT SYSTEMS OF CHANGE

Emergent systems of agency within learner networks embrace uncertainty

The Online Manifesto adopted by government leaders, reminds us that technology impacts the kinds of ideas we value, the quality of attention we pay, and our conceptions of self and world. Emergent learner innovations demonstrate the potential for new forms of behavior, values, and thought, even when they are not explicitly instructed to do so. It's starting to seem like we might be able to place our trust in this new educational ecosystem after all.

“A close relationship has always existed between education and technology, but also, that the history of educational technology is full of futures that have never been presents."

CCCBLAB



DECENTRALISATION

EVERYTHING IS DISTRIBUTED

"Study after study, it is completely clear that designing for those at the margins leads to greater learning experiences for all."

CHRIS MCNUTT
HUMAN RESTORATION PROJECT

THE MECHANISTIC SOLUTIONS TO ADDRESS INEQUITY, ARE EQUALLY DISTRIBUTED

The educational challenges our society faced throughout the period of 2024 - 2029 demonstrated unequivocally, that politically driven models to address inequality were not sufficient to meet potential futures, nor to address the self-sustaining mechanisms producing such widespread inequity .

Contrary to our historical tendency to *stretch curriculum and resources out to the margins;* the transformative period post-2030 saw innovative learning policymakers re-position marginalising mechanisms at the centre of education reimagining. Drivers of marginalisation became the *starting point* for revolutionary reforms. The innovative solutions to address techno-poverty, structural inequity, regional and rural divides and neurodivergence paradigms, provide a starting place for this dynamic educational system.

DISCONNECTION

FROM THE WAY THINGS USED TO BE

“The spoken word was the first technology by which man was able to let go of his environment, in order to grasp it in a new way . . .

. . It is the framework that changed with each new technology and not just the picture within the frame.”

MARSHALL MCLUHAN

FROM HISTORIES PAST

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, is the idea of technology as something *we* can shape and employ *instrumentally*, rather than something which shapes us. However the past impacts of social media and the development of sophisticated metaverse experiences within younger generations, showed this to be untrue.

Marshall McLuhan's theory that 'technologies are not simply inventions that people employ, but are the means by which people are reinvented' has shown itself to be a theory of change more relevant than ever in this future state. Just as the advent of the publishing industry did not just increase communication, but also created the 'author' and necessarily a 'public'; so too, did social media create the role of 'social influencer'. Unlike historical persons of influence or charismatic charlatans, the modern social media influencer's primary value was *the ability to connect and interpret the world*, through a shared system of meaning, redefining notions of expertise amid a noisy landscape of information, through new modes of connection and distributed networks of increasing influence.

FROM PRE-DIGITAL IDEAS

In a transformative state, education leaders and policymakers' reform signals the end of this disconnection between our historical denial of *technology's power to shape us* and our experience of technology in the real world. 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.

DISCONNECTION

FROM HORSELESS CARRIAGES

"Technologies primary effect is to amplify human forces. Like a lever, technology amplifies people's capacities in the direction of their intentions "

KENTARO TOYAMA

From horseless carriages

The historical Myth of Progress that is legacy edtech, would have us believe technology-inclusive pedagogy is surplus to the efficiencies of new learning systems. We now know this presumption to be incorrect at the deepest level.

As an adult competent in math, you may not be able to easily solve a Year 9 equation; but the foundations of math learning, enable you to be fluent in a more expansive mind framework of logic, puzzles, problem-solving and paradoxes.

Learning leaders have reconceptualised foundational domains of knowledge and their dynamic pedagogical models to encompass this new technology-driven operating context. 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.

THE MYTH OF PROGRESS

LEGACY EDTECH HAS LEFT THE STABLE

"We have forever changed the way in which we communicate, inform, work, relate with each other, love and protest

. . . (technologies) influence and give form to our actions, in the same measure in which our actions give form to technological objects. Not only do they change what we do, but also what we are. When we design them, we promote and amplify certain behaviours and limit and reduce others."

MANUEL CASTELLS

CCCBLAB

The horseless carriage of steady state has bolted.

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 WHAT and the HOW may have been easier to dispense and measure, but the sum of these parts in no way added up to the whole that new futures required. The continual decline in Australia's OECD academic measures demonstrated the fragility of the dominant narratives of the 2020s; but many education leaders now view that period in retrospect, as the necessary invitation to shape a new future.

By the time we reach 2033, the historical edtech market has long been recognised as inherently problematic in pedagogical approach (or lack thereof), not to mention transparency, privacy, portability and interoperability. The establishment of the Critical Digital Futures Foundation (CDFF) encompasses both education and business leaders, creating a space for collaboration and consideration of second and third order implications, of any new technology applying to receive a 'responsible tech' classification.

Student and teacher concern over privacy and ownership of personal data has been recognised as paramount to the production of agency, and integrated into educational law. Google classroom and other major platforms have been disestablished, as has the siloing of educational technology versus real-world technology.

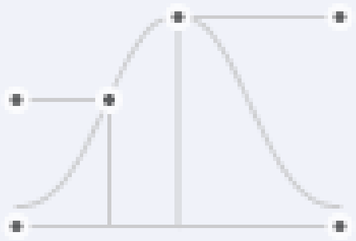
THE MYTH OF PROGRESS

POLITICALLY-DRIVEN REFORM HAS FOLLOWED EDTECH

"While outcomes theoretically prepare students to meet the requirements of an industrialized world — where deadlines and measurable productivity are the backbone of labor — they do not empower students to question labor practices, to demand change, or to genuinely innovate."

HYBRID PEDAGOGY

In the transformative state, the *Myth* of Progress . . is that the pathway is an economic one.



The 2020s discourse of education futures spun itself on the axis of commerce. The dominant framing of future-focused education objectives around 21stC skills for a 21stC workforce, perpetuated the legacy myth that school education's objective, should continue logically, to be linked with future employers' needs.

It is the reimagining of this central myth which makes way for a new truth that allows us all to move toward positive future possibilities. School education's PURPOSE is to see the learner as a HUMAN person with AGENCY in a GLOBAL and CONNECTED COMMUNITY-DRIVEN world, that operates within a fast changing, uncertain and volatile context. It is this foundational understanding that invites a reimagining of how learners learn; and widespread acceptance that school education cannot remain unchanged in the face of such a disruption.

Students are not 'outputs' in a system of economic production. They are the seeds of sovereign change, in a globally connected world of humans with infinite possibility.

FUTURE SKILLS IN SENSE-MAKING

A NECESSARY REFRAME

"We think of smart/learning objects as yet not finished entities that can evolve their behaviors by observing, reading and interpreting our habits. They train their algorithms based on deep learning or similar ways to constantly adapt and refine their decisions."

AUTOMATE.FARMS

The Knowledge Commons

The focus of decentralised education leaders within this increasingly autopoietic system, is not how to improve classroom teaching, but rather, how to build on the process of organic learning that we know starts with young children as they begin to develop their sense of the world.

The Online Manifesto adopted by government leaders, recognises that being part of this hyperconnected world to its fullest future extent, will impact, shape and in many ways, redefine learners' concepts of self, agency, interaction and reality. Indeed it will also redefine the way we think about open access information, collective intelligence and the development, ownership and evolution of knowledge itself. Welcome to the age of the knowledge commons.

The current educational policy framework in 2033, acknowledges the more likely case, that *it is us* the policymakers, educational leaders and parents , who are not fluent in this new language of future. This explicit recognition of the decreasing authority of intergenerational knowledge transfer, sparks a major cultural shift as education leaders (and parents) acknowledge that the challenge to continually identify and evolve future sense-making skills is critical to preparing learners for the future. Moreover, it is a challenge that must be shared by both leaders *and* learners alike.

The schools of the past, have no place in this future system.

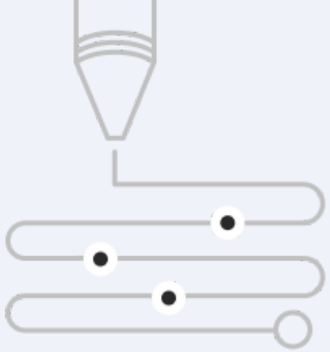
And yet; it is the education leaders and learners embracing this transformation, that will shape our possible futures for the years to come.

FUTURE SKILLS IN SENSE-MAKING

A NECESSARY REFRAME

"The Web...reminds us that the fundamental unit of time isn't a moment, it's a story, and the string that holds time together isn't the mere proximity of moments but our interest in the story."

DAVID WEINBERGER



A new story

Language matters because it tells people how we see things.

Pick any paper from the 2020s and you will see countless headlines about 21stC skills for the 'Future of Work'. In the current day (2033) education leaders commonly accept that this language functioned in many ways, to decrease agency in its suggestion that the future was somehow singular and already predetermined in some way, - we just had to prepare students for it. Both leaders and learners have reframed that space away from 'future preparedness', toward an agency-driven positioning - one of future skills in sense-making. The phrase is suggestive of a shared challenge for leaders and learners, a common goal and one that is not directed at a kind of 'future destination' for which we must be prepared, but rather, one which invites possible future adventures ahead, through shared discovery and sense-making - to wherever we end up.

Just as the STEM programs of the past decade taught learners via computer programming, to speak in a language both they and computers could understand. Today learners and leaders are developing a shared understanding of both current and emergent sense-making skills, as they build their agency-powered muscles of connection and contribution in the myriad of ways that continue to emerge in these new shared futures.

AGENCY

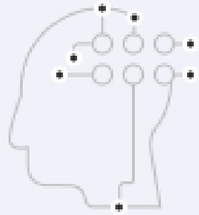
PARTICIPATORY POWER

“In the world of digitally networked publics, online participation — if you know how to do it — can translate into real power. Participation, however, is a kind of power that only works if you share it with others.”

HOWARD RHEINGOLD

Pedagogies are like opinions: we all have them.

STEPHEN BARNARD



The notion of digital presence for many students in the decade prior, consisted of regrettable social media postings with intermittent scatterings of digital literacy and e-safety thrown in for good measure. But the arrival of authentic digital connection and learner sovereignty was no panacea.

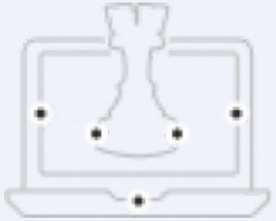
Genuine learner agency and participatory power were achieved in large part, due to the tireless efforts of innovative policymakers who systematically deconstructed the hierarchies and binaries that defined the historical model. To their credit, they foresaw the pedagogical value of open dynamic educational approaches, designed to feed this autopoietic system. Inputs which embraced systemic uncertainty, and continued to evolve and re-form in response to the world around them over time. In 2032 led by these same policymakers, the Australian government passed 'The Education Agency Act' (EAA) which legislated this open dynamic systems model already underway in many independent schools, and rolled it out across the nation.

AGENCY

A DOMAIN OF ONE'S OWN

That's your domain. You cultivate ideas there – quite carefully, no doubt, because others might pop by for a think. But also because it's your space for a think.

AUDREY WATTERS



A screen with a wider view

In a transformative future state; the primacy of enabling intellectual structures to be built by the learner, not taught by the teacher, becomes the driving force in all education policy. The role of technology in the development of personal agency, provides a community of practice, helping learners understand *how to be in this space*.

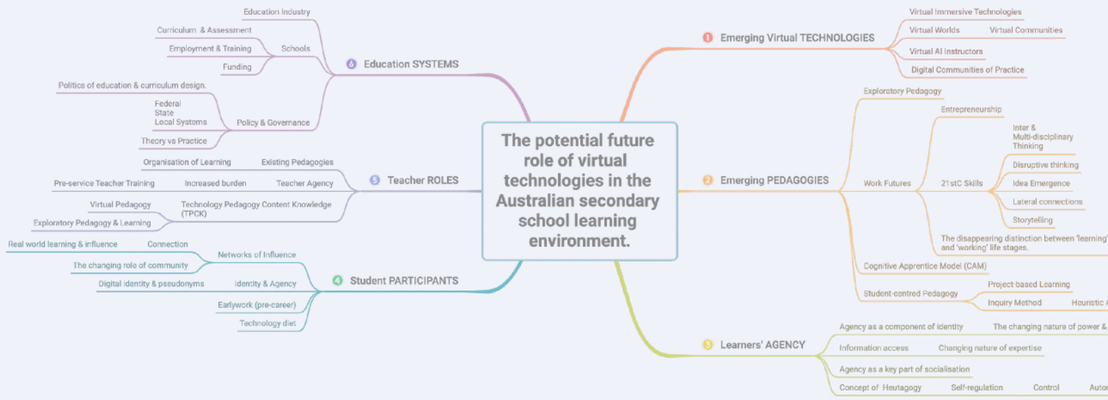
Australia adopts the Domain of One's Own initiative some 15 years after its inception, creating space for learners and leaders to explore, discover and document their learning adventures. The nationwide initiative enables learners and leaders to exercise control over their work, personal data and digital identity.

Learners are recognised as scholars, and leaders as forces of change in their own right.

It's beginning to feel like a revolution.

A pedagogical pilgrimage toward shared futures of possibility.

AGENCY



A pedagogical pilgrimage toward shared futures of possibility.

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.

LEARNING REPRESENTS A LIFELONG JOURNEY

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.

A CONTINUOUS ADAPTIVE SYSTEM

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.

"Stop thinking about normal . . . You don't have a big enough imagination for what your child can become"

JOHNNY SEITZ

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

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. 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.

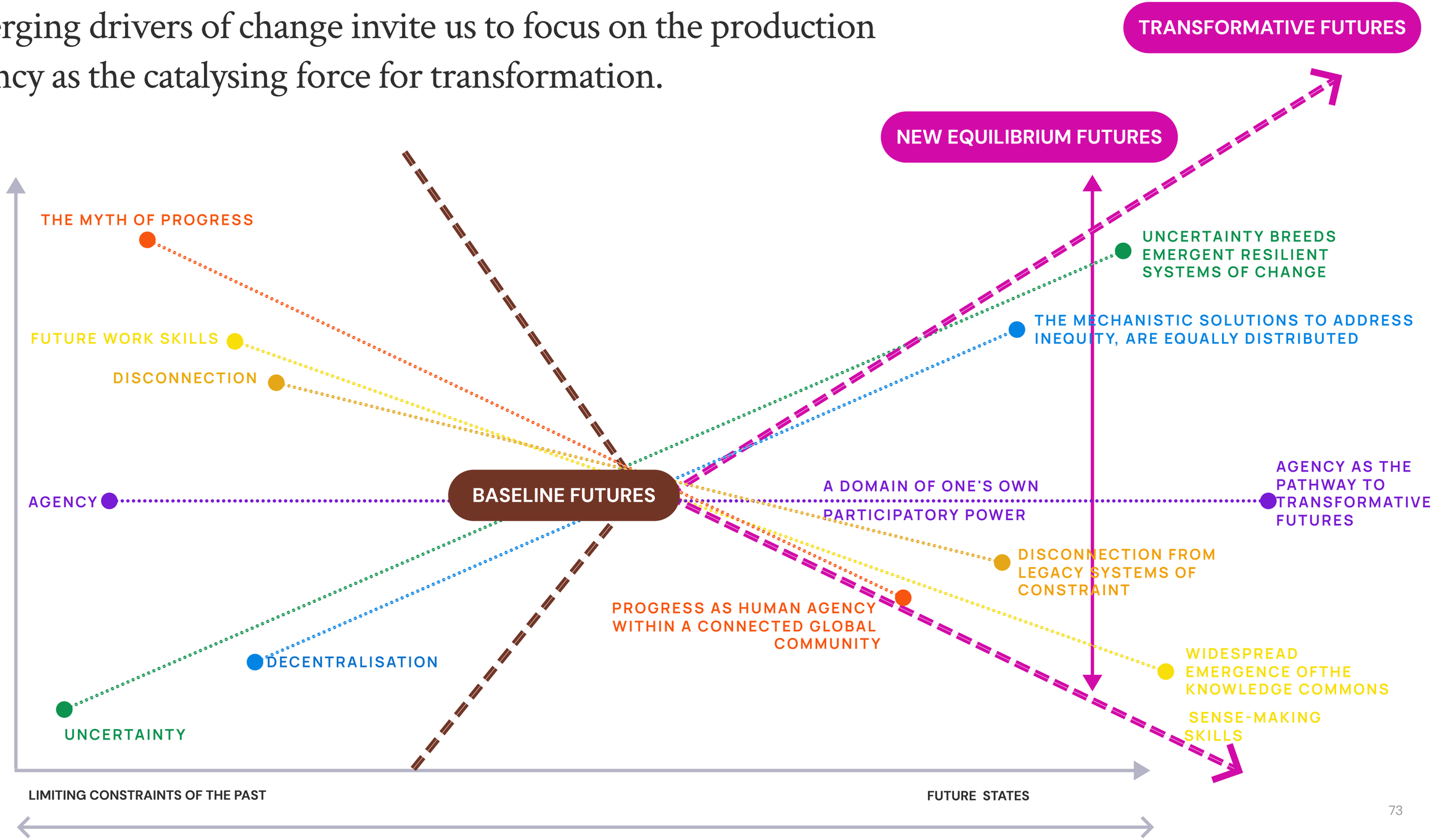
LIFELONG LEARNING NODES WITHIN FORMAL AND INFORMAL PATHWAY PROGRAMS, CREATE A CIRCULAR LEARNING ECONOMY OF SORTS

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

Converging drivers of change invite us to focus on the production of agency as the catalysing force for transformation.



The Relationship of Things (RoT)

The Relationship of Things (RoT)

A POST-NORMAL TRANSFORMATION SCENARIO FOR 2033

AGENCY

IN THE BEGINNING.

I did it . . I finally published my first longform essay to mirror.xyz.

Sure it's about web3 provenance protocols and NFT derivatives but hey, that's what I'm into. Who are you to judge? You might not think it's a big deal, some kid doing some blog post to a stupid website but I'm not an academic person. Three years ago, after failing English, I would have told you I wasn't even a smart person. Atleast, that's how I felt. Now I know that was total cap.

My parents insisted I attend the deathtrap formerly known as school until I was 15; which you'd think was torture, but was really just a frustratingly intense waste of my time. I used to sit in class, feigning interest, trying to fly under the radar so the NPC Chalkie up the front speaking yapanese wouldn't catch me responding to my clients on discord. Hell sometimes I'd even crack open my web development projects and get into that instead. I mean, I wasn't lazy or anything.

My attitude towards school might have had something to do with the fact that nobody my age has the appetite for some old dead dude who wrote a bunch of plays years ago, but it's more than that. You see, I'm dyslexic, and I have ADHD. Which makes concentration difficult . . and sitting still . . and concentrating on subjects of which I have next to no interest. Which was most of them.

I used to be pretty good at math and got into crypto super early. A lot of my good mates on Twitter were into it and it gave me a rush to see what I could do with a little research. I taught myself most of it using online simulations; I knew I couldn't beat the big whales who did it for a living but I found a different strategy. I built myself a nocode web scanner and set up alerts every time an influential dropped the name of a new coin or a freshly minted token project in a positive post. I had automatic buys scheduled that executed within minutes, I'd hold for 24 hours and then get rid of that baby before the bottom dropped out. It worked for a while, until it didn't. Crypto led to NFTs, where I learned my first lesson the hard way. I found this NFT project called Wonkey Donkey and was instantly hooked. I didn't have the money to mint but I volunteered as a discourse community mod which got me on the white list. Then my parents gave me the money for my birthday, it was $500 and felt like all the money in the world. I minted . . but it turned out to be a rug pull. I was devastated. My parents agreed to reinburse my birthday money if I could identify the red flags I missed and a plan to interrogate any future project to stop it happening again.

bet : yep ok, "it's on"
cap: a lie
facts: the truth
GOAT: greatest of all time
lit: "hot" or "fire", something remarkable
mod: to moderate in a forum
white list: a register of entities with privileges to pre-buy before the public mint
cold wallet: a crypto wallet not connected to the internet that stores your keys offline
PFP: profile pic used on social channels
chalkie: a teacher
yapping: when someone talks forever to an uninterested audience

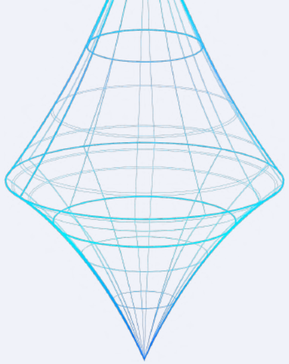
yapathon: when someone yaps so much they could have run 26 miles during their tangent

yapanese: when someone yaps so much they appear to no longer be speaking English
doxxing: revealing someone's identity
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

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

The Relationship of Things (RoT)

A POST-NORMAL TRANSFORMATION SCENARIO FOR 2033



I joined a web3 micro-course on open source intelligence tools (OSINT) recommended to me by the guys in my design slack channel . . I have ADHD remember, nothing happens by halves here,😂 and I worked out how to track the digital meta-data and provenance records of both users and assets online. If I'd done that in the first place, I would have seen that the dudes who started the project had no prior proof-of-work, that their domains were registered temporarily and diverted through multiple global server networks and I found a guy listed online as a co-founder, who left the project prior to minting. He deleted his profile but I found a lag file which listed him as the third partner. Must have freaked about being doxxed.

I also bought myself a cold crypto wallet that could handle all the major coins, and set up an eth address for trading and one for holding. There was no way I was going to be that guy again. I had to present my findings to my parents, it was like a project but with no grades. My school friends thought it was hilarious, and probably also a little stupid. But it changed the way I think about data provenance and trust in a major way.

Anyway the NFT collecting led to web3 discourse community modding and token art. I minted my own collection of NFTs which I had designed by a guy I knew. In reality the art was average and the traits were limited, and I had no profile . . so unsurprisingly it flopped. But the designer and I are good mates now, so I wouldn't call it a complete waste of time. One of the NFT creators from the @radi6 project saw some of the PFPs I'd been doing and asked me to do some art. One thing led to another and soon I was building out sites for his test projects. Like all newbies, I started in nocode and worked across all the big platforms. Pretty soon I was modding my own code and creating web components for others to buy. That was pretty cool. I created proof-of-work profiles on all the major art hubs and NFT drop channels; and pretty soon I was developing proper websites for major NFT projects and developing a following on Twitter. Which is kind of hard to maintain because my crowd is so US-centric, hence why I needed to make myself available in class while the Chalkie NPC was yapping.

Some banking dude who follows me suggested a few books I should read; my mum nearly fell off her chair when the amazon box arrived with books that not only had I ordered, but paid for too. I mean . . you gotta stay current. I set up a community for alphas like myself, and made some of my best mates there. Before you freak out I had physical friends too . . it's just that they weren't into what I was into. And whatever I'm into . .is always in a major way. Bet.

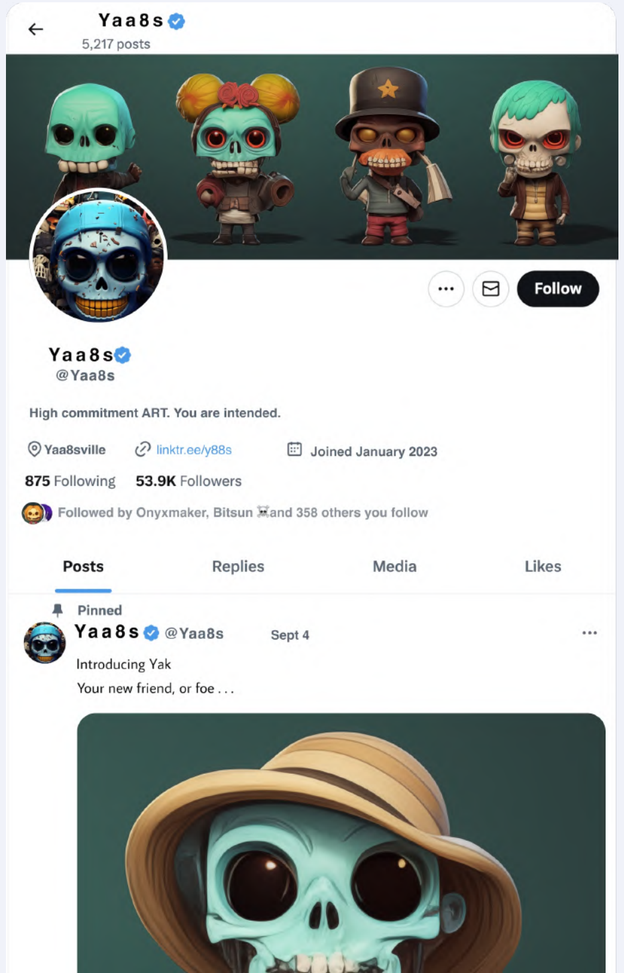
The Relationship of Things (RoT)

A POST-NORMAL TRANSFORMATION SCENARIO FOR 2033

The founder of the @Yaa8 project which I'd been doing some design for, saw a post I made about saving up for a @Yaa8 NFT. They're about $5,000 so you can see that I was playing a long game. He DM'd me and offered me a deal. If I wrote some posts for his work discord about data provenance and the challenges of ownership verification off-chain, he'd loan me one of his NFTs for my PFP. He'd seen my posts about immutable content and web3 provenance protocols, and wanted to upskill his digital agency team.

Loaning NFTs is not something you do in the web3 space. Especially with so much algorithmic junk and authenticity issues, anyone who uses an NFT that isn't trackable on-chain is considered a hack or worse still, a thief. But this guy just gave me one of his NFTs indefinitely, can you believe it? Transferred it to me on-chain, just like that. Of course he made me explain my holding set up to make sure I didn't lose it but after the Wonkey Donkey rug pull, I was all over that like a rash.

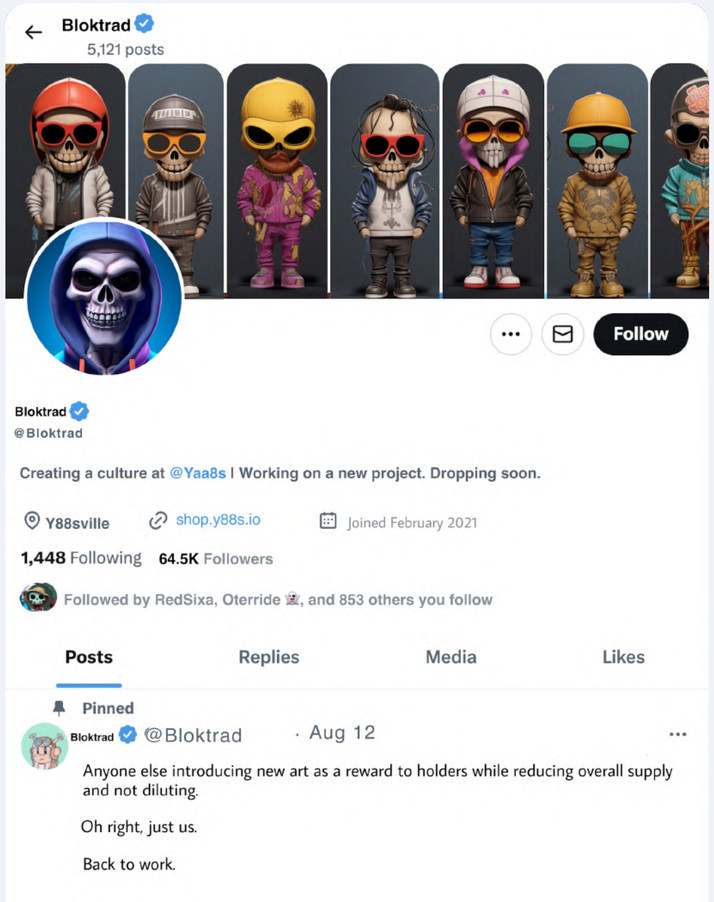
So I started writing for the @Yaa8s founder - @bloktrad. At first just short posts outlining critical provenance issues and authenticity feedback loops. My failures came full circle when I started writing about digital intelligence tools and methodologies; his people couldn't believe I'd learned all this from open source but you can find pretty much anything on the web if you look hard enough.



The Relationship of Things (RoT)

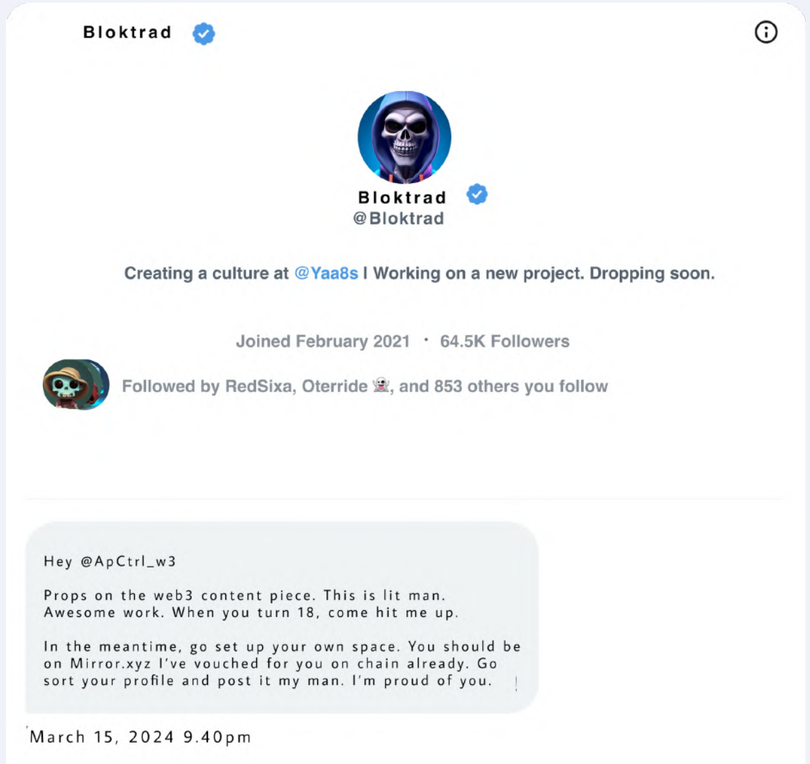
A POST-NORMAL TRANSFORMATION SCENARIO FOR 2033

Then he asked me to write a longform piece about web3 provenance protocols; so I wrote about collectable embeds and how splits are changing the game for social attribution network graphs, and the structures creators use for attribution and economic compensation.



I sent it to him a couple of times and he gave me some feedback, but mostly I think he was happy. I finally finished it and when I sent it him the final cut . . I got this DM back 👇

I'm telling you this guy is the GOAT!



The Relationship of Things (RoT)

A POST-NORMAL TRANSFORMATION SCENARIO FOR 2033

WELCOME TO 2033

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 early work 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" 😂. I mean . . obviously peoples still work for others, but even bigger businesses tend to operate micro-system models, so you still feel like you're working for a startup. No doubt there's some guru organisational theory about why this approach has increased staff retention and productivity, but mostly I think people just got tired of imbalance and boredom.

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 tackling the water crisis 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.

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.
It's weird that schools used to grade us and force us to memorise and regurgitate a load of bollocks that nobody ever remembered. Funny thing is . . . I still remember the security protocols I learned when I lost my first NFT buy to a rug pull. Just goes to show you doesn't it . . . 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 boomers, 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. 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 and reached sideways to scaffold me. Just as I've done for others along the way.

The Relationship of Things (RoT)

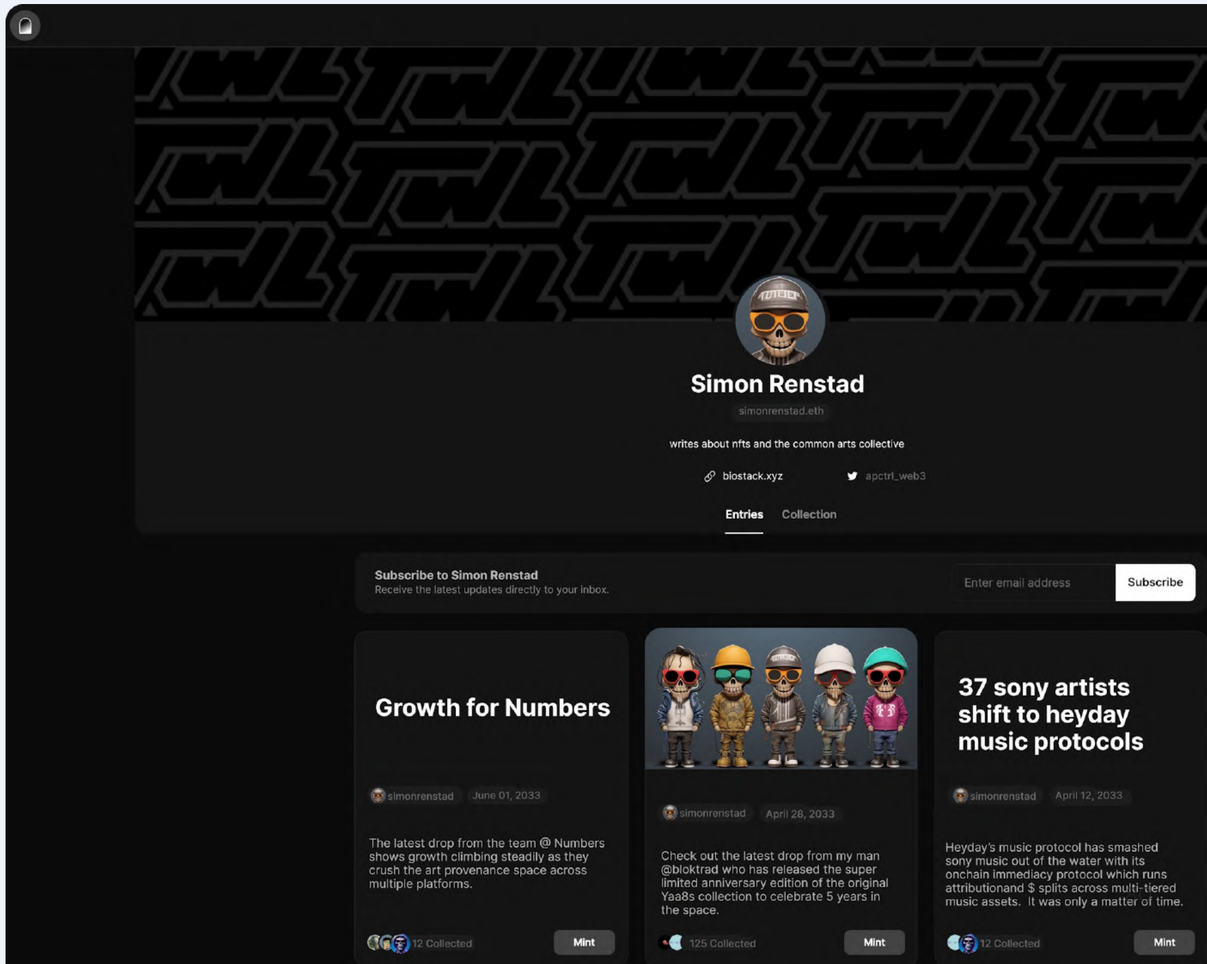
A POST-NORMAL TRANSFORMATION SCENARIO FOR 2033

WELCOME TO 2033

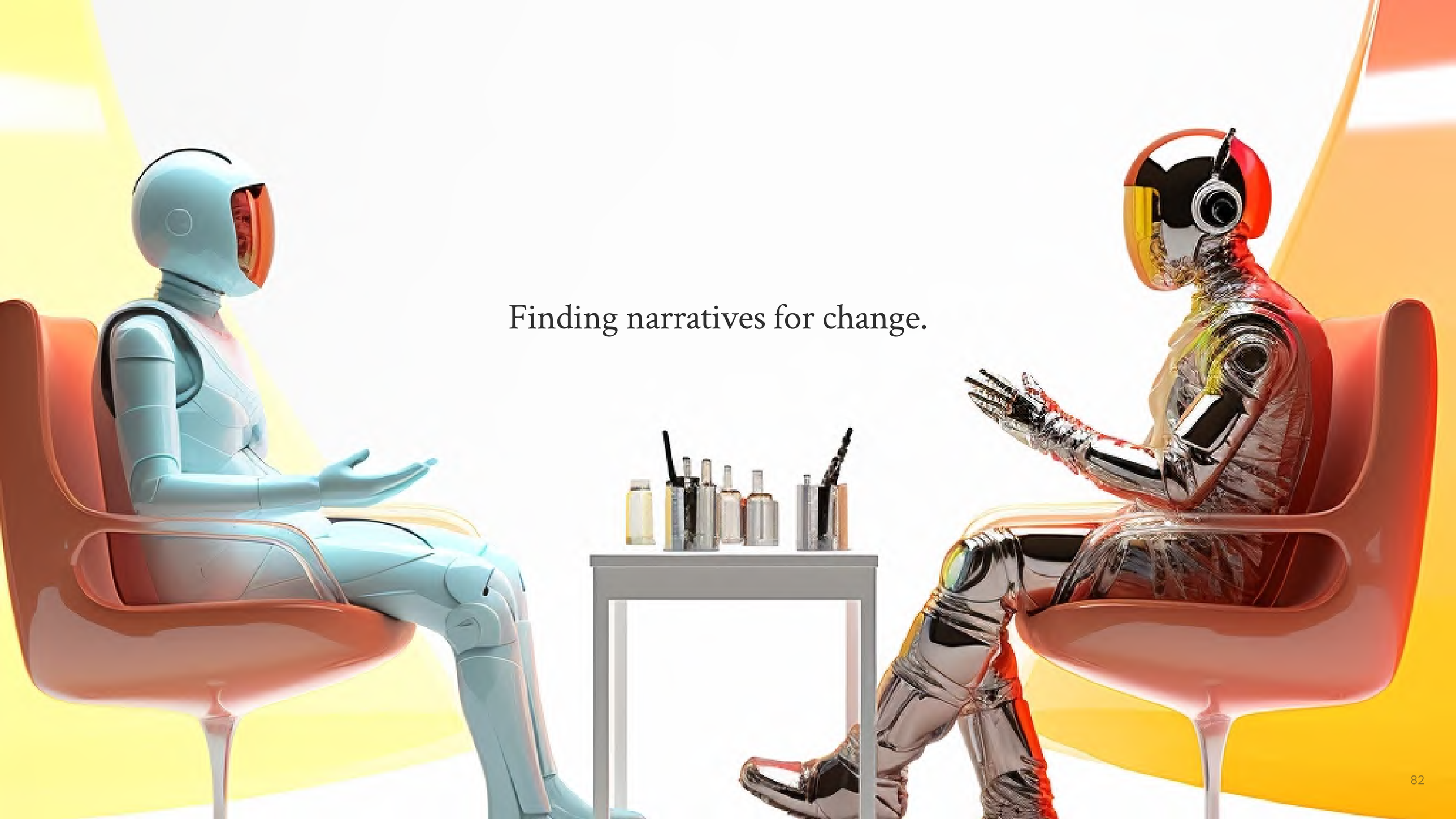
As for me? . . . I'm a professional writer, can you believe that?! The guy that only went by ApCtrl_web3 because he was too freaked to put out his real name. Yep that guy who pretty much failed English. That's me . . Simon Renstad and now I get *paid* to write for a living. Not a salary mind you, it's 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 web3 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. Want to guess who my first paid subscriber was? . . @bloktrad. Facts.

I'm also a domain master for OpenCampus; I work across three areas - mostly Crpto, 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.

It's funny you know, when I was younger . . I was the one my parents worried about. How would I cope if I didn't do well at school? Why couldn't I just be more engaged with the Chalkies? And now, it seems like the system has finally caught me with *me*. Seems like I was never actually that far off the track I was meant to be on. I used to tell my mum I was a pioneer, and unbeknownst to me, I might actually have been right. Facts.



Primary Research

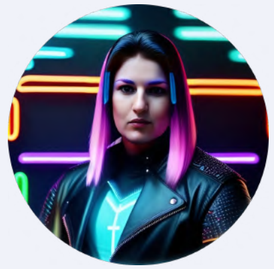

Finding narratives for change.

MEET THE

THE EXPERTS

I was hoping to interview a couple of people immersed in the education technology teaching or research space. It was a lot harder than I thought to find people willing to talk. In retrospect I should have known how political this space would be. We just had a major piece of legislation introduced in Australia, banning mobile phones in schools which followed the banning of AI in schools across most states earlier in the year. There's no question, education technology is a hot topic right now and no one wants to be caught speaking out of school.

Thankfully I was able to get one each of a high school curriculum leader, a progressive future-focused-teacher turned education startup , and a professor specialising in education technology. I've adjusted the questions a little as I went with the flow, depending on their level of experience and what they were comfortable talking about but managed to get a good cross section of perspectives.



FLASH I THE SCHOOL TEACHER *

Flash is a curriculum leader in art, design and technology within her school and the wider teaching ecosystem in Australia. She has spoken at edtech conferences and shared her experiences with the wider teaching community. Flash studied art and design before arriving in the teaching space, and found technology gave her an opportunity to further her passion for design in a new and evolving space. Flash has been teaching for approximately 10 years and has recently commenced a Masters in Philosophy. She is a rising changemaker.

LUKE I THE PROGRESSIVE DIGITAL CONNECTOR

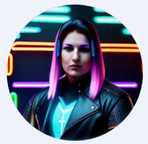
Luke began his career as a high school teacher focused on STEM learning and leadership. After attempting to innovate within the system for many years, he left teaching to start his own educational advisory startup - RealTime Learning, whose purpose is to support schools in expanding their capacity to delivery stimulating, enriching and future-focused STEM learning experiences by establishing partnerships with industry and the tertiary sector.

META I THE PROFESSOR *

Meta studied both education within the standard stream and within philosophy. She worked in research across both universities and government, before taking on her current role as Professor of Education.

*WHERE INDICATED, FOR THE SAKE OF CONFIDENTIALITY, RESPONDENTS NAMES HAVE BEEN CHANGED AND AVATARS CREATED TO MASK THEIR IDENTITY, IN ORDER TO PROVIDE A SENSE OF REALITY AS YOU CONSIDER THEIR RESPONSES.

THE INTERVIEWS - PART # 1



FLASH
THE SCHOOL TEACHER *

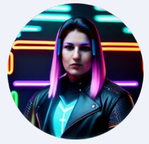
IN YOUR MIND, WHAT VALUE DOES TECHNOLOGY BRING TO SCHOOL EDUCATION NOW?

"It's something that's used in everyday life right? kids are always going to have to use technology . . no matter what career they end up in. Technologies will be integrated into everything. It also increases a teacher's productivity tenfold."

LUKE
THE PROGRESSIVE
DIGITAL CONNECTOR

"People have started to get involved and interested in technology, and certainly there are graduates coming through. And **the problem has been that we've largely outsourced our problem**, bringing people offshore to to to do tech roles. And the Australian Computer Society tells us that they can't anyone to finish a computer degree! They have like 120,000 start at the beginning of the year and 6,000 finish by the time they graduate. It's appalling. I think part of the problem (from the graduates I've worked with in my program) is that they're not getting the opportunity to practice in a real world. They're not being given opportunities. Internships are difficult to get. If you think about cyber security, you know. They don't want to put anyone in there. When there's a lot of, you know, potential risk and threat, yeah, like into interns and so forth. It's a massive problem. So **I'm not sure it's bringing much value at the moment.**"

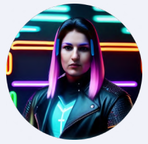
HOW WILL TECHNOLOGY INCREASINGLY DISRUPT OR REINFORCE CURRENT PEDAGOGIES?



"This generation . . they know technology. They know how to use it . . but you're still going to play a really big role in teaching them around this. So I think about it as a kind of mix of pedagogy and curriculum design. **You look at how you can reframe things to better integrate technology, to better support your pedagogy but it's a mix you know . . and a bit of work.** When it's done well, you're thinking about it holistically but not everyone does, they sort of use it as a replacement. Which doesn't really deliver on the goal. You've gotta remember it's a really big learning curve to get teachers to use technology in their practice. There's a fair bit of resistance, they don't feel like they have the time to learn something new."

*WHERE INDICATED, FOR THE SAKE OF CONFIDENTIALITY, RESPONDENTS NAMES HAVE BEEN CHANGED AND AVATARS CREATED TO MASK THEIR IDENTITY, IN ORDER TO PROVIDE A SENSE OF REALITY AS YOU CONSIDER THEIR RESPONSES.

THE INTERVIEWS - PART # 1



FLASH
THE SCHOOL TEACHER *

WHERE DO YOU THINK THE RESISTANCE IS COMING FROM ?

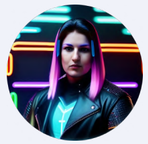
"I think it's just the time and effort required to learn new skills, when they don't see any real benefit. They know how they teach and they're thinking 'I get good results, why do I have to do anything different?' . . even though it's going to increase their productivity tenfold. That's the attitude . . I know sometimes I'll introduce a new technology and you give them the basics, and they're just going to run with it. I had the same challenge when I taught coding, I wasn't an expert so **the challenge is just to be a few steps ahead** . . "

"Like anything it takes a bit of time just sitting there and playing around with new technologies, because that's really where you learn the most. If I see something new, that's where I'll have a play and then I'll try it with the class. That's my method, **just trying to be one step ahead really**."

*WHERE INDICATED, FOR THE SAKE OF CONFIDENTIALITY, RESPONDENTS NAMES HAVE BEEN CHANGED AND AVATARS CREATED TO MASK THEIR IDENTITY, IN ORDER TO PROVIDE A SENSE OF REALITY AS YOU CONSIDER THEIR RESPONSES.

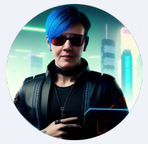
THE INTERVIEWS - PART # 1

WHAT'S DRIVING CHANGE AND APPROACHES TO TECHNOLOGY IN SCHOOLS, THAT'S NOT BEING TALKED ABOUT ENOUGH?



FLASH
THE SCHOOL TEACHER *

" Obviously recently we've got a lot of tech companies breaking into the space, that are producing stuff . . that's relatively recent. Certain tools are becoming more widespread, everyone's aware of them and everyone's using them. The education landscape has taken a really long time to progress from 'chalk and talk' to using technology, and **the educational tech companies have the money to produce more resources so a lot of information and training comes from them.**"



META
THE PROFESSOR *

"There's a lot of literature on the commercialisation of education and the role of technology companies in this space. I don't think there is a lack of talk (academic, professional, journalistic, or lay) on the topic. **Probably the one area that is relatively underexplored is how institutions have slowly opted out of the teacher professional learning space generally and specially on ed tech probably due to an inability of academic to compete with the interests of ed tech companies in providing professional learning that is product based.** Also the intensification of academic workload and the relative lack of prestige associated with service to the community and professions driven by corporate higher education has meant that **academics just *can't* or *won't* compete with ed tech companies in the professional learning space**".

LUKE
THE PROGRESSIVE
DIGITAL CONNECTOR

" At the end of the day, education is a political system right? It's like . . . **schools are focused on the tools,** and not focused on why technology is important in the first place. You know, we're not exploring the tension between what we know and where we want to go. And lot of that comes down to capability. It just doesn't exist, **a lot of educators are hiding behind the screen not knowing** . . that's a big problem."

DO YOU THINK AT SOME LEVEL IN POLICY OR IN EDUCATION LEADERSHIP. WE KNOW THAT TO BE TRUE, BUT WE JUST DON'T KNOW WHAT TO DO. HOW DO YOU THINK ABOUT THAT? HOW FAR DOES THAT UNKNOWING EXTEND?

" I think it's better understood outside of school than in school. People that engage with industry know that we need a different kind of education system. Often more than those who are actually in it."

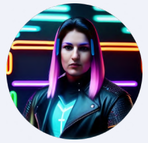
*WHERE INDICATED, FOR THE SAKE OF CONFIDENTIALITY, RESPONDENTS NAMES HAVE BEEN CHANGED AND AVATARS CREATED TO MASK THEIR IDENTITY, IN ORDER TO PROVIDE A SENSE OF REALITY AS YOU CONSIDER THEIR RESPONSES.

THE INTERVIEWS - PART # 1

IF WE CONTINUE WITH THE CURRENT TECHNOLOGY CURRICULUM (AND TECHNOLOGY EXPERIENCES), WHERE WILL THAT GET US TO IN YOUR MIND? WHAT'S THE ENDGAME? HOW CLOSE IS THAT TO WHERE YOU THINK WE NEED TO BE, TO PREPARE STUDENTS FOR THE FUTURE?

LUKE
THE PROGRESSIVE
DIGITAL CONNECTOR

" I think that those people who went into education to make the difference feel disempowered. And they've become disenfranchised. And I think that's why we've got a real problem in education system right now, because you've got a lot of people who went into make a difference and have just been handcuffed you can't do this or that. **I think it's a system wide problem and no I don't think we're prepared for the future, not in the current state**."



FLASH
THE SCHOOL TEACHER *

" When you go to events and teachers are talking about the future of education, technology can't really be ignored anymore. We need to prepare students. I think for a long time that was probably happening (ignoring), and now there's sort of a revolution in technology and we've got to keep current. Anyway if we weren't integrating it, the kids would use it anyway. It's like ChatGPT, everyone freaked out with that but there are different ways to use it. It's not just ChatGPT or nothing, it doesn't have to be an either / or. You know one kid was using an AI creative generation tool and I was like . . okay I could use that for some design development too . . "

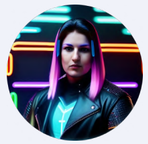
HOW DOES THAT CHANGE THE DESIGN DYNAMICS WHEN THEY'RE INTRODUCING STUFF TO YOU?

" Well it's good; sometimes they'll take liberties but other times we have really good creative outcomes. But sometimes they get on a track and do silly things and that's hard to manage. They can get off task really easily with technology but yeah, **I do like them showing me different things and sharing what they've discovered with me.**"

*WHERE INDICATED, FOR THE SAKE OF CONFIDENTIALITY, RESPONDENTS NAMES HAVE BEEN CHANGED AND AVATARS CREATED TO MASK THEIR IDENTITY, IN ORDER TO PROVIDE A SENSE OF REALITY AS YOU CONSIDER THEIR RESPONSES.

THE INTERVIEWS - PART # 1

IS THERE A BOLD IDEA OR CONTRARIAN VIEW ABOUT TECHNOLOGY IN SCHOOLS, THAT NOT EVERYONE AGREES WITH, WHICH YOU FIND INTERESTING?



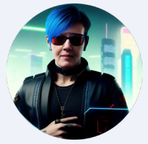
FLASH
THE SCHOOL TEACHER *

"I guess everyone just thinks things are a bit of a fudge. Whether it's when I was working in VR ; a lot of people at the school are old fashioned and we're a very academic school and VR was totally dismissed. Right from the beginning from the top leadership, just dismissed. It's finally being integrated now as part of the hybrid design technologies curriculum . . so **you eventually manage to embed it in some way but it's not easy**."

LUKE
THE PROGRESSIVE
DIGITAL CONNECTOR

"I came across a video not long ago called experiential avoidance . . . and I think that's exactly what attracted me to experiential learning, the opportunity to overcome that. It's nice when we put language around that. And to consider what that internal internally makes us do (experiential avoidance). And the video explains this really, well is, we want to avoid the things that actually develop grit that develop the the attributes of what you get. And you learn through adversity. **This is the stuff we're saying kids need to learn but teachers aren't even doing it themselves** . . And so experiential learning encapsulates lived experience, but lived experience and theory in education don't coexist that often. **It's like we've got a whole bunch of people in education who love theory but that's divorced from lived experience and actually putting that theory of grit and resilience into action. I think technology brings this into focus.**

They won't acknowledge the real importance of a lived experience of learning . . maybe because it's hard to assess. It's the tangibles that are hard to measure. And so it's much easier to measure how someone performs in terms of knowing the theory. Example like resilience are much easier to define it than actually take kids on a journey to build resilience and know that they've got it through what they've done and what they've delivered as opposed to . . 'Yeah . . let's just get them to define it'."



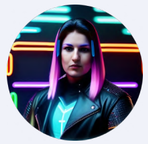
META
THE PROFESSOR *

"I think there are many contrarian views on areas such as mobile phones in schools and generative AI, but **the evidence base for arguing for learning or social media effectiveness just doesn't emerge soon enough to have informed debate**. Part of this is because research on ed technology isn't funded to the degree it should be and that there will always be a lag with emerging technologies in doing research on educational efficacy. So any debates or contrarian views need to draw on research more fully."

*WHERE INDICATED, FOR THE SAKE OF CONFIDENTIALITY, RESPONDENTS NAMES HAVE BEEN CHANGED AND AVATARS CREATED TO MASK THEIR IDENTITY, IN ORDER TO PROVIDE A SENSE OF REALITY AS YOU CONSIDER THEIR RESPONSES.

THE INTERVIEWS - PART # 1

THINKING ABOUT TECHNOLOGY AS A BODY OF KNOWLEDGE, IS THERE SOMETHING YOU *WISH* STUDENTS WERE LEARNING OR SCHOOLS WERE DOING, THAT THEY AREN'T NOW?



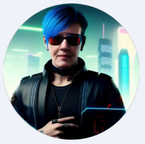
FLASH
THE SCHOOL TEACHER *

" **We need to be experimenting more** . . I'll try things and see what works and what doesn't. We have a lot of technology . . we use Microsoft, smart boards or clever touch boards, and Sites and Sharepoint across different groups and teams. And we have 3D printers and VR, and architectural modelling where they can visualise their models from all angles, which is good for spatial reasoning."

LUKE
THE PROGRESSIVE
DIGITAL CONNECTOR

" I think we try to go too wide and too broad to reach more kids rather than do deep and and and do the depth that's really important - because **we compromise the integrity of what we're trying to do when we try to, you know, do things to scale too quickly**. When RealTime Learning first started (Luke's business), we're working with handfuls of kids in workshops and people are going . . What? Where's the scale in that? . . but now those facilitators can reach 500 kids a week, because we've done something that's deep and that the kids have experienced it, they it can be done. Whereas you see **a lot of initiatives in tech that are just one offs**. Let's go in. Do a a smoke and mirrors around where where technology is going to be used in the future, and then just hope that the kids make it."

"**Kids aren't being given the opportunity to to follow a pathway.** They're sort of held off. It's held out there, you know . . a long way from them rather than being able to engage in it right now. **I wish kids were doing more problem and passion based learning**. Everything right now is focused on content and curriculum, rather than recognising - what content are we going to use to solve this? If they were developing and solving a real problem, content would be written and devised as a part of the process. And that's where the real learning happens, as opposed to just regurgitating stuff. **Then there wouldn't be this disconnect, kids don't know why they're doing things because they haven't connected with the problem and why? because we're so focused on getting them to learn content.** Content is easier to deliver and easier to assess. Real problem based learning, deep learning is messier, there's a lot more chaos."



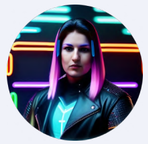
META
THE PROFESSOR *

"The human rights implications of technology in leisure and learning needs much more attention including educating children and young people on this and listening to their views. **The pastoral element of schooling is only reactive to this, or driven by crises instead of weaving a fundamental core around human rights and technology into curriculum.** Part of this is ethics, some of it is digital civics and economics, and the other is understanding how machines alter or create new relationships between humans and the world and the synthetic and virtual."

*WHERE INDICATED, FOR THE SAKE OF CONFIDENTIALITY, RESPONDENTS NAMES HAVE BEEN CHANGED AND AVATARS CREATED TO MASK THEIR IDENTITY, IN ORDER TO PROVIDE A SENSE OF REALITY AS YOU CONSIDER THEIR RESPONSES.

THE INTERVIEWS - PART # 1

DO YOU (OR HAVE YOU) UTILISED AI OR VIRTUAL WORLDS / METAVERSE AS PART OF YOUR TEACHING PRACTICE?



FLASH
THE SCHOOL TEACHER *

" No we just do static kinds of technology. I think it's definitely interesting but it's one of those things . . anytime you have a collaborative, you have to be really careful how you manage it. I don't know those kinds of resources very well and then you have to have the resources to do it too." There's a high potential for chaos. Sure collaboration, but also chaos!"

LUKE
THE PROGRESSIVE
DIGITAL CONNECTOR

" I'm not against AI by any stretch. There's nothing to fear at the moment but so many teachers are scared of it, they think it's like cheating. They don't want to even touch it. But we as humans have better judgment; when I when I talk about judgment that comes from empathy. It's human skills and the way they interplay with technology that matters. Those skills are not divorced from technology. And that's how I'm trying to explain how AI can be used in the classroom.

Here is AI.

AI is just another person.

Another contributor in the classroom.

*WHERE INDICATED, FOR THE SAKE OF CONFIDENTIALITY, RESPONDENTS NAMES HAVE BEEN CHANGED AND AVATARS CREATED TO MASK THEIR IDENTITY, IN ORDER TO PROVIDE A SENSE OF REALITY AS YOU CONSIDER THEIR RESPONSES.

THE INTERVIEWS - PART # 1

WHO IS LEADING THE CONVERSATION ABOUT TECHNOLOGY AND FUTURE SCHOOLS IN YOUR VIEW?

LUKE
THE PROGRESSIVE
DIGITAL CONNECTOR

" There are groups like the future schools alliance with Peter Hutton. He's got over 100 schools, and you know, it's full of thought leaders. Selberg's another one, you know, that's trying to influence a different way for us to think about education. He's a Finnish educator. Are they having major impact on the system? No, I mean they work with Gonski (who did the Govt. report on school reform) but you know, we're not getting a lot of traction.

I'm glad I'm not a teacher in the classroom working in a system I feel quite pessimistic at the moment. I could just let go of everything I'm doing and go jump back in the classroom, and maybe that would make for a much easier life. But I'm genuinely concerned about where we're going, and I don't see anyone really leading the charge for what what's needed.

If I'm honest, that's probably where some of my burnout kicked in . . the sense of hopelessness. And I came across that video on expert experiential avoidance - it comes from this place of creative hopelessness where you go . . '**Okay, I'm I'm not gonna keep trying to put the same jigsaw piece in that puzzle, it's not working anymore.**' . . So now it's causing me to be creative in different ways to think about these challenges. How do I tackle the hopelessness from a different point of view? But yeah, if I'm honest, I do feel a little bit pessimistic about where it's at right now, . . because **I don't see any leadership**, you know.

*WHERE INDICATED, FOR THE SAKE OF CONFIDENTIALITY, RESPONDENTS NAMES HAVE BEEN CHANGED AND AVATARS CREATED TO MASK THEIR IDENTITY, IN ORDER TO PROVIDE A SENSE OF REALITY AS YOU CONSIDER THEIR RESPONSES.

THE INTERVIEWS - PART # 1

IF YOUR NEXT ROLE WAS TO DESIGN MODERN LEARNING EXPERIENCES FOR SECONDARY SCHOOL STUDENTS WHERE THEY CAN DRIVE THEIR OWN LEARNING, WHAT WOULD YOU DESIGN? WHAT MUST BE INCLUDED? WHY?

LUKE
THE PROGRESSIVE
DIGITAL CONNECTOR

" **We'd focus deep on where students are passionate, that's where they'll learn, and technology would be a means to an end**. This platform-driven approach is really concerning. The person leading our pilot program is a massive fan of decentralisation. And the question we haven't answered is: what happens when a kid builds a portfolio or does learning and it sits in that platform like Office 365 or Google or whatever, how do they get ownership over that?

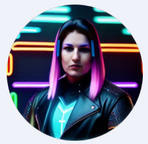
We need to embrace more open source models in education that aren't tied to bottom line. The dollar still drives everything and we're seeing this monopolization of the market. So in my program we're currently looking at Gitlab as a platform because it's remained open source as opposed to Github, which has been, you know, bought out by Microsoft. I'm thinking about: how do kids own a portfolio and have more ownership over their links?

I don't know how we're gonna let go of Web 2 and go to Web 3. I don't know how they're going to let go of those platforms. But I feel like we've got to help kids transition to Web 3. And I don't even think that's been addressed or focused. **In in the school system right now, they're all just using the technology that's being fed to them**, they wouldn't even know what web3 is.

*WHERE INDICATED, FOR THE SAKE OF CONFIDENTIALITY, RESPONDENTS NAMES HAVE BEEN CHANGED AND AVATARS CREATED TO MASK THEIR IDENTITY, IN ORDER TO PROVIDE A SENSE OF REALITY AS YOU CONSIDER THEIR RESPONSES.

THE INTERVIEWS - PART # 1

IF YOU COULD MAKE ONE BIG BOLD CHANGE TO PREPARE STUDENTS FOR THE FUTURE, WHAT WOULD IT BE?



FLASH
THE SCHOOL TEACHER *

"We need to be thinking about technology (and STEM) as core for 21stC skill development, you know to prepare students for the future. These are the skills they need for future jobs. I think the penny will drop eventually."

LUKE
THE PROGRESSIVE
DIGITAL CONNECTOR

"Microsoft's got a massive monopolization on it right now. You know, they've just bought TakeLessons (online tutoring service). Grok education have just been given 60 million for technonology development. It's just technology! Groc are buying up every STEM educational program in the landscape until they can find one to deliver their curriculum. I feel pretty disenfranchised with these sort of models now . . it just seems like it's more technology sites being funded rather than actually connecting kids with solving real problems.

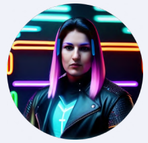
I went to the recent education technology conference; it was basically like a marketplace . . totally missing the mark. I think it was largely driven by people telling me . . well, you know what? dyslexic people don't have to read anymore . . just use AI to do it. What a crock.

Everyone there was selling all these different magic solutions rather than recognizing . . there's still got to be a connection to first principles, so that people can then make that connection with where AI is taking them. AI isn't something to be scared of, but it's also not a solution in itself. This is the challenge, isn't it? **When education companies have the funding and the resources and lead the conversation, it's driven by commercialization . . but what about the kids?**"

*WHERE INDICATED, FOR THE SAKE OF CONFIDENTIALITY, RESPONDENTS NAMES HAVE BEEN CHANGED AND AVATARS CREATED TO MASK THEIR IDENTITY, IN ORDER TO PROVIDE A SENSE OF REALITY AS YOU CONSIDER THEIR RESPONSES.

THE INTERVIEWS - PART # 1

IF YOU HAD TO MAKE ONE BIG BOLD PREDICTION ABOUT TECHNOLOGY AND SCHOOL EDUCATION IN THE FUTURE - WHAT WOULD IT BE?



FLASH
THE SCHOOL TEACHER *

"I think technology will move (hopefully) off the bottom rung of the ladder. At the moment they think technology is not a real subject, it's not an academic subject, it's not a core subject . . . but technology is STEM. I mean, you can't have technology without STEM (science, technology, engineering, math) concepts, they come in throughout the process. Schools are bringing in different leadership roles, where they're facilitating work with teachers to integrate technology but eventually that won't be needed, and technology will just be integrated completely."

META
THE PROFESSOR *

"I am most worried about climate change as an existential threat. I do see AI as needing strong regulation and for communities affected by it to collectively act especially so that unethical uses are prevented rather than just reacted to. I think the paper by Wachter and colleagues offers the best glimpse into the dangers of the technology for society and school especially the concept that machines (automated decision making) may discriminate in ways not historically understood as discrimination (that is not group specific)."

*WHERE INDICATED, FOR THE SAKE OF CONFIDENTIALITY, RESPONDENTS NAMES HAVE BEEN CHANGED AND AVATARS CREATED TO MASK THEIR IDENTITY, IN ORDER TO PROVIDE A SENSE OF REALITY AS YOU CONSIDER THEIR RESPONSES.

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 responsibiliity for their own learning. The challenging thing is; nothing about this kind of learning . . looks like school.

MEET THE

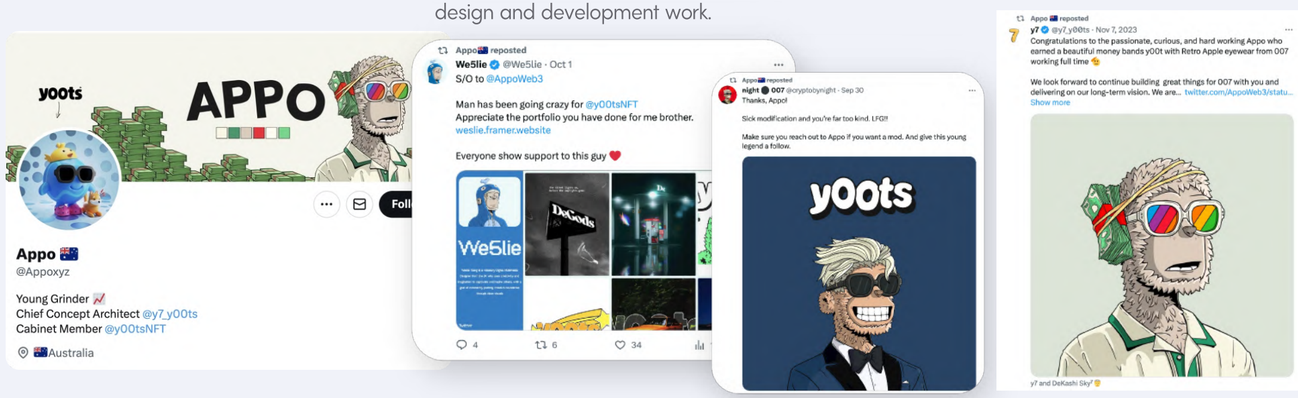
THE WEAK SIGNALS ON THE FRINGE

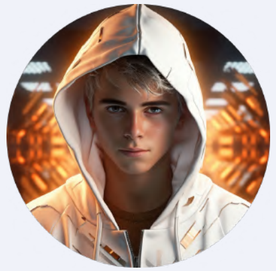
The next-best thing to being able to predict the future is listening to those who will shape it.

@APPOXYZ| 15 YRS

THE WEB3 CONCEPT DESIGNER & COMMUNITY CONNECTOR

@Appoxyz is a 15 year old student currently attending high school in Australia. Whilst he plans to study further after high school, he finds the school curriculum less engaging or affirming than his own personal learning journey has been. He operates mostly on Twitter and Discord, contributes as a Cabinet Member for the @y00tsNFT project and is the Chief Concept Architect for the spinoff club for high conviction y00ts holders @yZy00ts. Outside of these community projects Appoxyz earns a little on the side through his self taught web design and development work.





BRYTE | 19 YRS*

THE WHITE HAT HACKER-IN-TRAINING

Bryte recently graduated high school and is studying Information Technology at University, which he finds pretty out of touch compared to his own self-led learning online. He has reached out to develop his own 1:1 mentoring relationships with likeminded people online, created his own network and been educating himself in the cybersecurity space through non-standard learning paths like coursera, Hack-the-Box, @realtryhackme and red hat hackfests.

THE INTERVIEWS - PART # 2

Find your Frequency.

HOW DO YOU THINK ABOUT TECHNOLOGY AND YOUR OWN WORK CAREER IN THE FUTURE?

@APPOXYZ
THE WEB3 CONCEPT DESIGNER
& COMMUNITY CONNECTOR

"I don't really think about it like that. I use technology with *everything*, *all the time*. And I get paid for some of the work that I do.
Not all of it but I do it because I love learning new stuff. It's addictive. Often I just figure something out or make something, and if I can get paid for it, it's a bonus."

"I had to tell my dad to stop hassling me. He was trying to get me to wash his car for like $20 and I was like . . . I just made USD100 this morning doing a PFP* for some dude who is dropping a new NFT project. So no, I don't want to wash your car for $20 😂."

BRYTE *
THE WHITE HAT
HACKER-IN-TRAINING

"I'm into cybersecurity but the hard thing is . . even the stuff I'm learning at uni feels behind. They're really strict about like . . what sort of coding language I can utilise or what tools, and I'm like . . . who cares? if its out there and open source, we should be using it."

*PFP - PROFILE PIC

THE INTERVIEWS - PART # 2

The Nerds Rule The World.

CAN YOU DESCRIBE HOW YOU MEET PEOPLE OR GET WORK ONLINE? HOW DO YOU FIND YOUR PEOPLE?

@APPOXYZ
THE WEB3 CONCEPT DESIGNER
& COMMUNITY CONNECTOR

"I don't know I just do my thing. I do whatever I'm interested in and just end up meeting people who are into the same things. There's also a bunch of older guys who are like running projects or businesses or whatever, that have helped me. You know, given me advice and stuff. People are pretty generous when you're part of their community. Like this one guy who runs a big NFT project that I've been following. I did a bunch of free design for him, you know . . just built a site showcasing all the NFT art with some cool traits overlayed on to. I just did it for fun because I liked his (NFT) project. Yeah it was a fair bit of work but I didn't care, I learned heaps from it . . and he loaned me one of his NFTs to use for my profile picture, because I couldn't afford to and you need an NFT to be part of the community. That was cool."

BRYTE *
THE WHITE HAT
HACKER-IN-TRAINING

"It's not that easy at first, but the more time you spend online the easier it gets. I've alway been a mad gamer so I kinda get how that stuff works online. People are pretty helpful and will share what they know. Especially if you're young. You've just got to be there and doing your own thing . . "

*PFP - PROFILE PIC

Key Take-Aways

THE MYTH OF PROGRESS IS ALIVE AND WELL.

The first round of interviews confirmed a lot of my initial research around edtech driving 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 like Luke 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 Lukes 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?

Key Take-Aways

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 like Appoxyz to be 'seen' within a system that cannot grade his 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?

> "Sometimes it's not easy for highly creative children to "comply" with a regular curriculum, even at a preschool age. They are wired to explore, to experiment, build, imagine and create."
>
> KATHRYN HAYDON
> AUTHOR OF CREATIVITY FOR EVERYBODY

THE HEAVY LIFT : SCHOOLS AND THEIR TOOLS

The interviews confirmed much of the previous research around obstacles and constraints within the current system. Luke's point that even the best theories (with evidence based research) are divorced from the lived experience of technology, especially for young learners. His observation 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" resonates deeply with my initial framing of the project focus.

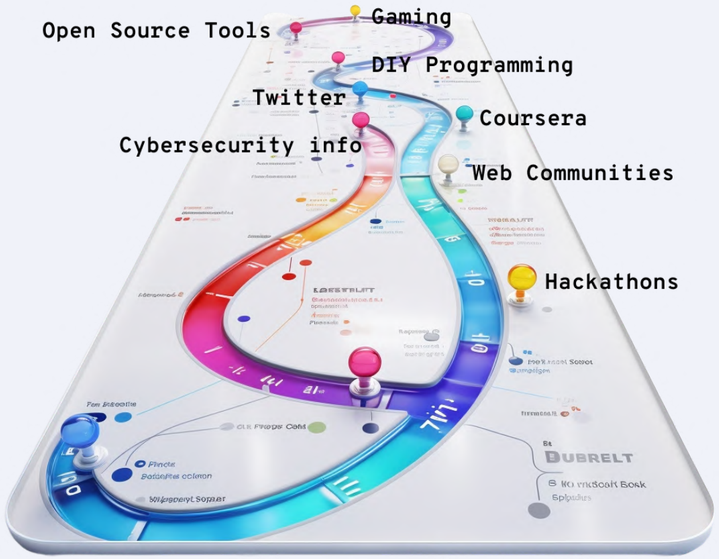
The challenge here in this project, is that at its core, it is not a strictly technological problem. It's helpful to think of the education system as a complex adaptive system, and to identify the unresolved root challenge which defines the context for this technology question.
How might we reconceptualise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

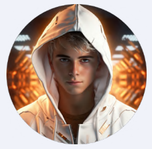
And now we can see that technology in this context, is the proxy object for a much bigger question.

Key Take-Aways

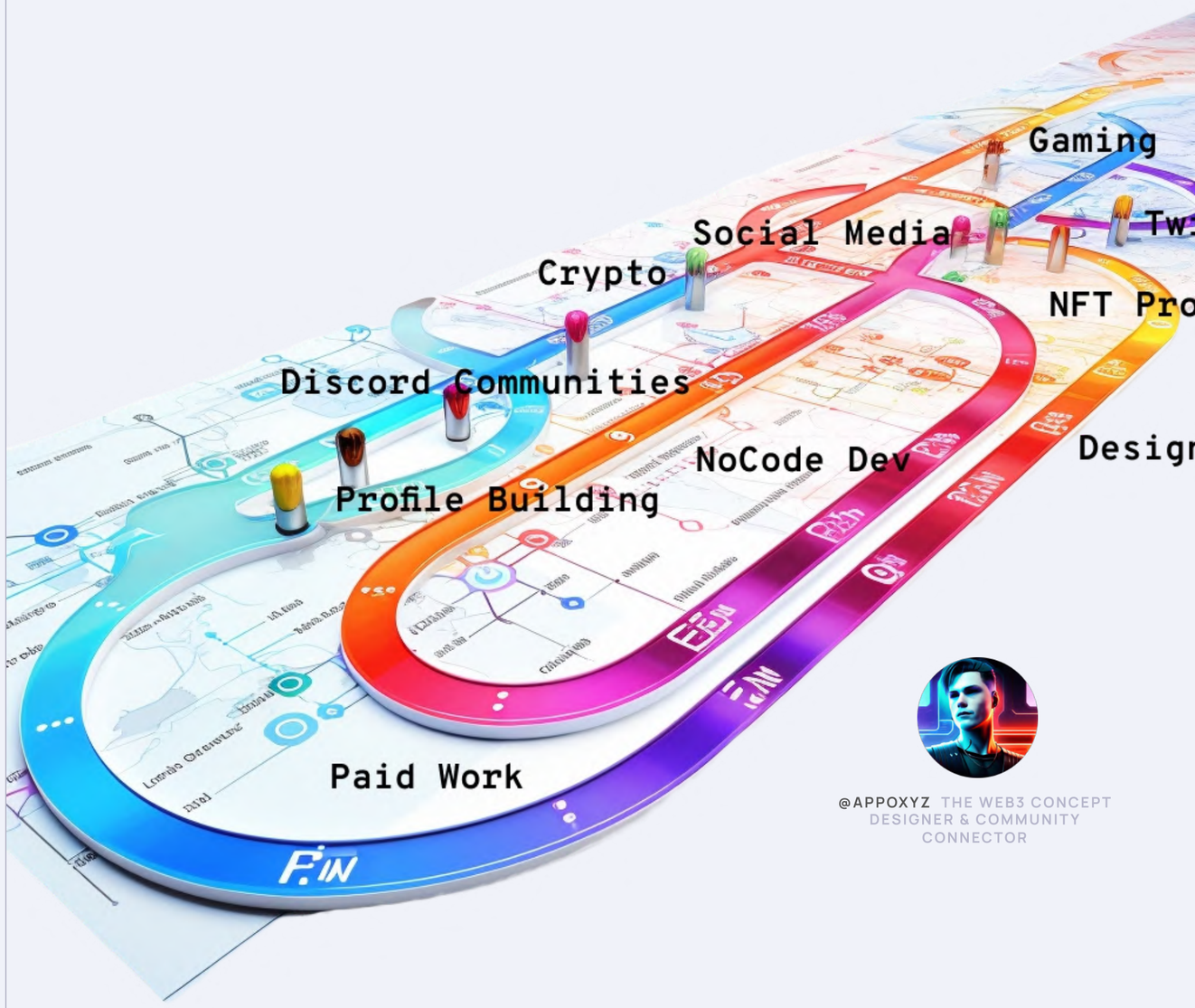
NON-LINEAR PATHWAYS TO SELF-LED LEARNING AND GROWTH.

The pathways of the young learners 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.





BRYTE *
THE WHITE HAT
HACKER-IN-TRAINING



@APPOXYZ THE WEB3 CONCEPT
DESIGNER & COMMUNITY
CONNECTOR

Key Take-Aways

REFERENCES INCLUDED HERE TO GIVE A SENSE OF THE CONVERSATIONAL VIBE OF THE YOUNG LEARNERS WHO ARE FINDING THEIR WAY AND INDEED, THEIR SELVES.

Find your People.

Are you obsessed with something?

Online business? Quilting? Building Chrome extensions? YouTube?

The world will say it's bad. They'll call you crazy.

They'll say you're obsessed. They'll say "you can't have a conversation with him".

Well, interestingly, I can't have deep conversations with non-nerds anymore.

You can have a surface-level conversation with almost anyone.

But deep conversations only get good when you're talking to a nerd about the topic.

They don't have to be a know-it-all.

But because they're nerds, they're curious enough to go and find out more.

The world will still call you crazy.

And funny enough — it's the crazy ones that end up changing the world.

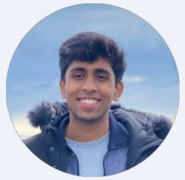
The Jobs. The Mr. Beasts.

So if you want to have an impact, you have to be a bit obsessive.

But obsession can get lonely.

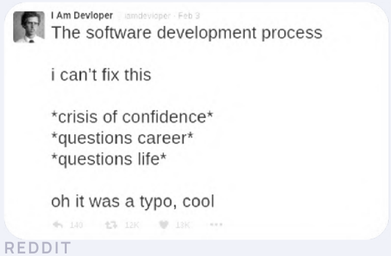
You start feeling like the odd one out. But that's not true.

If you feel like the odd one out, you're probably not surrounding yourself with enough crazy people.

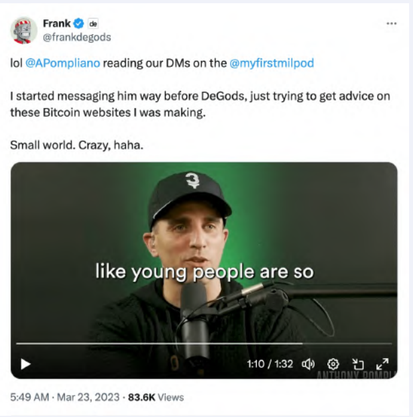


@AADITSH

REDDIT



REDDIT

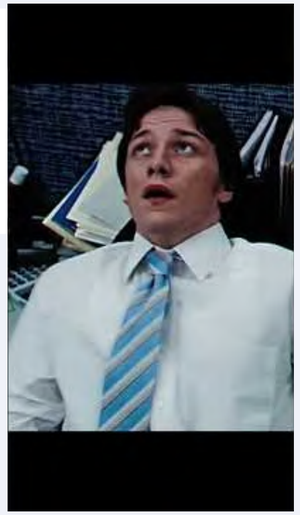


ANTHONY POMPLIANO (AKA POMP) EXPLAINING HOW A YOUNG FRANK (NOW FOUNDER OF DEGODS) CONNECTED WITH HIM WHEN HE WAS YOUNG.

IN A WORD. PERSISTENCE.

WATCH THE SNIP 👉 HERE

REDDIT



YOUTUBE

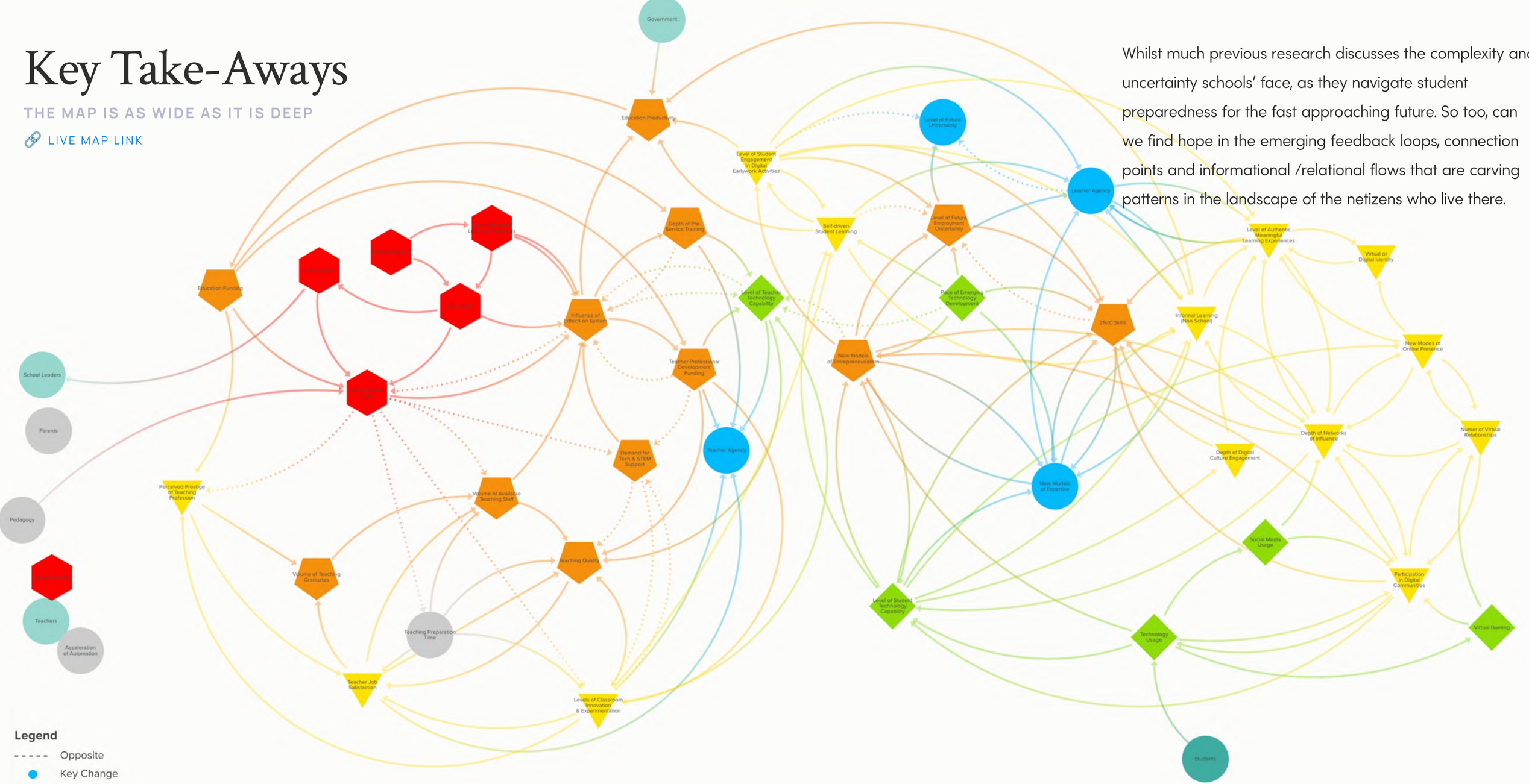
QUORA

QUORA

Key Take-Aways

THE MAP IS AS WIDE AS IT IS DEEP

LIVE MAP LINK



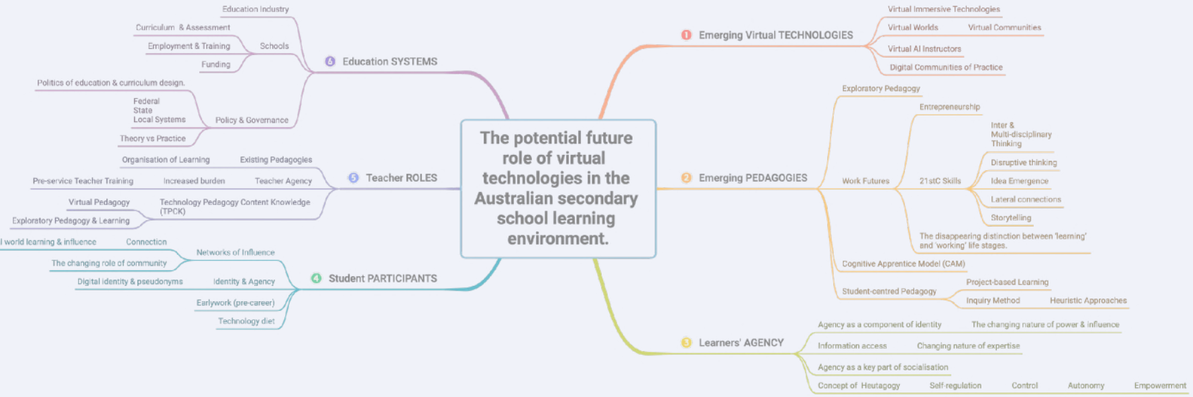
Legend

- Opposite
- Key Change
- Social Driver
- Technology Driver
- Economic Driver
- Political Driver

Whilst much previous research discusses the complexity and uncertainty schools' face, as they navigate student preparedness for the fast approaching future. So too, can we find hope in the emerging feedback loops, connection points and informational /relational flows that are carving patterns in the landscape of the netizens who live there.

A FINAL THOUGHT POST-INTERVIEWS

What if the solve for the question of what role technology should play in education . . is human?



Future Wheels

Future Wheels

SCENARIO

The Relationship of Things (RoT)

We use the Futures Wheel to map cascading implications that may emerge from the possible future scenarios we develop. Here I've utilised the Futures Wheel to explore a broad range of impacts for consideration within the transformation scenario. This format invites us to consider implications across each of the major PESTLE+ areas and ensure a wide ranging analysis for future strategy development.

These Future Wheels are based on emergent ideas developed in the **Transformation scenario - The Relationship of Things (RoT).**

On the following pages you can see 4 Futures Wheels which explore the potential cascading implications of 4 potential shifts which emerged from the **Transformation scenario - The Relationship of Things (RoT).** They include:

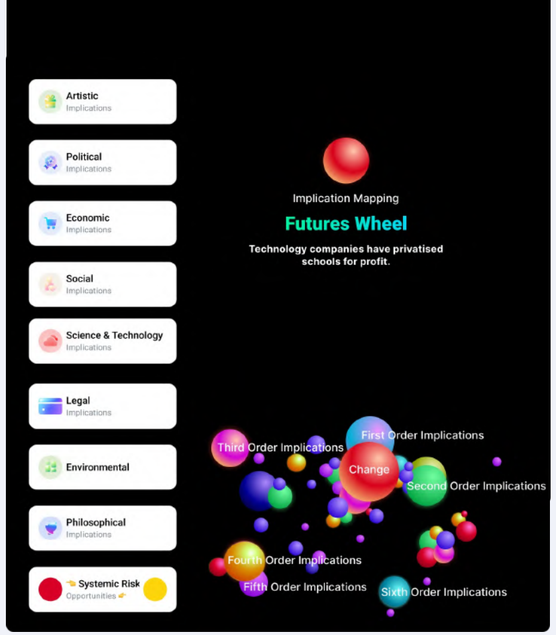
- Technology companies have privatised schools for profit.
- Educators have bifurcated into domain masters and learning coaches.
- Curriculum has been replaced with problem-based meta maps.
- Learners' work is minted as 'scholar NFTs' on-chain.

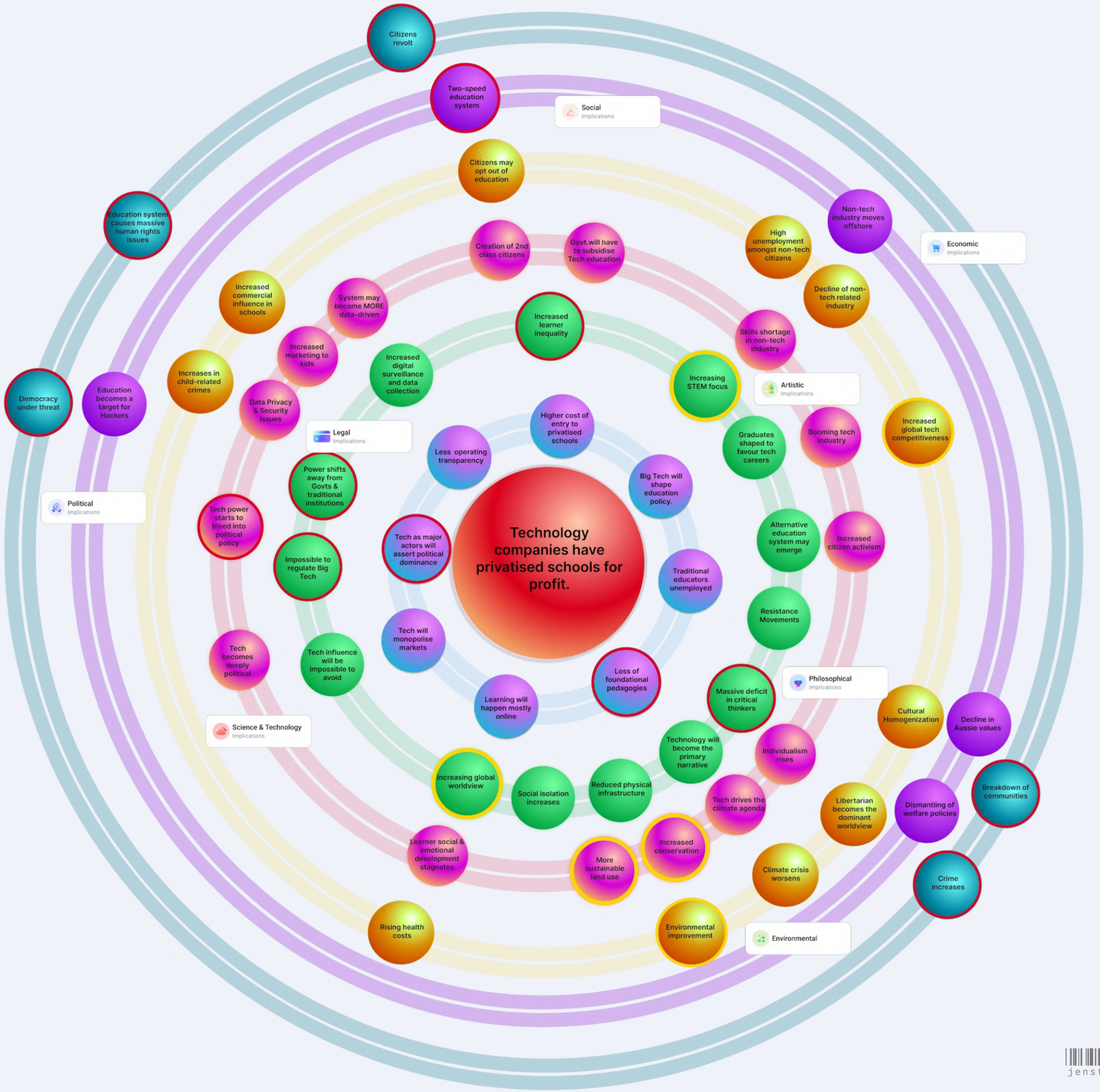
The 4 emergent changes described above; whilst taken from the transformation scenario and thus firmly positioned in the future, are not entirely unrealistic as the seeds of these emerging changes are in fact, already visible today. The Futures Wheels enable us to explore the cascading implications and identify the challenges and opportunities these shifts present, and how they interrelate within the education system, so that we might take the next steps in determining how best to move toward possible preferred futures.

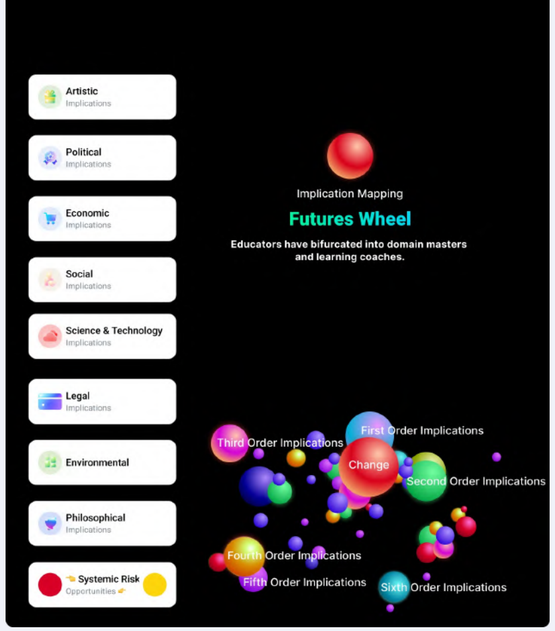
UTILISING FUTURES WHEELS TO EXPLORE IMPLICATIONS

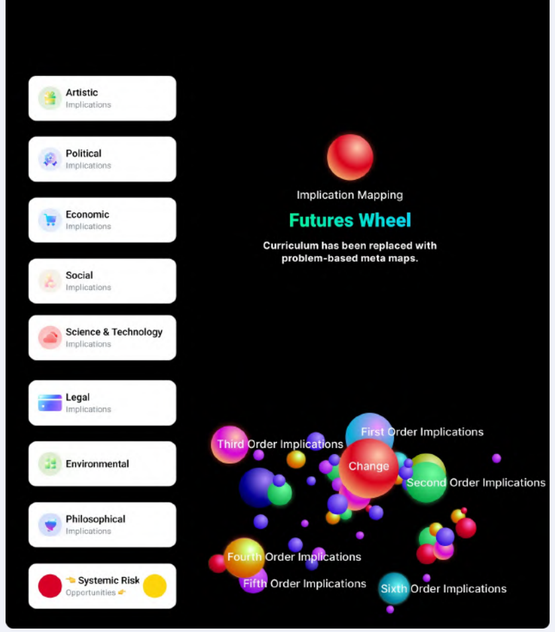
KEY CHANGES SURFACED IN THIS TRANSFORMATION SCENARIO

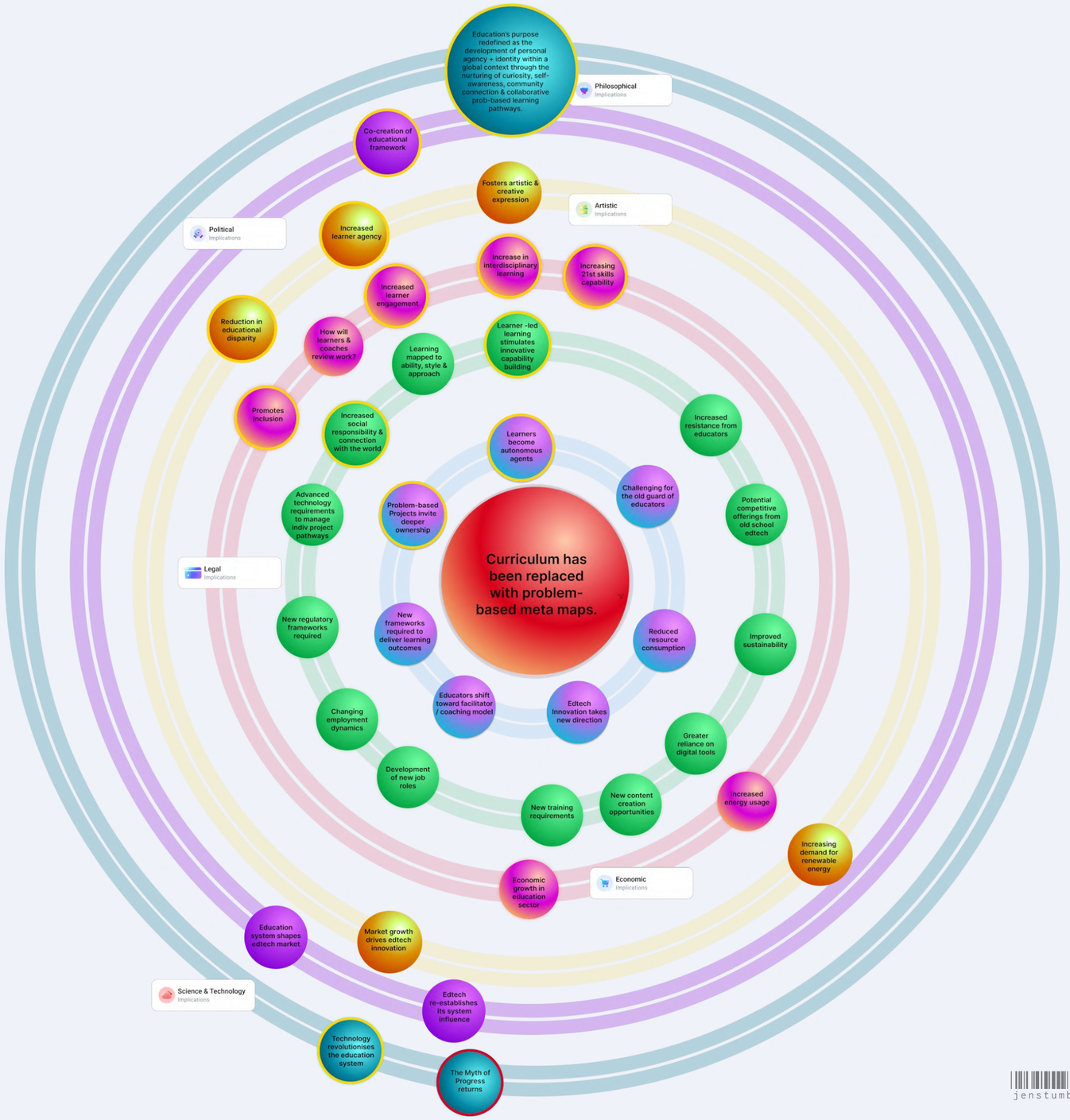
- A significant proportion of schools have been privatised and now operate as a decentralised network of for-profit hubs called "OpenCampus".
- Technology companies have taken over and privatised schools.
- The emergence of the Education Commons as a mainstream global phenomena.
- Peeragogy is the dominant educational approach.
- Educational content is open-source and co-created.
- Educators have bifurcated into domain masters and learning coaches.
- Curriculum has been replaced with problem-based meta maps.
- Early work starts whenever you want it to, and the concept of 'work' commonly refers to both personal passion and for-money projects. OpenCampus prepares you for either.
- All learners work collaboratively on wicked problems each year.
- Personal work is minted as scholar NFTs on-chain.
- Connection is both physical and digital - via learning communities-of-practice focused around personal projects and passions.
- No clear distinction between learning, creating, connecting and working.
- Knowledge is defined, developed, shaped, circulated, exchanged and discovered within an ever-changing network model. Learning comes from energy flows within this network.
- All learning is voluntary.
- Proof-of-work becomes Proof-of-self.

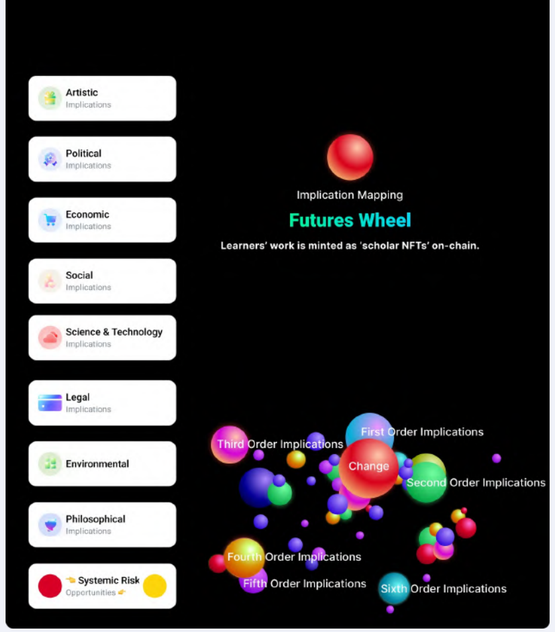


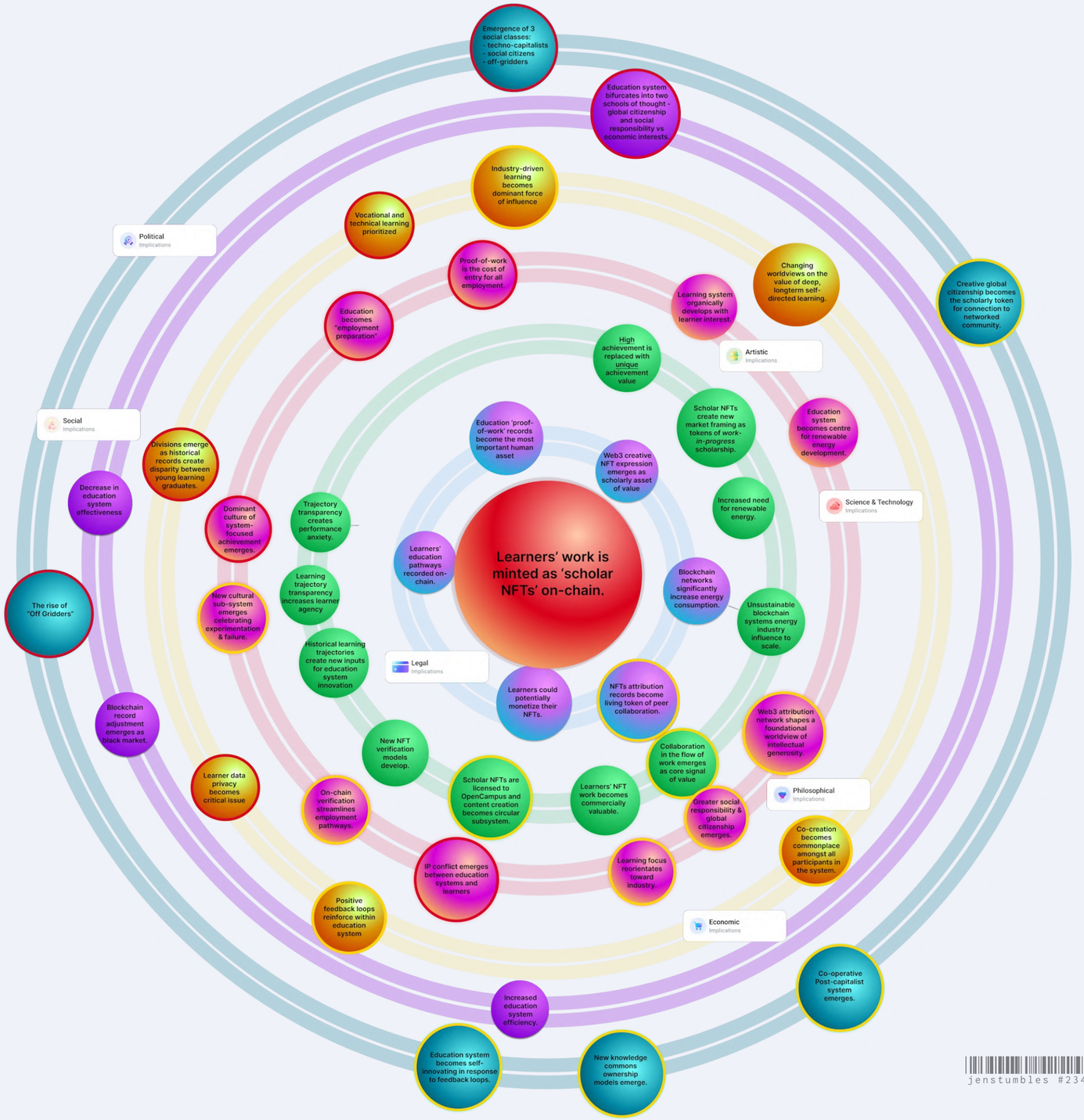


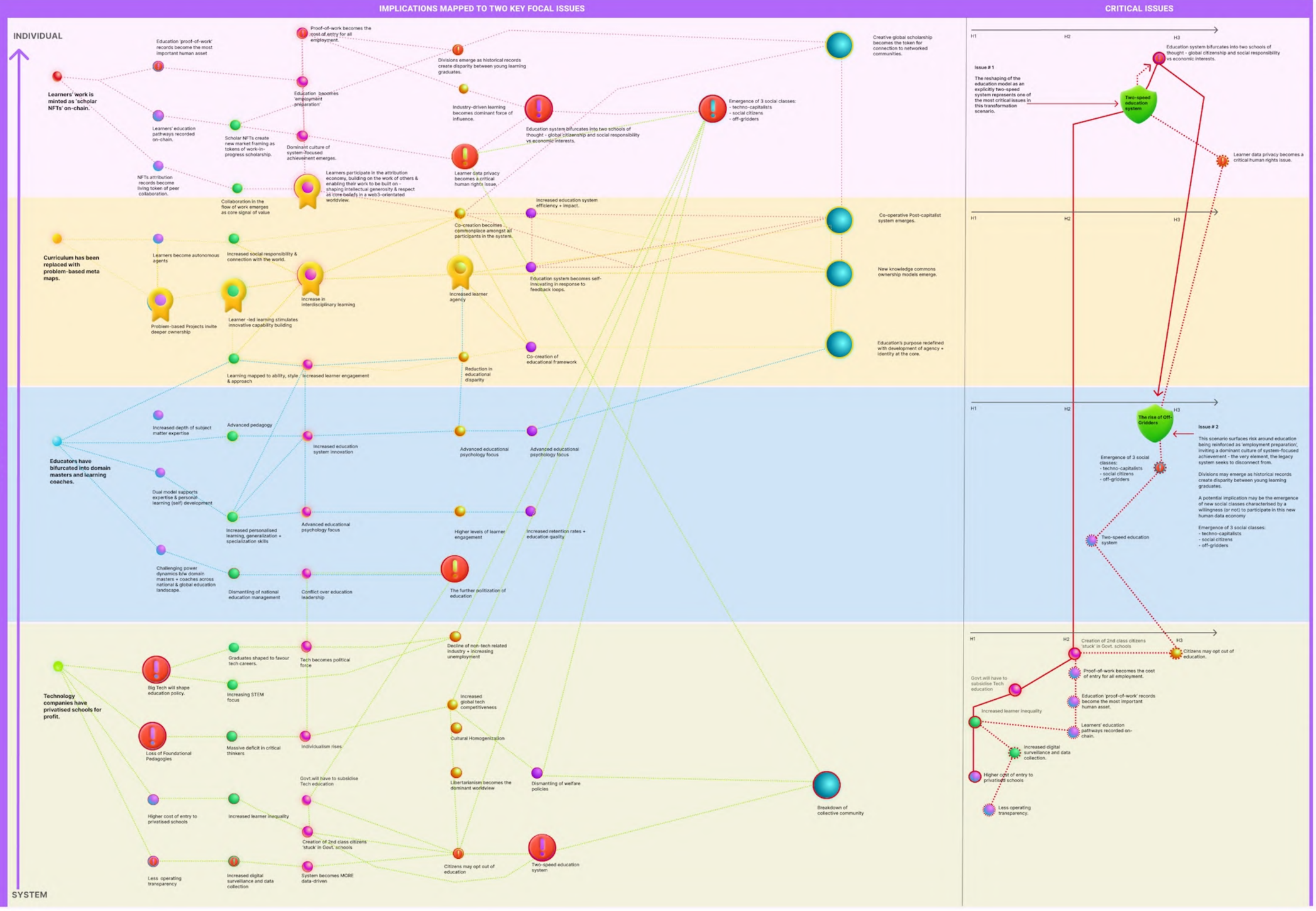












POTENTIAL FUTURE IMPLICATIONS OF A TRANSFORMATIVE SCENARIO

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

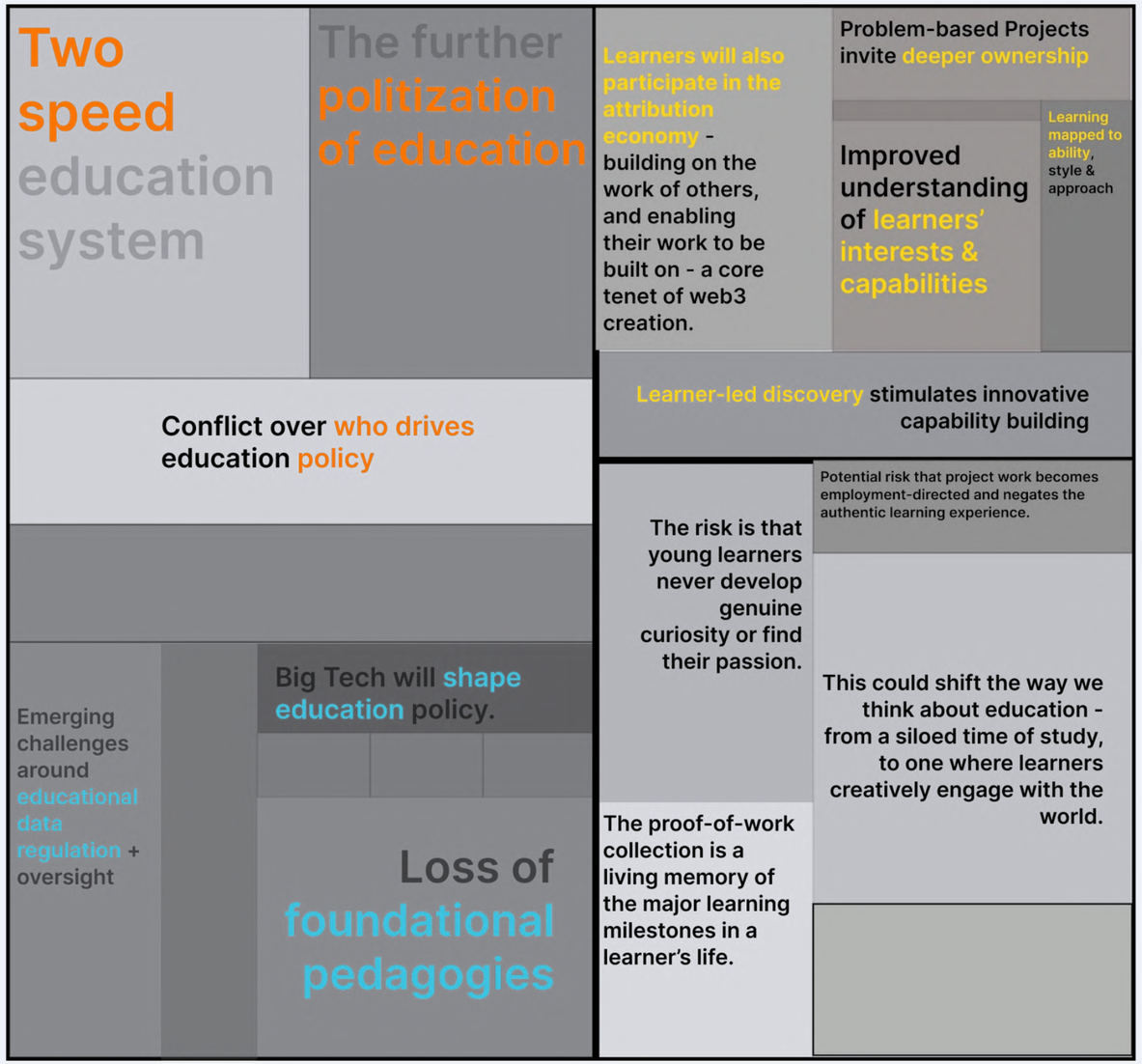
Key Focal Issues

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.

Most important issues

Most important implications

Most provocative implications



Key Implications + Options

Remembering the Initial Framing of the Challenge

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 school system?

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.

It was my contention during the **Current Assessment** stage of this project, that exploring this question through the broader lens of education as a complex adaptive system would offer the opportunity for impactful solutions, but undoubtedly decrease the likelihood of an easy solve. 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; I focused on both the broader educational context and technology's current placement within it. I did 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.

ReFraming the Option Design Process Accordingly

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

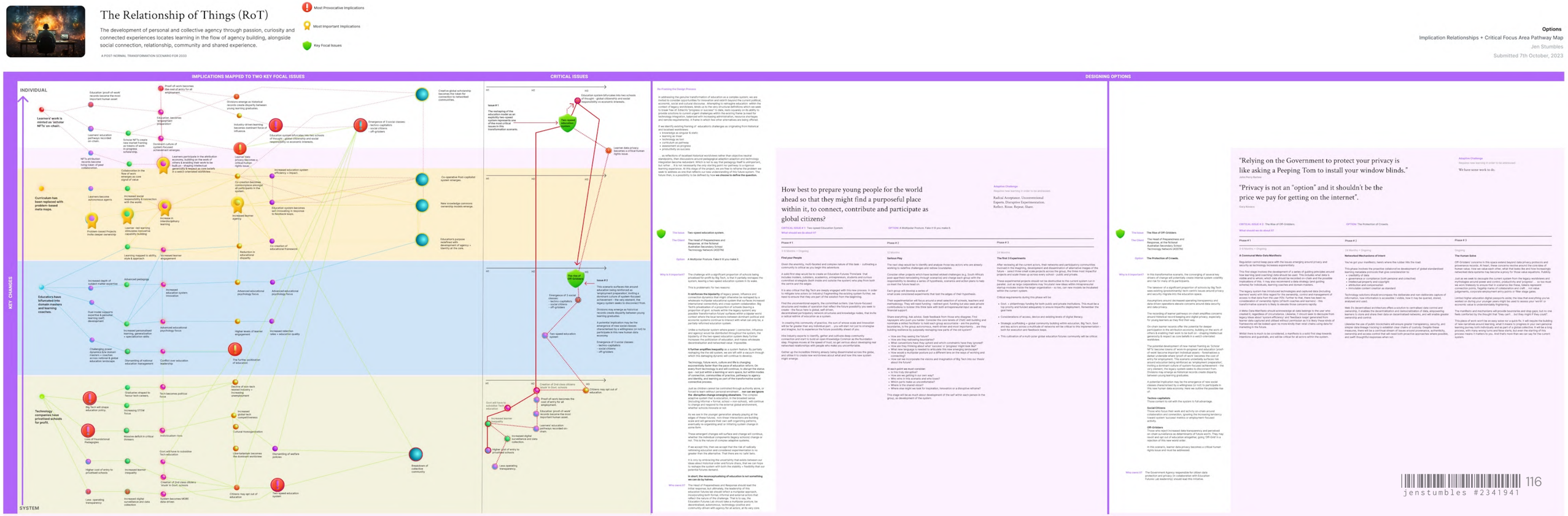
Accepting that the beliefs above are localised historical worldviews rather than objective neutral standpoints, it follows that discussions around pedagogical *adaption* and technology *integration* become increasingly moot. Which is not to say that pedagogy itself is unimportant, but rather . . it is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

At this stage of the project in addressing the most critical issues and potential options moving forward; it's worth remembering that my 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 prepare our students for the future?**

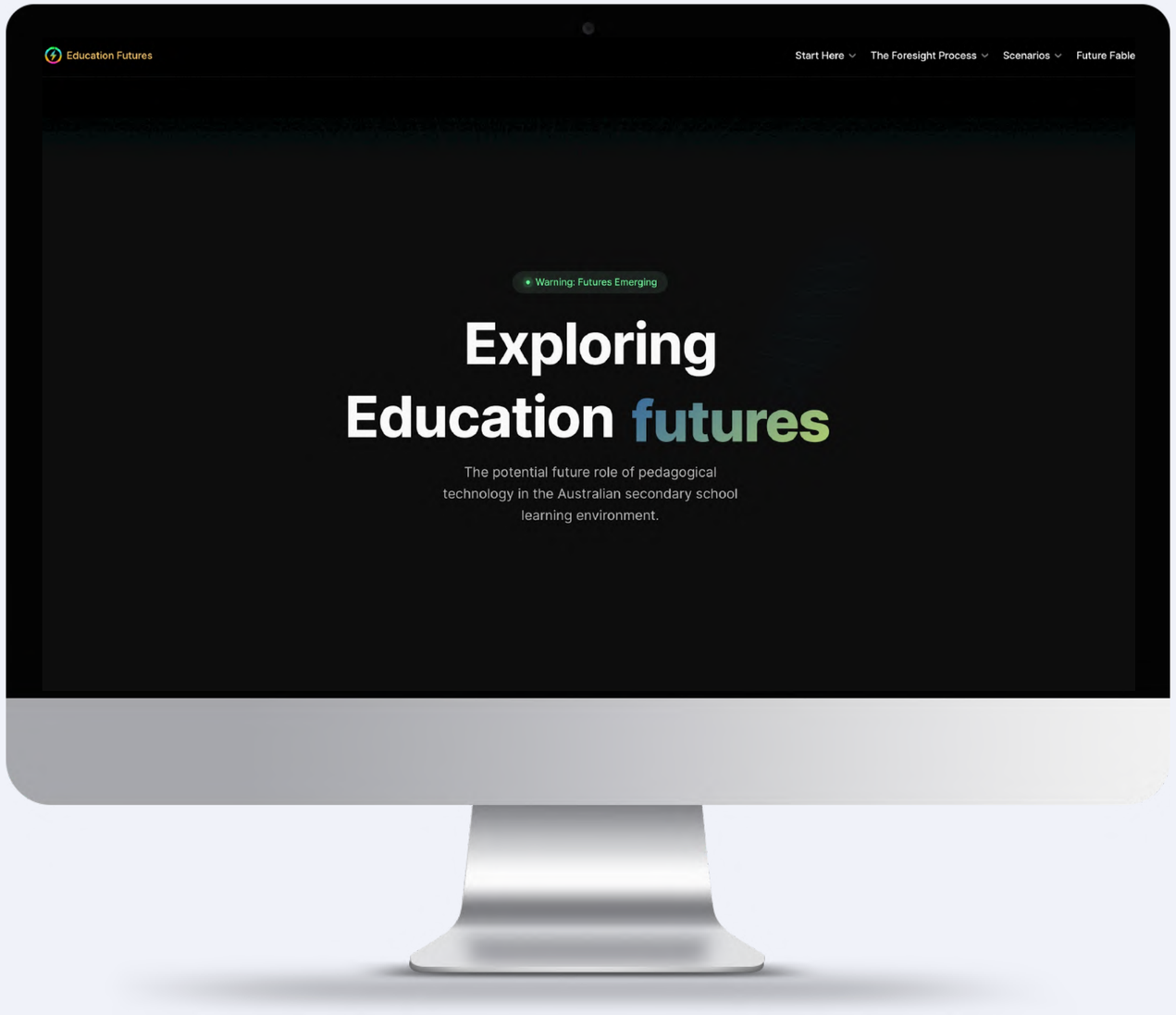
ReFraming the Option Design Process Accordingly

After working through the **Future Wheels** which were based on emergent ideas developed in the **Transformation scenario - The Relationship of Things (RoT),** I consolidated the key implications from the wheels in order to identify the two most **Critical Issues** this scenario presents, along with potential **Options** to address them. You can see the cascading implication pathways mapped around the two key critical issues of focus below.

Key Implications + Options



Final Presentation



THE SITE IS LIVE AND ACCESSIBLE RIGHT NOW AT EDFUTUREHUB.COM.

PART A

Education Commons Website

This site is the first step in creating both an Education Commons, and a Community of Practice. The site was designed to start the conversation. It's going to be an ongoing one, because we're just getting started. Think of this site - as an invitation to enrolment. You can see the foresight process outlined and in an effort to encourage you to participate not just in the imaginings of this project, but in imagining your own educations futures - many of the templates have been provided for you to download (either with the data from this project or blank to fill in yourself).

How should you use the site? Well the short answer is . . any way you like.

You can follow the foresight process through each stage, and then look at the scenarios and then the future fable OR you can jump straight to the bits that spark your interest, and then go back and check out the chain of custody in the research summaries contained in each foresight stage.

PART B

A Digital Scrollytale : The Little Education System that Could.

An Invitation to Imagine

This scrollytale . . is a hopeful story of transformation. It also seeks to play with this idea I've explored in the project - about *experiencing different ways of knowing*. Of moving beyond our own restrictive worldview or semiotic system or mythologies. A lot of futures work and certainly a lot of work on education futures is prose heavy. Written papers and books and articles; . . this fable is an invitation for you to imagine.

It hopefully also encourages you to take the posture of a child (given that is what we're all working toward), to take a beginners mind . . . to be playful as children are . . and to engage in hopeful imagining. When we talk about "systems" or "systems design" or "systems change", we often talk about systems in the abstract. But what if . . systems had feelings too? What if by understanding and imagining what it might be like to be the system . . we might reshape our posture, even just a little?I've written this image of the future of the education system**,** as a fable . . . enabling us to empathise with the system, in an attempt to make this abstract idea . . humanly accessible.

The story of the Little Education System that could, links both a personal and a systems narrative within an overarching meta-narrative. It seeks to bridge the gap between the "IT" that is "system", and the deeply human, complex and emotional experience of change. And in the story of this abstract hero adventure, the hope is that we might just see a little of ourselves here too.

THE SCROLLYTALE IS ACCESSIBLE VIA EDFUTUREHUB.COM AND YOUTUBE

PART B

A Digital Scrollytale

The fable from the future is a scrollytale from the year 2055 - long after this project has been and gone. As we consider the future role of technology within the complex system that is education; how might it be helpful to imagine what it might be like . . to **be that system**?

An Invitation to Imagine

THE SCROLLYTALE IS ACCESSIBLE VIA EDFUTUREHUB.COM AND YOUTUBE