Joint European Technology-Enhanced Learning PhD Summer School 2024

Can TEL save the planet?

Simon Buckingham Shum

Professor of Learning Informatics
Director, Connected Intelligence Centre
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Can TEL prevent civilizational collapse?

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How do we start to think about TEL's contribution to tackling our global crises?

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< insert dark news stories each morning >

< yet we must find ways
to be hopeful >

< figuring out where our TEL jigsaw pieces fit may take some careful puzzling >

“present and future risks can also interact with each other to form a ‘polycrisis’ – a cluster of related global risks with compounding effects, such that the overall impact exceeds the sum of each part”
World Economic Forum, Global Risks Report 2023

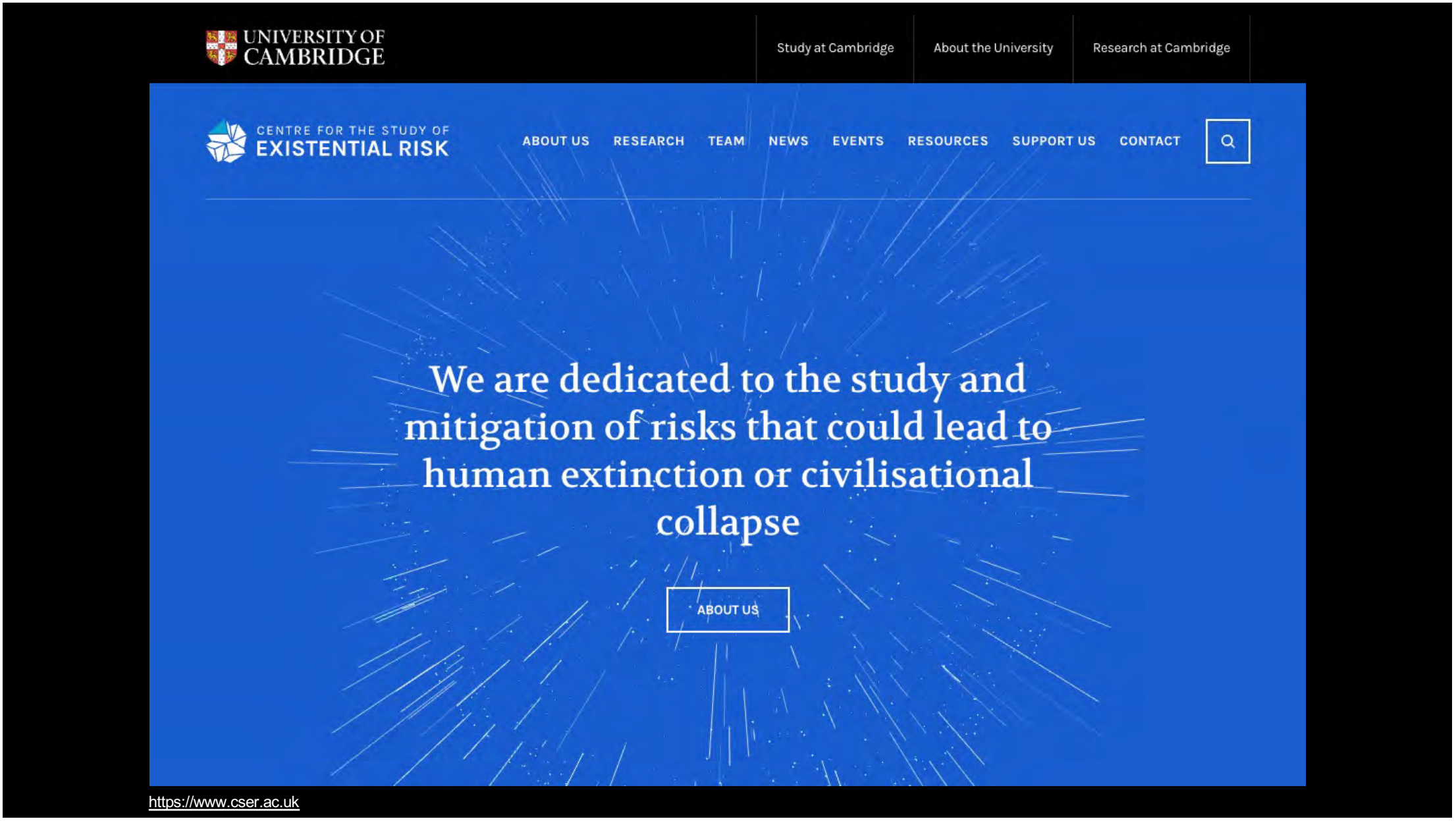
“Polycrisis”

This is why 'polycrisis' is a useful way of looking at the world right now
(World Economic Forum)

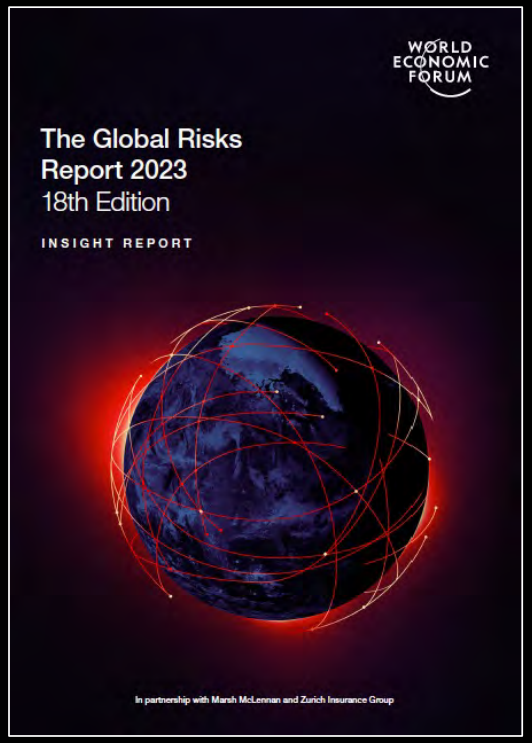
“the shift from “polycrisis” to “permacrisis” implies that we now see our crises as situations that can only be managed, not resolved. Indeed, “permacrisis” suggests that every decision to accelerate a difficult situation in order to come out on the other side of it risks something far worse.” *Neil Turnbull*

“Permacrisis”

Permacrisis: what it means and why it’s word of the year for 2022
(The Conversation)



https://www.cser.ac.uk



https://www.weforum.org/publications/global-risks-report-2023/digest/

Global risks ranked by severity over the short and long term

"Please estimate the likely impact (severity) of the following risks over a 2-year and 10-year period"

2 years — 2025		10 years — 2034	
1	Cost-of-living crisis	1	Failure to mitigate climate change
2	Natural disasters and extreme weather events	2	Failure of climate-change adaptation
3	Geoeconomic confrontation	3	Natural disasters and extreme weather events
4	Failure to mitigate climate change	4	Biodiversity loss and ecosystem collapse
5	Erosion of social cohesion and societal polarization	5	Large-scale involuntary migration
6	Large-scale environmental damage incidents	6	Natural resource crises
7	Failure of climate change adaptation	7	Erosion of social cohesion and societal polarization
8	Widespread cybercrime and cyber insecurity	8	Widespread cybercrime and cyber insecurity
9	Natural resource crises	9	Geoeconomic confrontation
10	Large-scale involuntary migration	10	Large-scale environmental damage incidents

Risk categories: Economic | Environmental | Geopolitical | Societal | Technological

Whether you think this is terminal, or something we'll resolve, the situation is grave…

Yes, but what's this got to do with **TEL?**

Whether you think this is terminal, or something we'll resolve,
the situation is grave…

Yes, but what's this got to do with **TEL?**

Diagnosis: **Failure to learn…**

- Failure to learn to live within planetary limits
- Failure to understand our complex interdependence with the natural world
- Failure to master technology to enable not undermine civic society
- Failure to control our cognitive biases
- Failure to mature out of our selfishness
- Failure to educate the next generation to break out of this cycle
- Failure to cultivate the leaders who acted on the above in time
- Failure to …

We all care — but the polycrisis is HUGE…
Other legitimate responses…?
Not fair — TEL obviously works at a different level to global politics
…?
18th EATEL Summer School on Technology-Enhanced Learning
Gabicce Mare, Pesaro, Italy
May 11-19 2024
Tuesday 14/05
Wednesday 15/05
Thursday 16/05
Main hall
Workshop space A
Workshop space B
Keynote 3: Embedded learning with Augmented Reality
by Prof. Fridolin Wild, The Open University UK
Keynote 4: Cultivating Trust and Values in the Era of AI-Powered Education
by Ass. Prof. Olga Viberg, KTH Royal Institute of Technology
Keynote 5: Beyon
Relaxation break
Transfer, departure from the hotel at 09.00
Coffee break
Lunch
Dinner
Arrival, hotel check-in and registration
Hotel check-out and departure
Keynote 2: Can TEL save the planet?
by Prof. Simon Buckingham Shum, University of Technology Sydney
Speed mentoring
All senior instructors meet all PhD candidates.
Free time in Rimini city
Poster and Demo session
PhD candidates can bring a poster and participate [optional]. Instructors can demonstrate their prototypes and tools.
Game jam
Board games, consoles, VR-games
Flexible time
EATEL
https://ea-tel.eu/jtelss24
IATUL
International Association of University Libraries
General PhD
TEL core
TEL introduction
Keynotes and announcements
Thematic workshop
Methodology workshop
Soft-skills workshop
Career workshop
Informal learning sessions
Social program
JTELSS24 program v. 0.3

LNCS 12315
Carlos Alario-Hoyos
María Jesús Rodríguez-Triana
Maren Scheffel
Inmaculada Arnedillo-Sánchez
Sebastian Maximilian Dennerlein (Eds.)
Addressing Global Challenges and Quality Education
15th European Conference on Technology Enhanced Learning, EC-TEL 2020
Heidelberg, Germany, September 14–18, 2020
Proceedings
LNCS 14200
Olga Viberg · Ioana Jivet ·
Pedro J. Muñoz-Merino ·
Maria Perifanou · Tina Papathoma (Eds.)
Responsive and Sustainable Educational Futures
18th European Conference on Technology Enhanced Learning, EC-TEL 2023
Aveiro, Portugal, September 4–8, 2023, Proceedings
LNCS 12884
Tinne De Laet · Roland Klemke ·
Carlos Alario-Hoyos · Isabel Hilliger
Alejandro Ortega-Arranz (Eds.)
Technology-Enhanced Learning for a Free, Safe, and Sustainable World
16th European Conference on Technology Enhanced Learning, EC-TEL 2021
Bolzano, Italy, September 20–24, 2021, Proceedings

Antonio Dias de Figueiredo

UNIVERSITY OF COIMBRA, PORTUGAL

1. THE MYTH OF THE SEPARATION

We live in a mix of two worlds:

- A RATIONAL WORLD, of predictability, stability, order, uniformity, and absence of emotions, inspired by the efficiency of machines and technology
- A RELATIONAL WORLD, of complexity, uncertainty, diversity, emotion, and interdependence, inspired by the human beings, nature, and life

https://www.researchgate.net/publication/373708099_The_Culture_of_Education_in_the_Age_of_Artificial_Intelligence

6. EMPOWERING PEOPLE

At the turn of the century, Edgar Morin advocated a RELATIONAL school

where the fragmented knowledge and skills of our times could be interconnected

in order to respond to the human condition, the identity of the planet,

the recognition of uncertainty, the urge of mutual understanding, and the ethical imperative

https://www.researchgate.net/publication/373708099_The_Culture_of_Education_in_the_Age_of_Artificial_Intelligence

An invitation and provocation to feed back on my work-in-progress…

I’m here to learn from you!

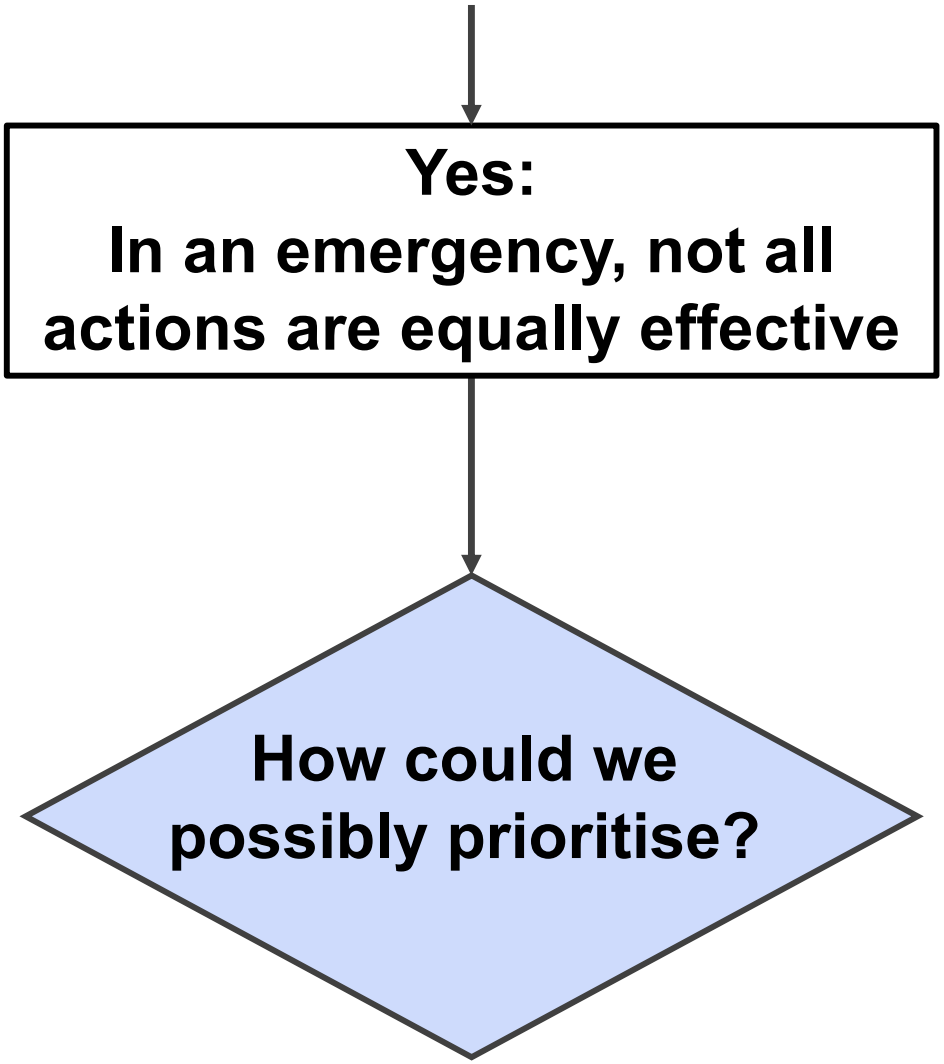
Should our work change in any way to reflect the crises we face?

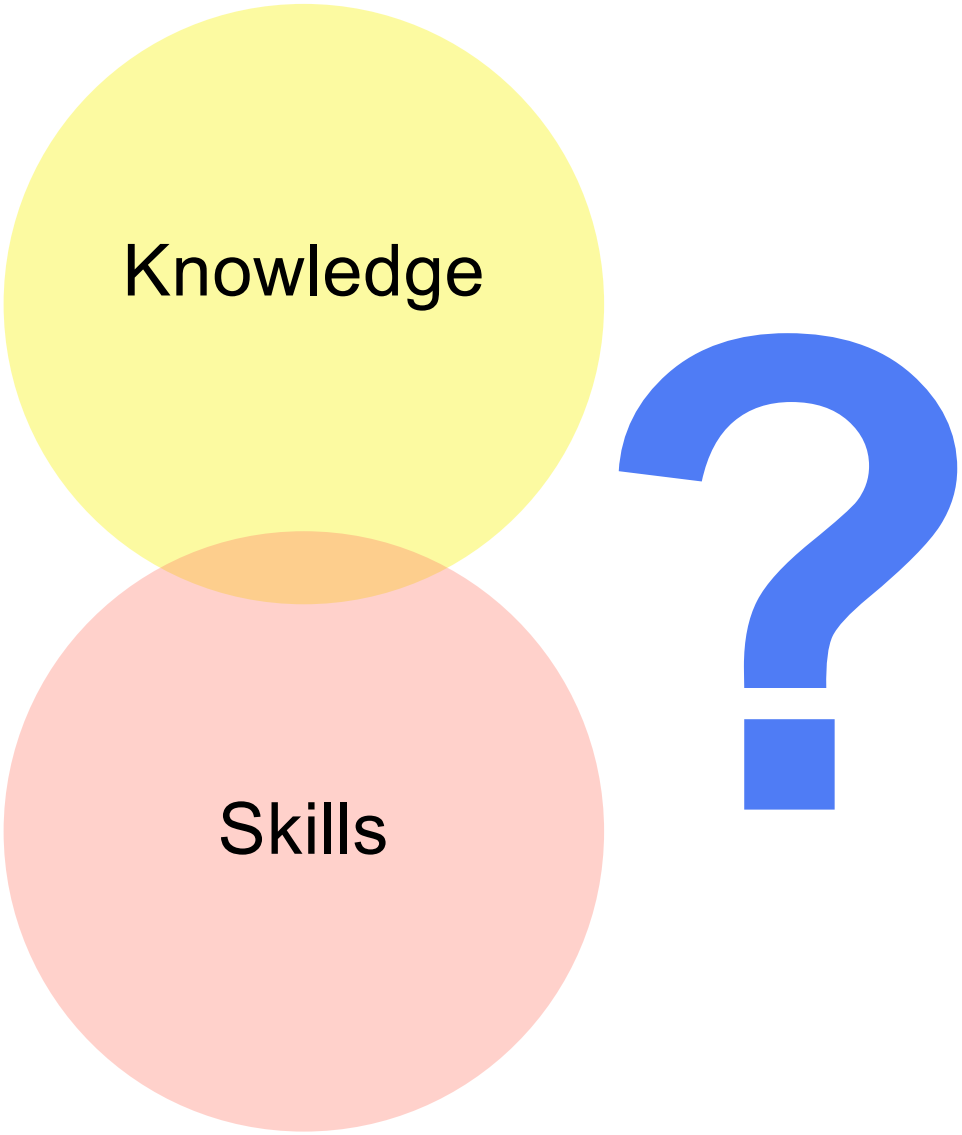
No: education is an intrinsic societal good. It can always be improved of course and that's what I'm working on.

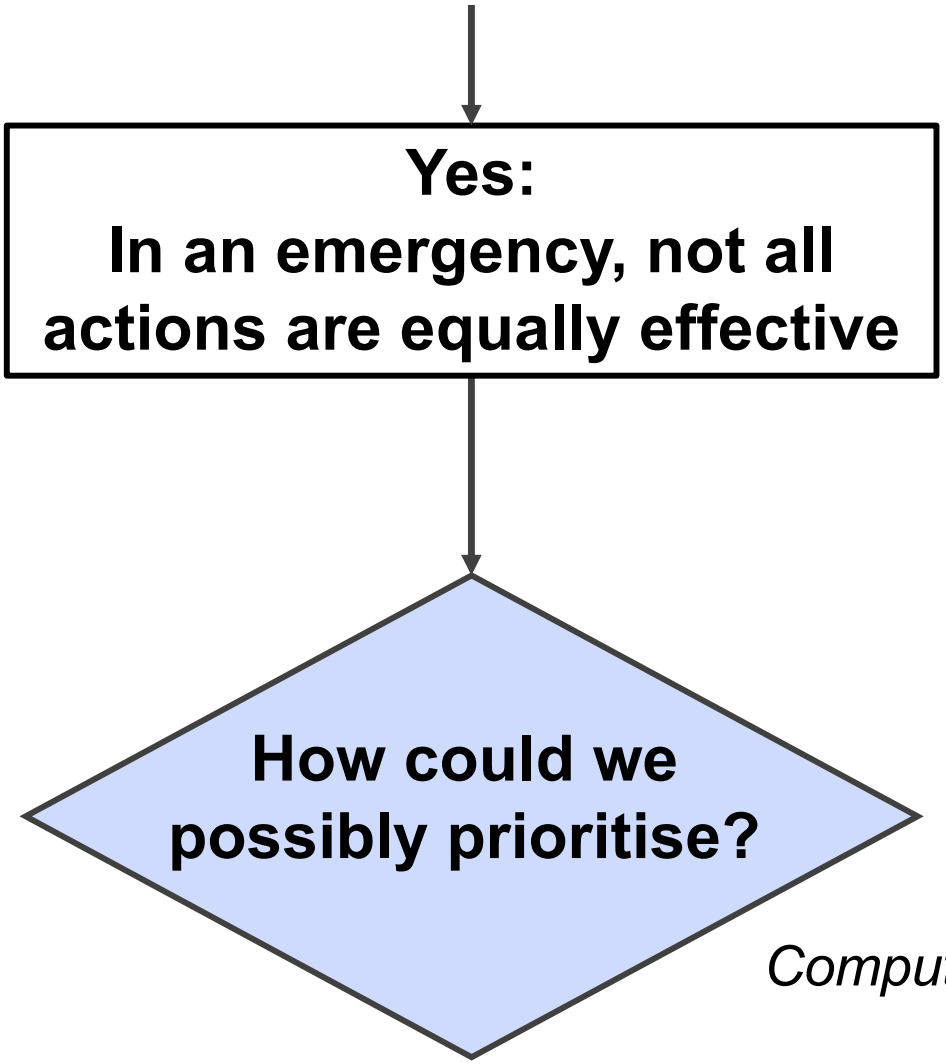
Carry on…

Yes:
In an emergency, not all actions are equally effective

Let's prioritise…


Yes:
In an emergency, not all actions are equally effective
How could we possibly prioritise?


Knowledge
Skills



Knowledge

Systems science?
Climate science?
Green tech?
Performing arts?
Literature
Social work?

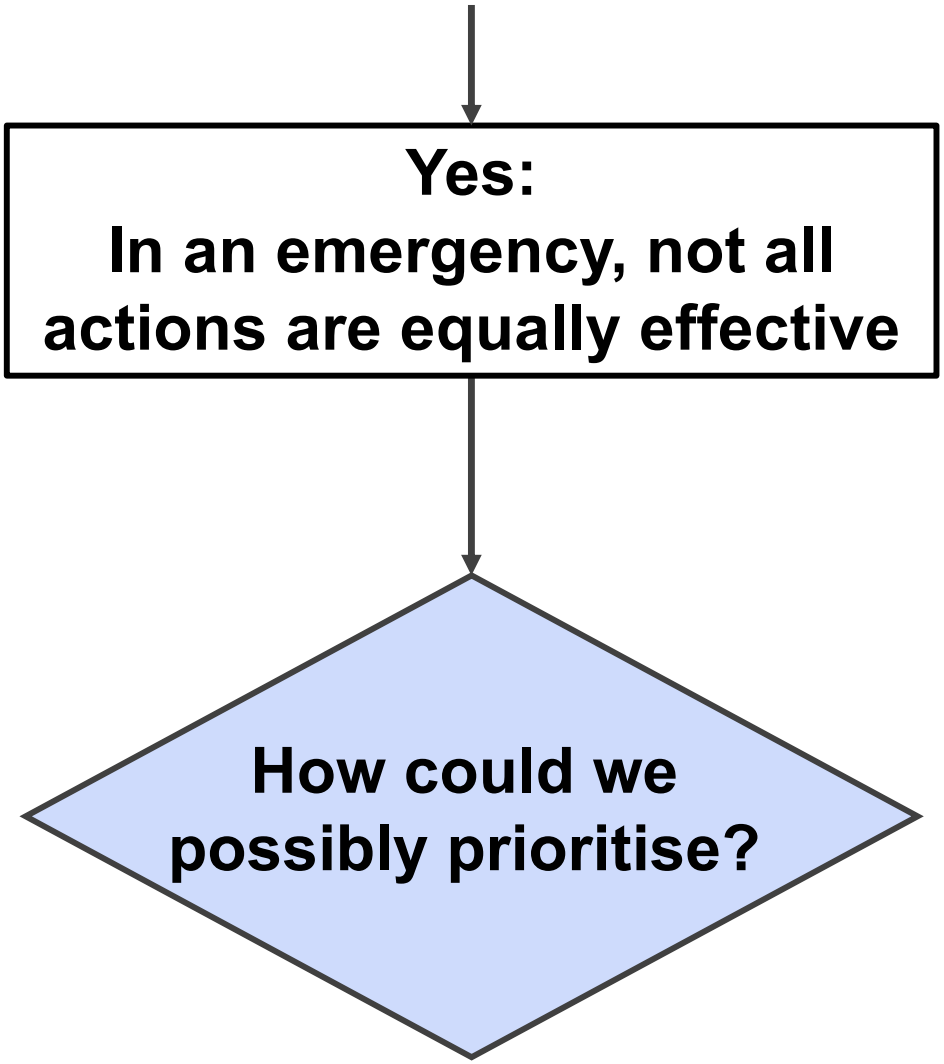
Skills

Computational simulation?
Conflict resolution?
Prompt engineering?
Great oratory?
Emotional intelligence?
Creativity?

Should our work change in any way to reflect the crises we face?

No: education is an intrinsic societal good. It can always be improved of course and that's what I'm working on.

Carry on…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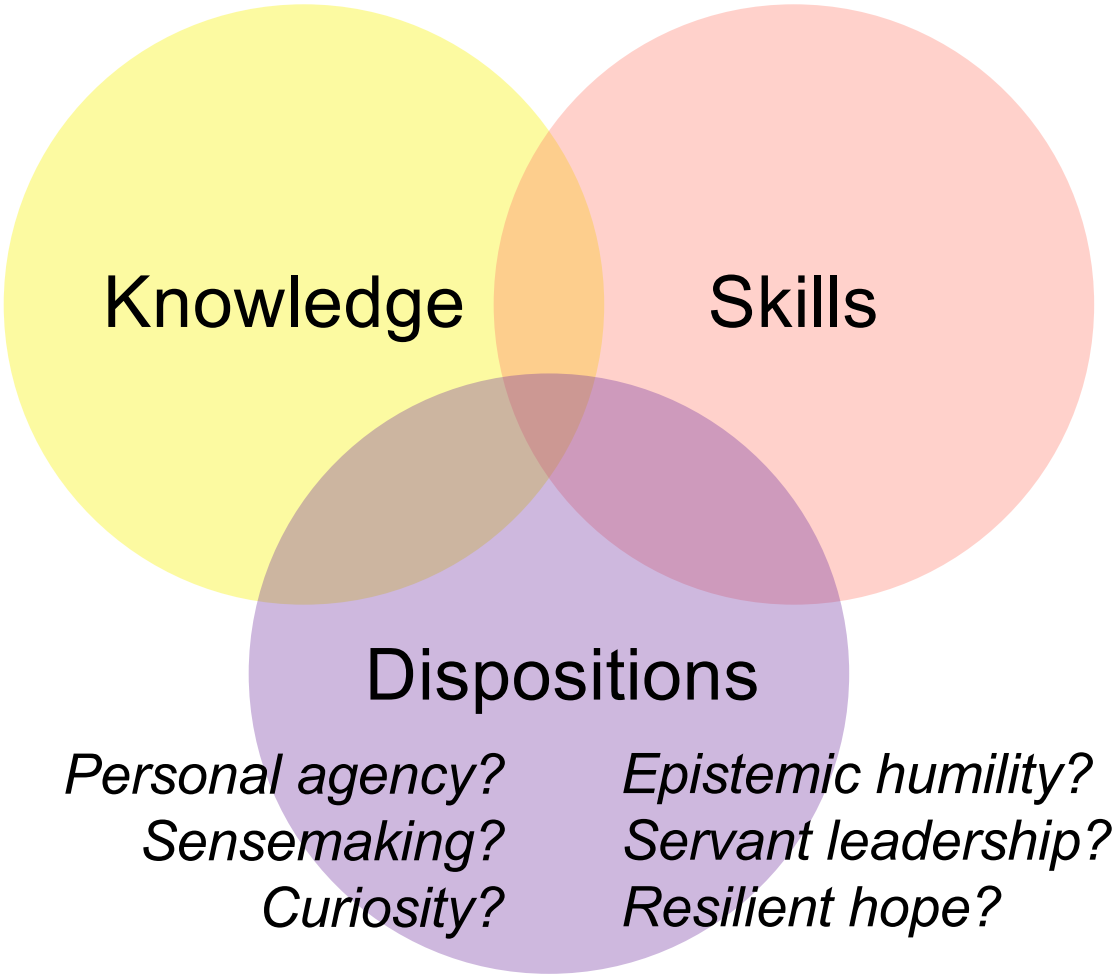
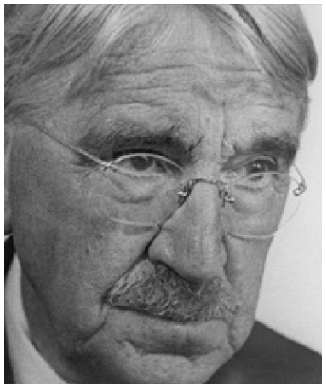

Knowledge
Skills
Dispositions
Personal agency?
Sensemaking?
Curiosity?
Epistemic humility?
Servant leadership?
Resilient hope?

Dispositions?



"Knowledge of methods alone will not suffice: there must be the desire, the will, to employ them.

This desire is an affair of personal disposition."

John Dewey, 1933

Dewey, J. *How We Think: A Restatement of the Relation of Reflective Thinking to the Educative Process*. Heath and Co, Boston, 1933

Dispositions?

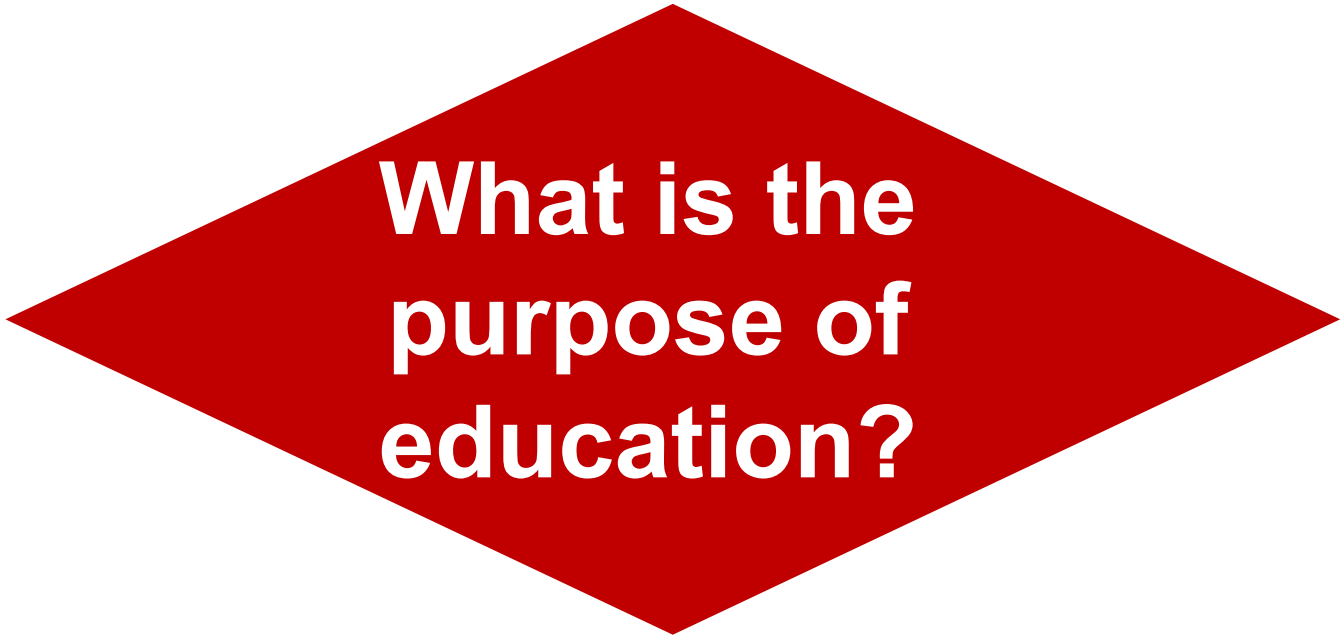
"One of the key issues emerging from these findings was the learner's orientation towards the unknown, uncertainty and ambiguity, and their tendency to either retreat from it or move into it. The former effectively precludes deep learning, and the latter is the beginning point for it."

Ruth Deakin Crick & Chris Goldspink

Deakin Crick R. and Goldspink G. (2014) Learning Dispositions, Self-theories and Student Engagement, *British Journal of Educational Studies*, 62,1,1-17. DOI: http://dx.doi.org/10.1080/00071005.2014.904038

When we ask *Why?* enough times, we soon run into…

values… power… politics… history…



Transforming education to cultivate global citizens

Academic Network on Global Education & Learning

Réseau Académique de chercheurs sur l'education global

Red académica de investigadores sobre la educación global

Akademisches Netzwerk von Global Education Forschern

- Global Citizenship Education
- Development Education
- Human Rights Education
- Education for Sustainability
- Education for Peace /Conflict Prevention
- Intercultural Education

ANGEL https://angel-network.net

Transforming education to cultivate global citizens

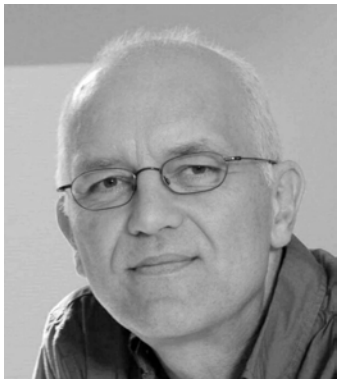
Global Education Network Europe (GENE) is the European network of Ministries and Agencies with national responsibility for policymaking, funding and support in the field of Global Education.

GENE https://gene.eu

Definition

Global Education is education that enables people to reflect critically on the world and their place in it; to open their eyes, hearts and minds to the reality of the world at local and global level.

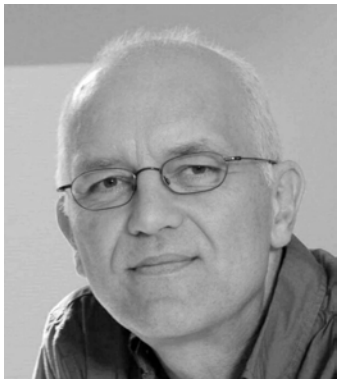
It empowers people to understand, imagine, hope and act to bring about a world of social and climate justice, peace, solidarity, equity and equality, planetary sustainability, and international understanding. It involves respect for human rights and diversity, inclusion, and a decent life for all, now and into the future.



“Reclaiming a future that has not yet been”

Gert Biesta

Biesta, G. Reclaiming a future that has not yet been: The Faure report, UNESCO’s humanism and the need for the emancipation of education. *Int Rev Educ* 68, 655–672 (2022). https://doi.org/10.1007/s11159-021-09921-x



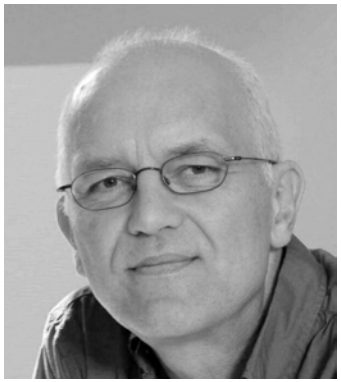
[I]t seems to us, that through the knowledge it provides of the environment in which it operates[,] education may help society to become aware of its problems and, provided that efforts are centred on training "complete men" who will consciously seek their individual and collective emancipation, it may greatly contribute to changing and humanizing societies (Faure et al. 1972, p. 56; emphasis in original).

1972 vs. 2008

In a knowledge society where demands for skills, competencies and knowledge constantly increase and change, lifelong learning is a key strategy to adjust human capital to new requirements, e.g. caused by technological change. More generally, one may consider lifelong learning as a reaction to an acceleration of social, economic and technological change (ELLI Development Team 2008, p. 8).

Gert Biesta

Biesta, G. Reclaiming a future that has not yet been: The Faure report, UNESCO's humanism and the need for the emancipation of education. *Int Rev Educ* 68, 655–672 (2022). https://doi.org/10.1007/s11159-021-09921-x



One argument in favour of the "societal dysfunctionality" of education, Mollenhauer contends, is the idea that education can never just be about the insertion of the new generation into the existing social order – education as *adaptation* – but also has a role to play in helping children and young people to find their own position in society – education as *emancipation* (see Mollenhauer 1968, pp. 22–23). Regarded from this angle, the role of education is not just to secure the continuation of the past and the present; it also needs to have an orientation towards the future, particularly with the intention of keeping the future "open" for the new generation rather than determining their future for them. In this line of thinking, which is already visible in

Gert Biesta

Biesta, G. Reclaiming a future that has not yet been: The Faure report, UNESCO's humanism and the need for the emancipation of education. *Int Rev Educ* 68, 655–672 (2022). https://doi.org/10.1007/s11159-021-09921-x

Education “in a time between worlds” (Zak Stein)

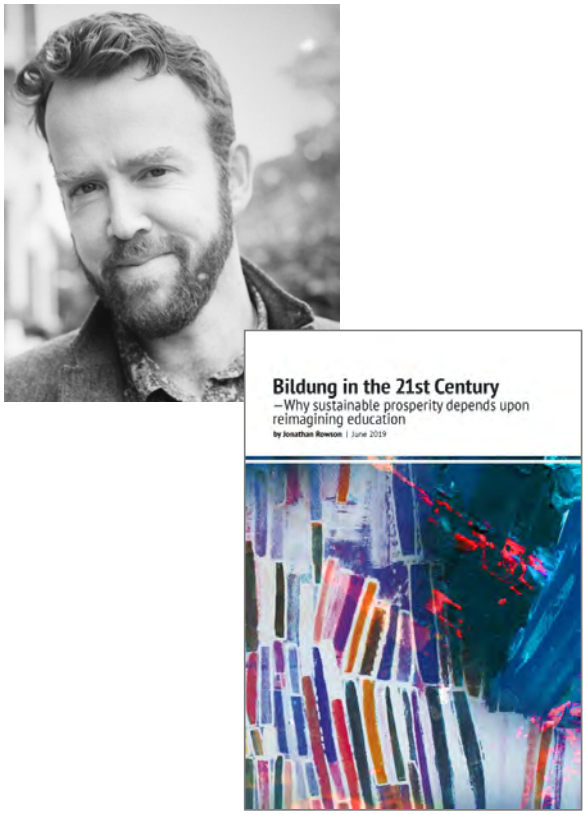
“…societies require each new generation to be in a position to inherit the requisite capabilities, legitimacy, and meaning-making to continue the project of cooperative social life.

…

Failing this, the intergenerational fabric of the social world begins to fray. At some point inadequate education results in an inability to fill essential institutional roles, provide motivating meanings, and secure political legitimacy.”

https://systems-souls-society.com/education-is-the-metacrisis/
https://systems-souls-society.com/education-must-make-history-again/

These times compel us to rethink education: *Bildung*



"Bildung is a Germanic term with English and Greek roots and Nordic and American fruits.
[…] it means something like

transformative civic education

[…] the sense of

fulfilling one's nature or purpose

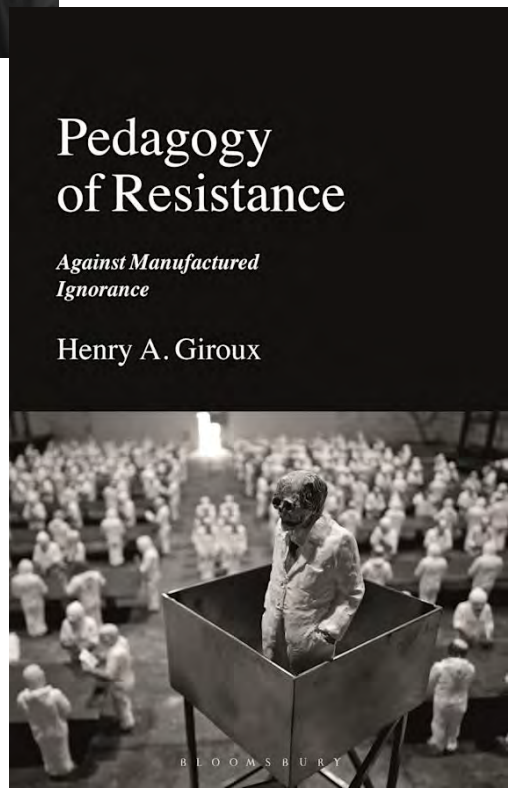
in response to the challenges

[…] Bildung entails a dynamic world view that values

independence of mind and spirit grounded in ecological and social interdependence."

Jonathan Rowson

https://cusp.ac.uk/themes/m/essay-m1-9/



"It is hard to imagine a more urgent moment for taking seriously ongoing attempts to make education a fundamental element of politics. At stake here is the notion that education is a social concept, one rooted in the goal of emancipation for all people. Moreover, this is an education that encourages **human agency**, one that enables people to be both **critical thinkers** and **committed individuals** and **social agents**." **(emphasis added)**

How do our AI visions
for the future of education relate
to the obligations of democracy?

How can our platforms be used to
combat learned helplessness in the age
of disinformation machines?

How do we imagine a future in which
AI becomes a fundamental tool for
expanding creative, socially
responsible agency?

Giroux (2023), personal communication

So, education must
cultivate global citizens.

And not sell its soul to capitalism, or the forces threatening democracy.

But the critiques of our predicament – and hence of education – run deeper…

"metacrisis… draws attention to interiority (meta as within) and relationality (meta as between) as spiritual features of what is typically assumed to be a political challenge, while also highlighting that a fixation with crisis may preclude other and better ways of being in the world (meta as beyond)" *Jonathan Rowson*

"Metacrisis"

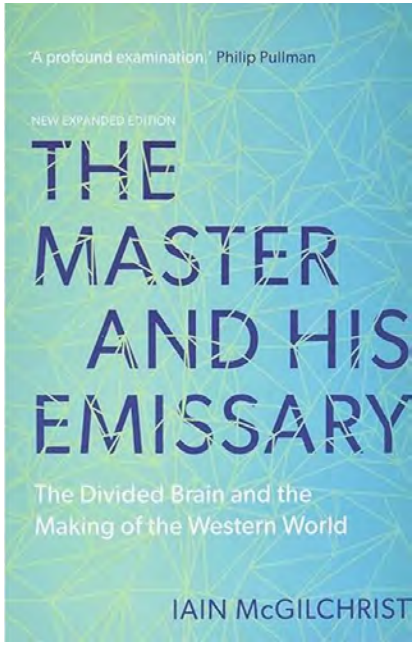
Living in the Metacrisis video / Prefixing the World article

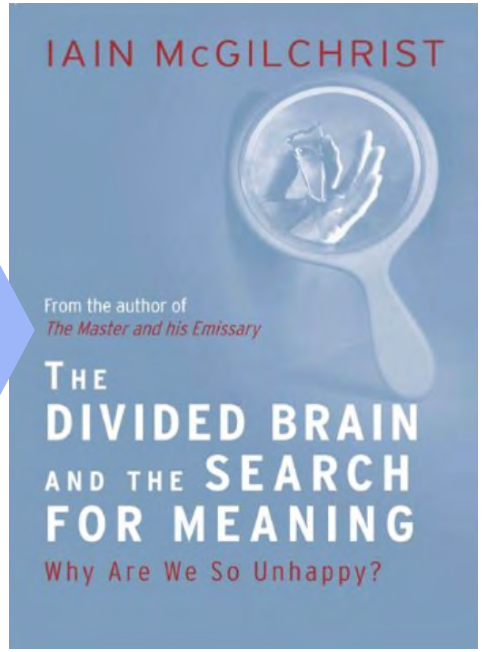
Neo: Why do my eyes hurt?
Morpheus: You've never used them before.

Enter cognitive neuroscience:

Modernity's excesses, myopia and paralysis are recognisably a form of collective cognitive dysfunction – *rooted in neuroscience*

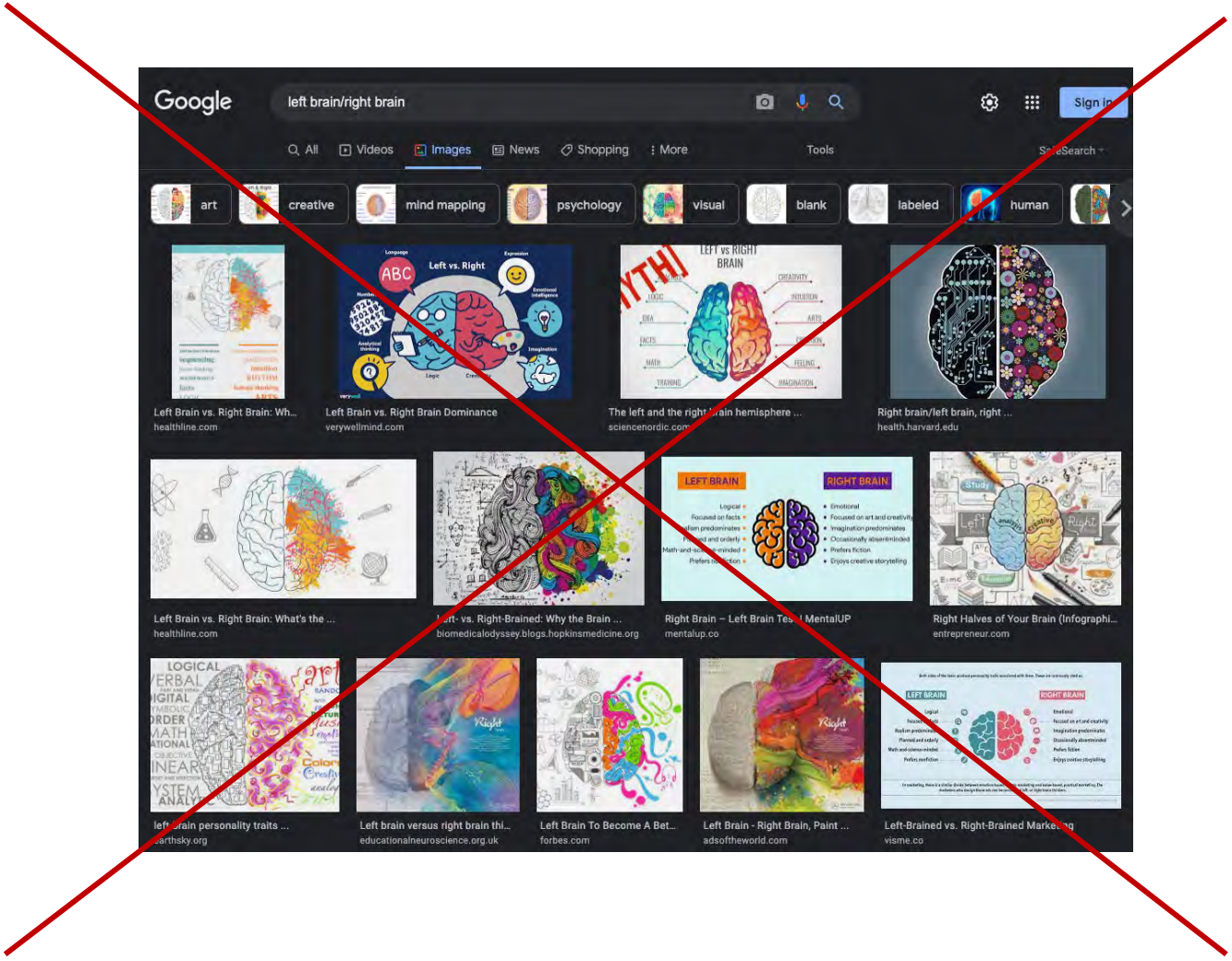
Iain McGilchrist (2021), *The Matter With Things: Our Brains, Our Delusions, and the Unmaking of the World.* Perspectiva Press.





Short version!

https://systems-souls-society.com/insight/perspectiva-press/the-matter-with-things/



NB: McGilchrist debunks pop psychology and management snake oil:

“Left Brain = analytical and reliable

Right Brain = creative but unreliable”

Why is the brain asymmetric, deeply divided, and why is the corpus callosum largely *inhibitory?*

Why is the brain asymmetric, deeply divided, and why is the corpus callosum largely *inhibitory?*

THE MASTER & HIS EMISSARY

"The brain is—in fact it has to be—a metaphor of the world." ... "In terms of the metaphor of the Master and his emissary, the Master realises the need for an emissary to do certain work on his behalf (which he, the Master, must not involve himself with) and report back to him. That is why he appoints the emissary in the first place. The emissary, however, knowing less than the Master, thinks he knows everything and considers himself the real Master, thus failing to carry out his duty to report back." — Iain McGilchrist

LEFT HEMISPHERE (THE EMISSARY):

- The hemisphere of **"what"** / The **speaking** hemisphere
- **Exclusive, either/or, analytic, fragmentary, linear, sequential, explicit, abstracted, compartmentalized, static, certainty, finitude, lifeless**
- Attention is **local, narrow, focused**
- Focuses on **stasis** or a **point in time**
- **Re-presents experience** in non-living, mechanical form
- Deals with what it already knows (is **familiar** with)
- Body as something from which we are relatively **detached**
- Self as an **expression of will**
- Thinking is **decontextualized** and systematic
- Sees agglomerate of **parts** (then reconstructs a "whole")
- Concerned with **memory for facts** and public knowledge
- **Emotionally relatively neutral** (superficial, social emotions)
- Ultimately **disconnected from the "Other"**
- Concerned with **abstract categories** and types
- **Less reliable** in attention, perception, judgment, etc
- **Optimistic but unaware** of what it is missing (deluded, denial)
- Interested in the **man-made** ("the fruits of human invention")
- Principal concern is **utility** (grasping and amassing "things")
- More useful for **manipulation** of the world and one another
- **Competition**, **rivalry**, and capacity for deliberate **malice**

RIGHT HEMISPHERE (THE MASTER):

- The hemisphere of **"how"** / The **silent** hemisphere
- **Inclusive, both/and, synt**
- **embodied, holistic,**
- Attention is **gl**
- Perceives **flow**
- Tends to **ground exp**
- Openness to **inte**
- **Body as som**
- Deeply connected to
- **Understands context** of langua… …aphor, narrative
- Sees the **bigger picture** and … **whole** and in their **context**
- **Episodic memory**, longer **w… …g memory**, **deductive reasoning**, **insight**
- Affinity with **emotions** (emotional perception / emotional understanding)
- **Connected with the "Other"** (nature, other people, new, uncertain, etc)
- Interested in the **uniqueness/individuality** of things/beings
- Role in **"theory of mind"** (putting oneself in another's mind)
- **Social understanding** and **social behavior,** capacity for **empathy**
- Reads human **facial expressions**, vocal intonation, gesture
- **Smiling**, **laughing**, and **humor** but prone to **sadness** and **depression**
- **Music as "language"**: melody, tone, timbre, pitch-processing, harmony
- **Moral judgment**, sense of **justice**, and capable of **compassion**

Read later!

https://www.sloww.co/left-brain-right-brain-hemispheres/

From the study of brain-damaged patients:
The world as seen by the left hemisphere

"... static, isolated, fragmentary elements that can be manipulated easily, are decontextualised, abstracted, detached, disembodied, mechanical, relatively uncomplicated by issues of beauty and morality […] and relatively untroubled by the complexity of empathy, emotion and human significance

[...] It is an inanimate universe — and a bureaucrat's dream. There is an excess of confidence and a lack of insight."

The world as seen by the right hemisphere

"All is flowing and changing, provisional, and complexly interconnected with everything else. Nothing is ever static, detached from our awareness of it, or disembodied; and everything needs to be understood in context, where, if it is not to be denatured, it must remain implicit.

Here, wholes are different from the sum of the parts, and beauty and morality, along with empathy and emotional depth, help us to intuit meaning that lies beyond the banality of the familiar and everyday. It is an animate universe - and a bureaucrat's nightmare."

We need both ways of attending to the world, but it's not just a case of "balance"

Analytical, manipulative, 'thing-centric' modes of attending and acting (LH) must be in service to holistic, empathic, relational modes (RH)

Since LH reductionist attention has come to dominate we now perpetuate a distorted world

McGilchrist calls us to restore Intuition and Imagination as important ways to understand the world

All 4 intertwine…

- Science
- Reason
- Intuition
- Imagination

McGilchrist calls us to re-forge 3 vital relationships

with each other.

with nature.

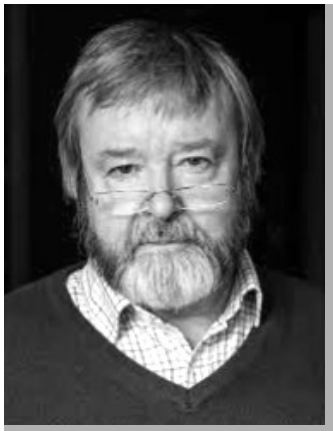
with the sacred.

…reinforcing the need to learn from

Indigenous knowledge systems

McGilchrist: ancient cultures understood what we now understand to be hemispheric specialisation

cf. Tyson Yunkaporta: Sand Talk



Can we develop AI that:

integrates all 4 ways of knowing?

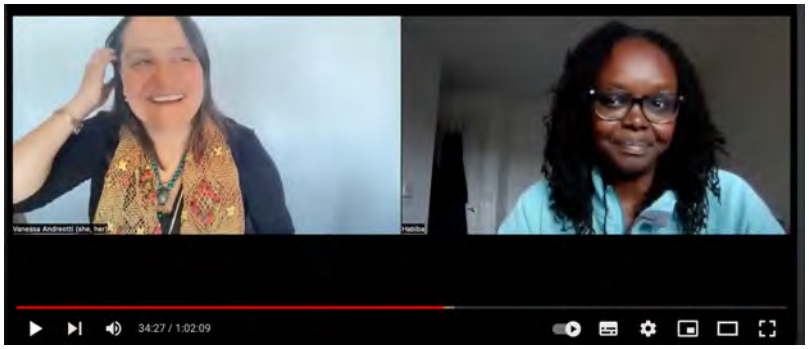
trusts people with greater agency rather than metricising them?

reconnects us with each other, nature and the cosmos?

Keynote, AI World Summit 2022

“Hospicing Modernity”
Vanessa Machado de Oliveira

https://www.penguinrandomhouse.com/books/675703/hospicing-modernity-by-vanessa-machado-de-oliveira/



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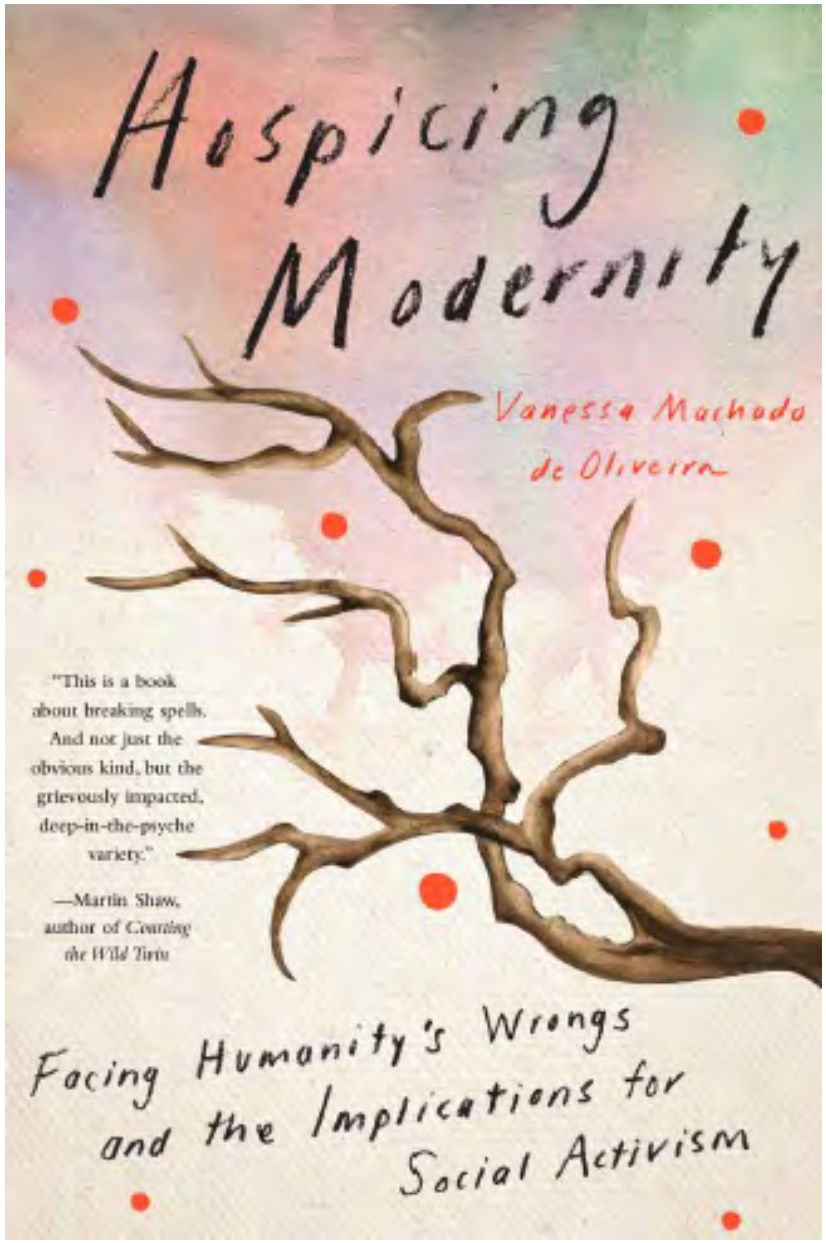


“Hospicing”…

This word was used to refer to acting with compassion to assist systems to die with grace, and to support people in the process of letting go—even when they are holding on for dear life to what is already gone.

Interrupting Self-Infantilization

The stories of this book heed the Indigenous insight that amongst all other animals humans are the youngest, and amongst all human cultures the modern culture is the youngest and is caught up in a loop of immature, irresponsible, and self-infantilizing behaviors. Therefore, the stories issue an invitation for modern humans to wake up, smarten up, step up, own up, clean up, grow up, and show up differently as the metabolism of the planet and humanity within it face enormous challenges.

Modernity Is Faster than Thought

Modernity predetermines what can be heard; what can be deemed real and possible; what can be imagined as desirable and ideal; and how we are supposed to feel, behave, and communicate within these parameters. This conditioning is precognitive—it is faster than thought itself

Constitutive Denials

In the story of modernity as a wording of the world, what modernity/coloniality disavows can be thought of as constitutive denials: what we need to (be made to) forget in order to believe what modernity/coloniality wants us to believe in, and to desire what modernity/coloniality wants us to desire. There are at least four main constitutive denials sanctioned within modernity/coloniality that severely restrict our capacity to sense, relate, and imagine otherwise:[22]

1. the denial of systemic, historical, and ongoing violence and of complicity in harm (the fact that our comforts, securities, and enjoyments are subsidized by expropriation and exploitation elsewhere);
2. the denial of the limits of the planet and of the unsustainability of modernity/coloniality (the fact that the finite earth-metabolism cannot sustain exponential growth, consumption, extraction, exploitation, and expropriation indefinitely);

3. the denial of entanglement (our insistence in seeing ourselves as separate from each other and the land, rather than "entangled" within a wider living metabolism that is bio-intelligent); and
4. the denial of the magnitude and complexity of the problems we need to face together (the tendency to look for simplistic solutions that make us feel and look good and that may address symptoms, but not the root causes, of our collective complex predicament).

Western academic arrogance has an armoury of defence mechanisms

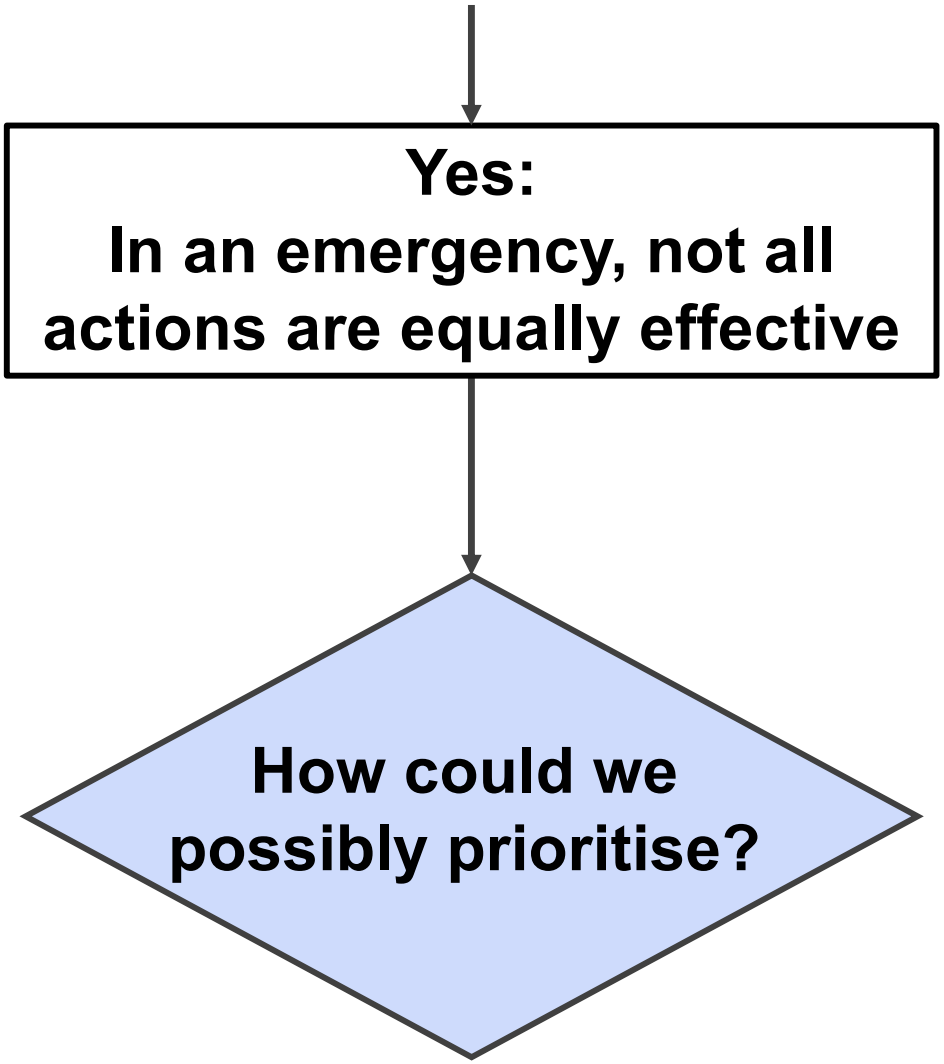
- Logocentrism relates to the indexing of reality in language (i.e., "I say, therefore it is").
- Universalism relates to the search for an objective and universal description of reality (i.e., "I think, therefore it is *all* there is").
- Anthropocentrism relates to the perception of humanity as separate from nature and having a mandate to own, manage, exploit, and control it (i.e., "I own, therefore I rule").

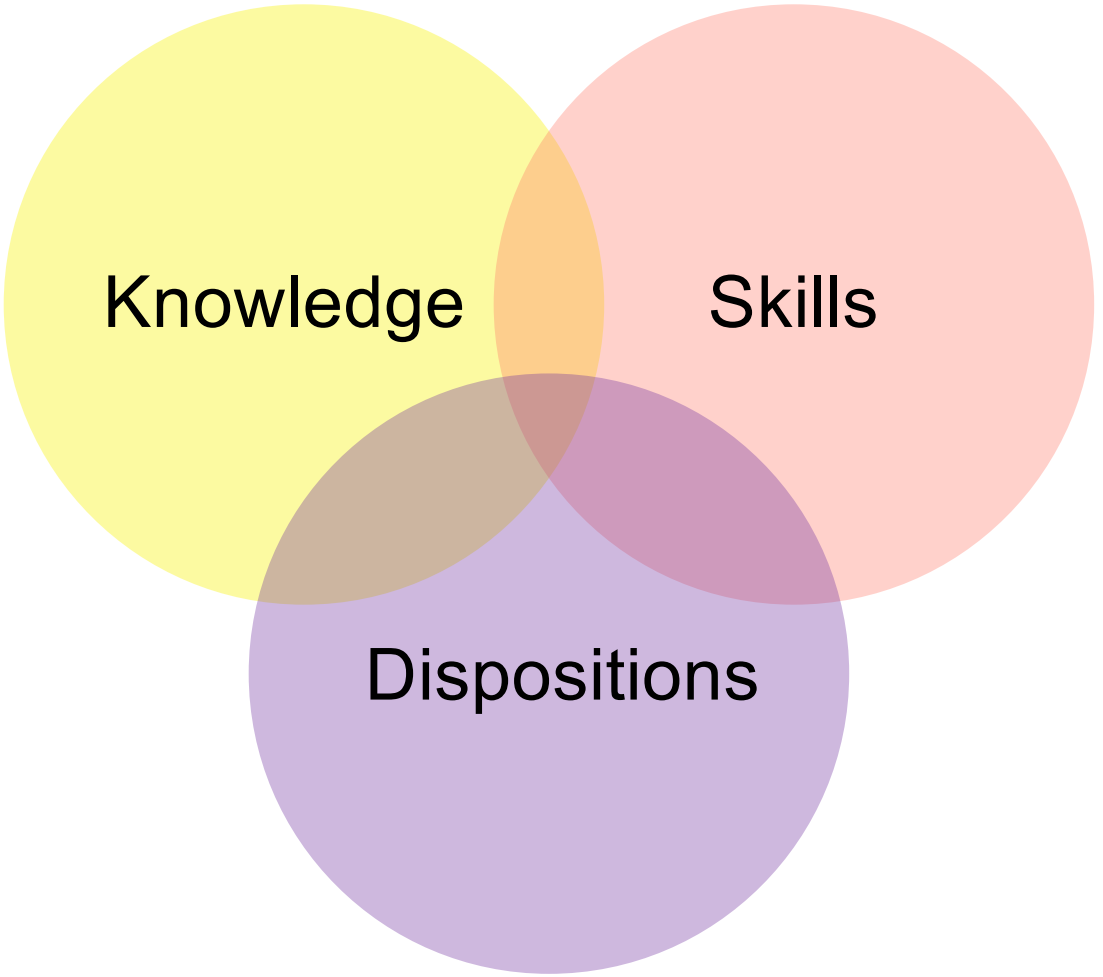
Interesting examples of the opposition she encounters in her work in universities

Western academic arrogance has an armoury of defence mechanisms

- Teleological reasoning relates to establishing predefined goals for engineering the world and getting the greatest value for the energy spent (i.e., "I plan, therefore it will be").
- Utility-maximizing is a transactional mode of reasoning that calculates action according to the greatest benefits to be gained (i.e., "I invest, therefore I benefit from it").
- Dialectical thinking relates to a linear logic of progression (of thesis, antithesis, and synthesis) that is averse to paradoxes, complexities, and contradictions (i.e., "It is this, therefore it cannot be that").

- Allochronic and evolutionary thinking relate to judging others according to criteria where oneself is represented as being in the present and at the apex of (linear) time and evolution (i.e., "I succeed because I am intelligent and strong, therefore you perish because you are unintelligent, uneducated, and weak," in other words, "I rock, therefore you suck").


Yes:
In an emergency, not all actions are equally effective
How could we possibly prioritise?


Knowledge
Skills
Dispositions

Should our work change in any way to reflect the crises we face?

No: education is an intrinsic societal good. It can always be improved of course and that's what I'm working on.

Carry on…

Yes:
In an emergency, not all actions are equally effective

Let's prioritise…

Polycrisis • Permacrisis • Metacrisis

…an invitation to reflect on

"how deep the rabbit hole goes" (Morpheus)

Engage with the dark side of modernity:

objectifying, dehumanising, colonising…

Cultivate knowledge, skills and dispositions affirming emancipation, relationality, agency, humility → purpose + hope

TEL… In your career, which visions of education will you amplify?

Supplementary slides

(If time… a working example from my research)

“Belonging Analytics”

- Lim, L.-A., Buckingham Shum, S., Felten, P. and Uno, J. (2023). “Belonging Analytics”: A Proposal. *Learning Letters*, Volume 1, Article 4, 1-12.
- Belonging Analytics LinkedIn community
- Webinar: Indiana University 5th Annual Learning Analytics Summit

Can we conceive
learning analytics and personalised,
automated feedback that foreground…

student sense of **belonging**

storytelling, especially
the student's self-narrative

reflection on personal experience
that integrates "head+heart"

student agency to articulate purpose
and shape their learning

A student's sense of belonging is positively linked to…

- Successful transition into higher education
- Persistence and graduation rates
- Academic performance
- Mental health and well-being

Institutions can influence students' sense of belonging

Ahn, M. Y., & Davis, H. H. (2020). Four domains of students' sense of belonging to university. *Studies in Higher Education, 45*(3), 622-634.

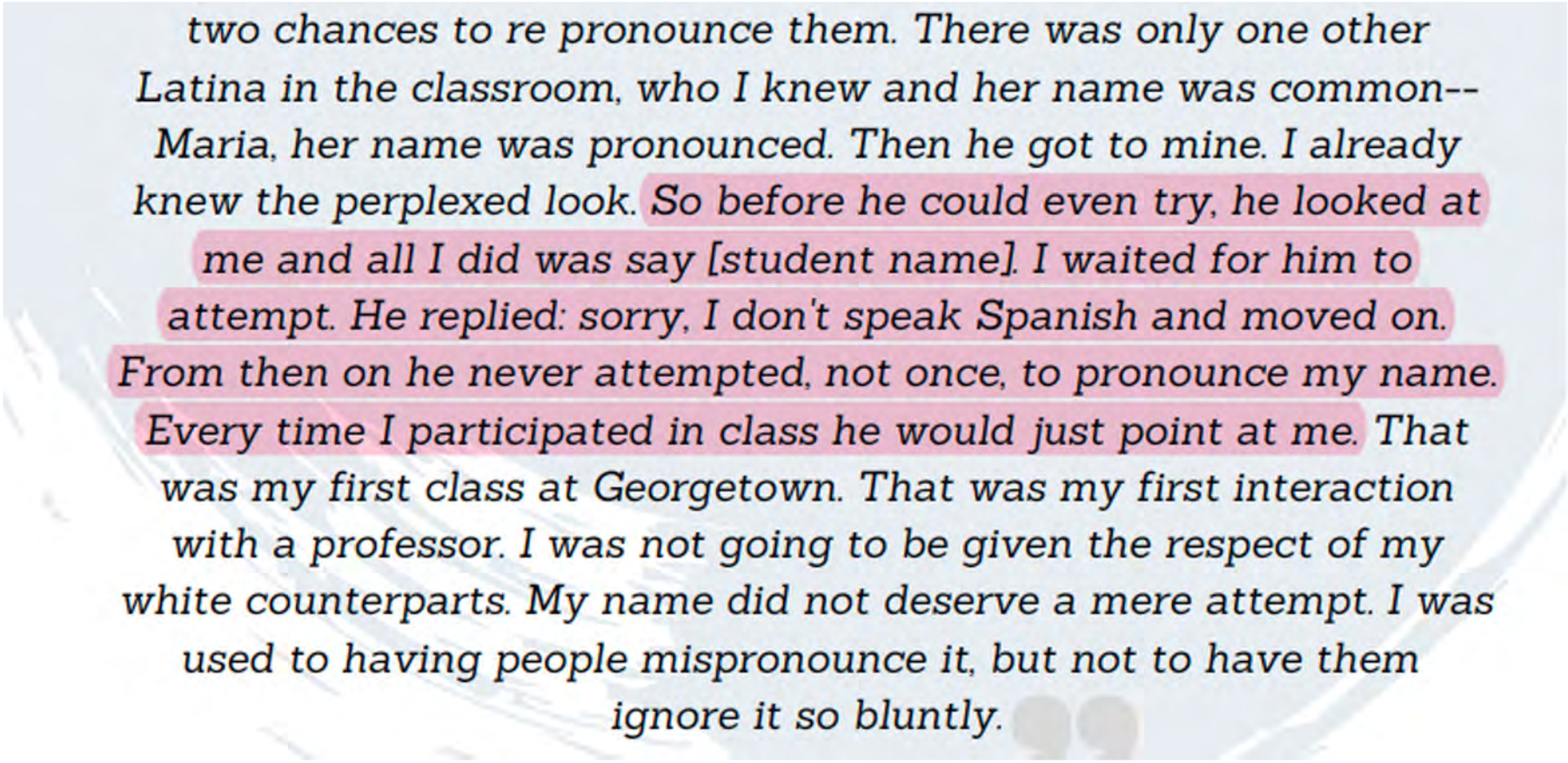
Meehan, C., & Howells, K. (2019). In search of the feeling of 'belonging' in higher education: Undergraduate students transition into higher education. *Journal of Further and Higher Education, 43*(10), 1376-1390.

Belonging is often understood to have two parts:

"(i) **a sense of valued involvement**
(the feeling of being valued, needed, and accepted in the system or environment); and
(ii) **a sense of fit**
(the person's perception that his or her characteristics are shared with or complementary to those present in the system or environment.)"

Asher, S. R., Weeks, M. R. (2013). Loneliness and belongingness in the college years. In R. Coplan & J. Bowker, eds., *The handbook of solitude: Psychological perspectives on social isolation, social withdrawal, and being alone*, 283-301. Wiley. (p. 287)

Belonging study @ Georgetown University



two chances to re pronounce them. There was only one other Latina in the classroom, who I knew and her name was common-- Maria, her name was pronounced. Then he got to mine. I already knew the perplexed look. So before he could even try, he looked at me and all I did was say [student name]. I waited for him to attempt. He replied: sorry, I don't speak Spanish and moved on. From then on he never attempted, not once, to pronounce my name. Every time I participated in class he would just point at me. That was my first class at Georgetown. That was my first interaction with a professor. I was not going to be given the respect of my white counterparts. My name did not deserve a mere attempt. I was used to having people mispronounce it, but not to have them ignore it so bluntly.

Morrison, M., Young, T., & Elmendorf, H. (2020). *A student sense of belonging at Georgetown: First generation undergraduate student experiences*. Georgetown University, Washington, D.C.

Belonging study @ Georgetown University

"Earlier this semester, I had the opportunity to attend 1vyG, the largest first-generation, low-income student conference in the nation, as a Georgetown delegate, alongside six other amazing Hoyas. Throughout our time at the conference, being able to share my struggles and stresses and my triumphs and victories as a first-generation student of color with our delegation, illuminated a new, profound sense of solidarity. To me, our small, yet powerful delegation represented the best of Georgetown because we recognize that even though our identities could make life on the Hilltop difficult, we continue to be fearless, unapologetic, and determined. Georgetown is not Georgetown without its black, brown, low-income, first-generation, undocumented, queer, etc. student population, and being part of this illustrious community on campus has been one of my greatest blessings."

Morrison, M., Young, T., & Elmendorf, H. (2020). *A student sense of belonging at Georgetown: First generation undergraduate student experiences*. Georgetown University, Washington, D.C.

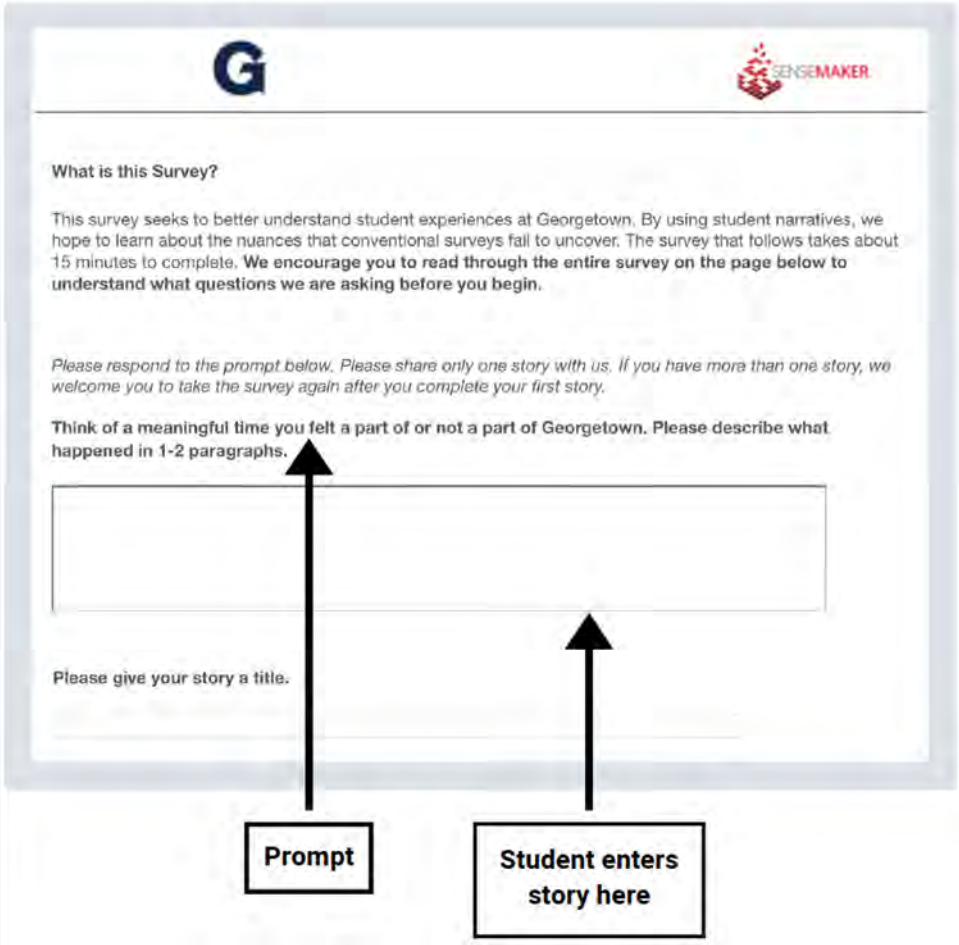
Hypothesis:

If it is possible to
track valid indicators of
students' sense of belonging
longitudinally, at scale, in a timely
manner, **"Belonging Analytics"** could
contribute significantly to learning,
well-being, and equity in higher
education.

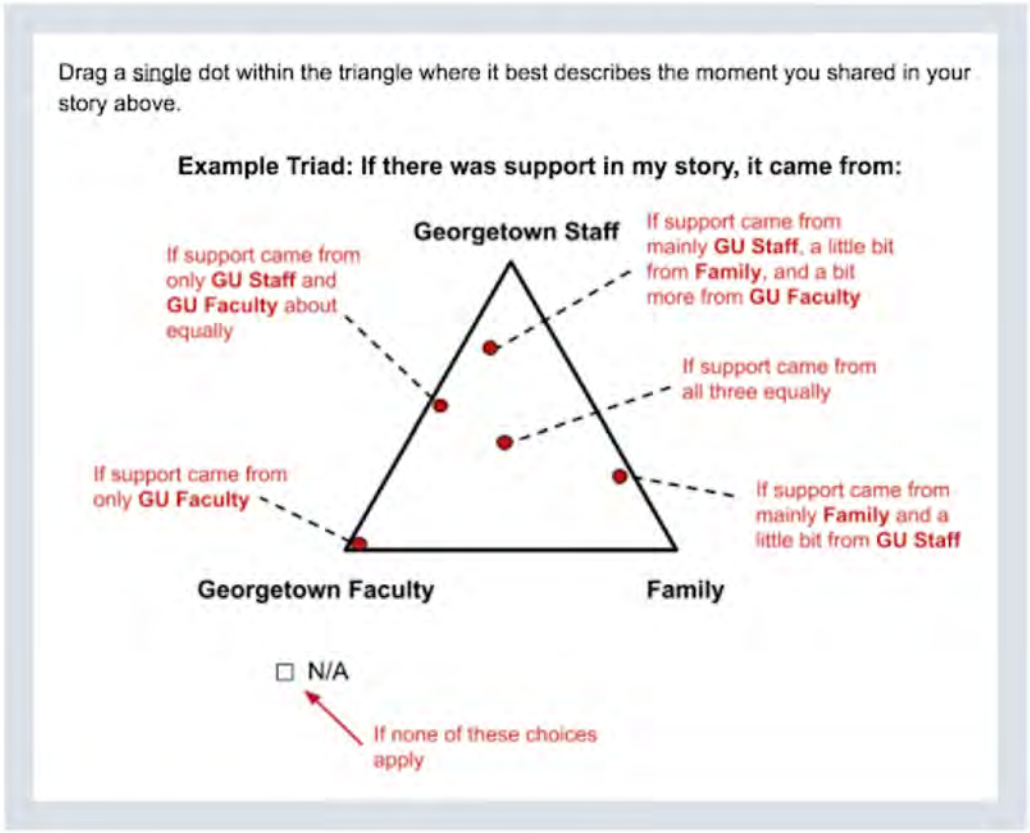
Snapshots of 4 complementary approaches…

Participatory Narrative Analytics for “belonging”

Online survey integrated into a narrative analytics platform (SenseMaker) https://thecynefin.co/sensemaker/

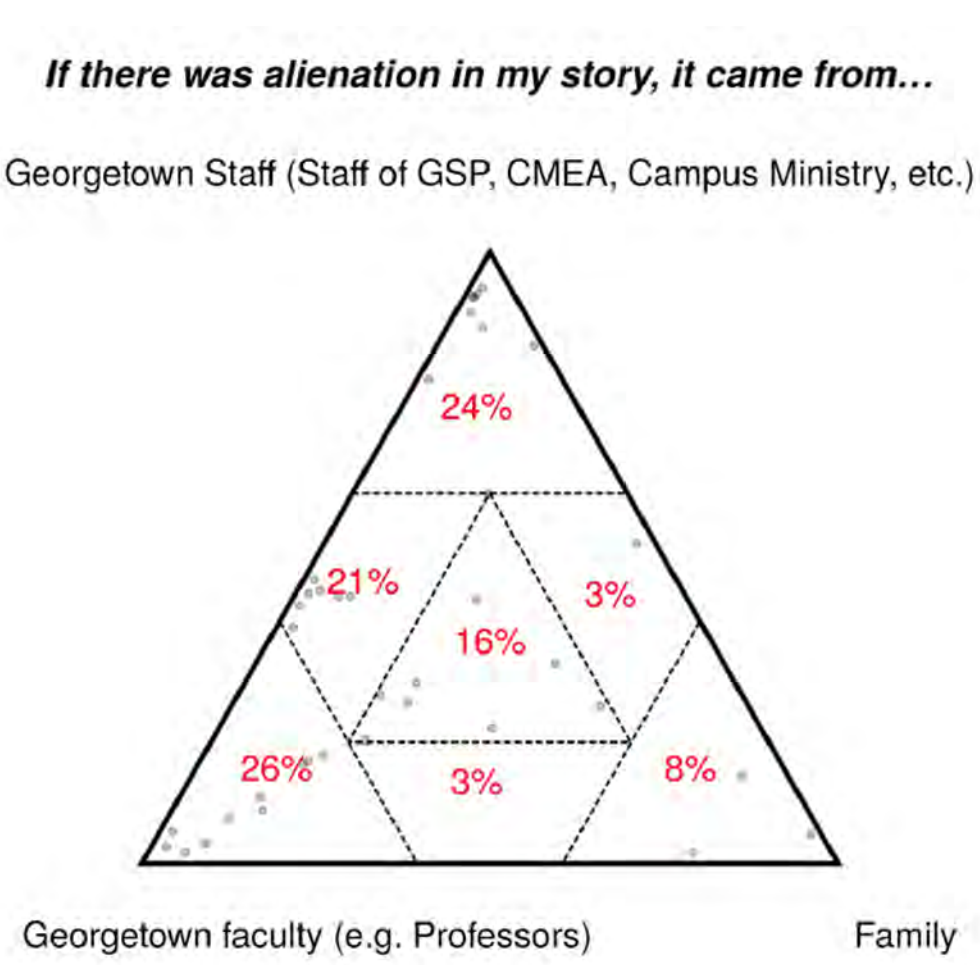


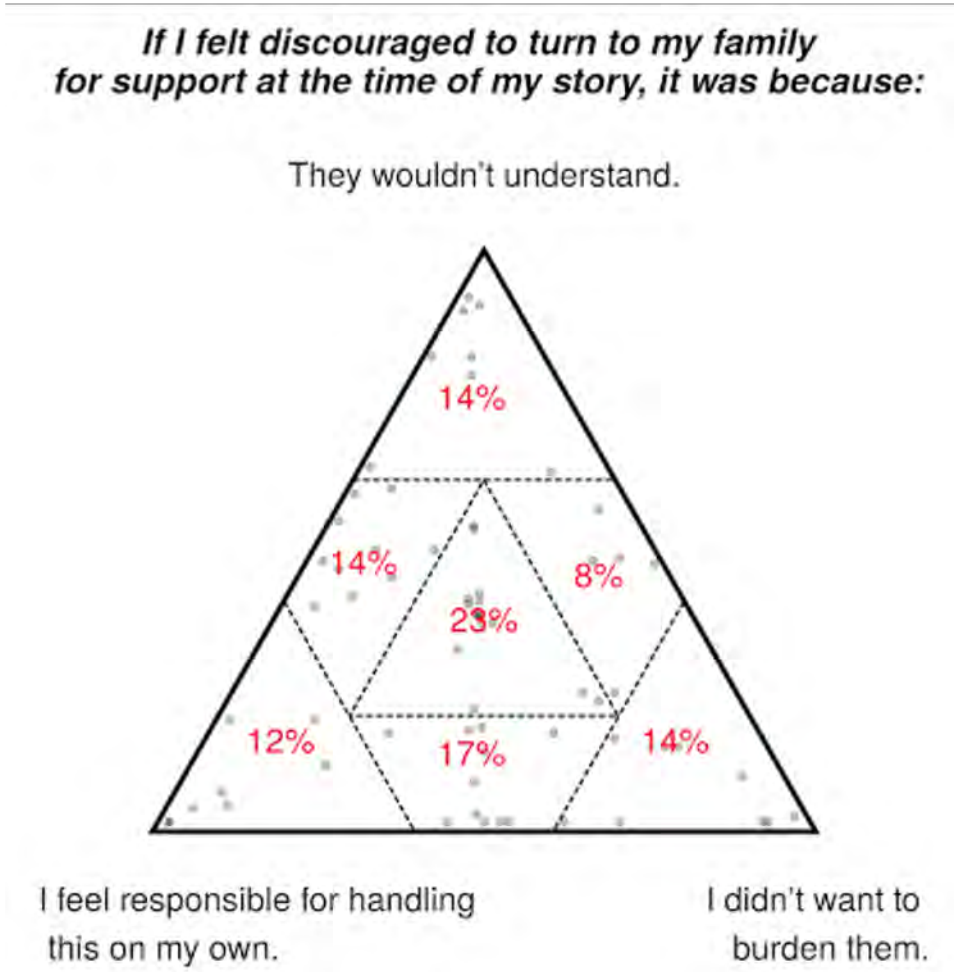
Respondents ‘code’ their stories themselves



Participatory Narrative Analytics for “belonging”

Online survey integrated into a narrative analytics platform



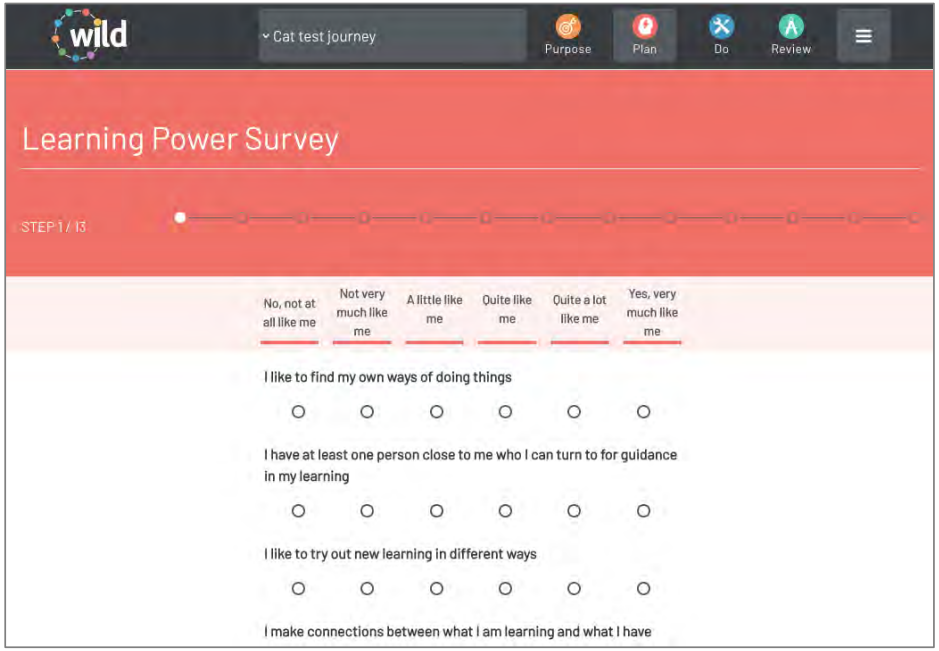


https://cic.uts.edu.au/tools/learning-power

Dispositional Learning Analytics

Personalised feedback with a Learning Power profile

Validated survey as part of an enquiry project



A language for learning dispositions

Deakin Crick, R., Huang, S., Ahmed Shafi, A. and Goldspink, C. (2015). Developing Resilient Agency in Learning: The Internal Structure of Learning Power. *British Journal of Educational Studies*: 62, (2), 121-160. http://dx.doi.org/10.1080/00071005.2015.1006574

Poles of the Learning Power dimensions

Positive	Negative
Mindful Agency	Unaware, passive, mindless
Hope and Optimism	Stuck and static
Sense-making	Data accumulation
Creativity	Rule bound
Curiosity	Passive
Collaboration	Independent or dependent
Belonging	Isolated, split off, lonely
Openness to learning	Closed, brittle or fragile & dependent

Personalised feedback report (e.g. for **Belonging**)

DETAILED RESULTS

Belonging

...is trusting that you will be understood and find support from people around you when you need it.

The opposite of this is feeling 'alone' or left out.

Your Own Result

You can see from your profile there's a fair bit of room for you to improve in this dimension.

Is that what you want to work on? If so, you might reflect on what your profile is telling you.

Are there times when you feel more separate and less supported in your learning than you would like to be?

How could you improve your sense of 'connectedness' in your learning community?

- Is there anyone you could ask to link up with, whom you could talk things through with, who'd support you in your reflections and decisions?
- Could you find a coach or mentor of your own?
- Is there someone with a responsibility to support you, whom you could make better use of?
- There may be others who are needing the same. What could you do to build more of a 'learning community', of people with a shared commitment to learn, improve and do better?

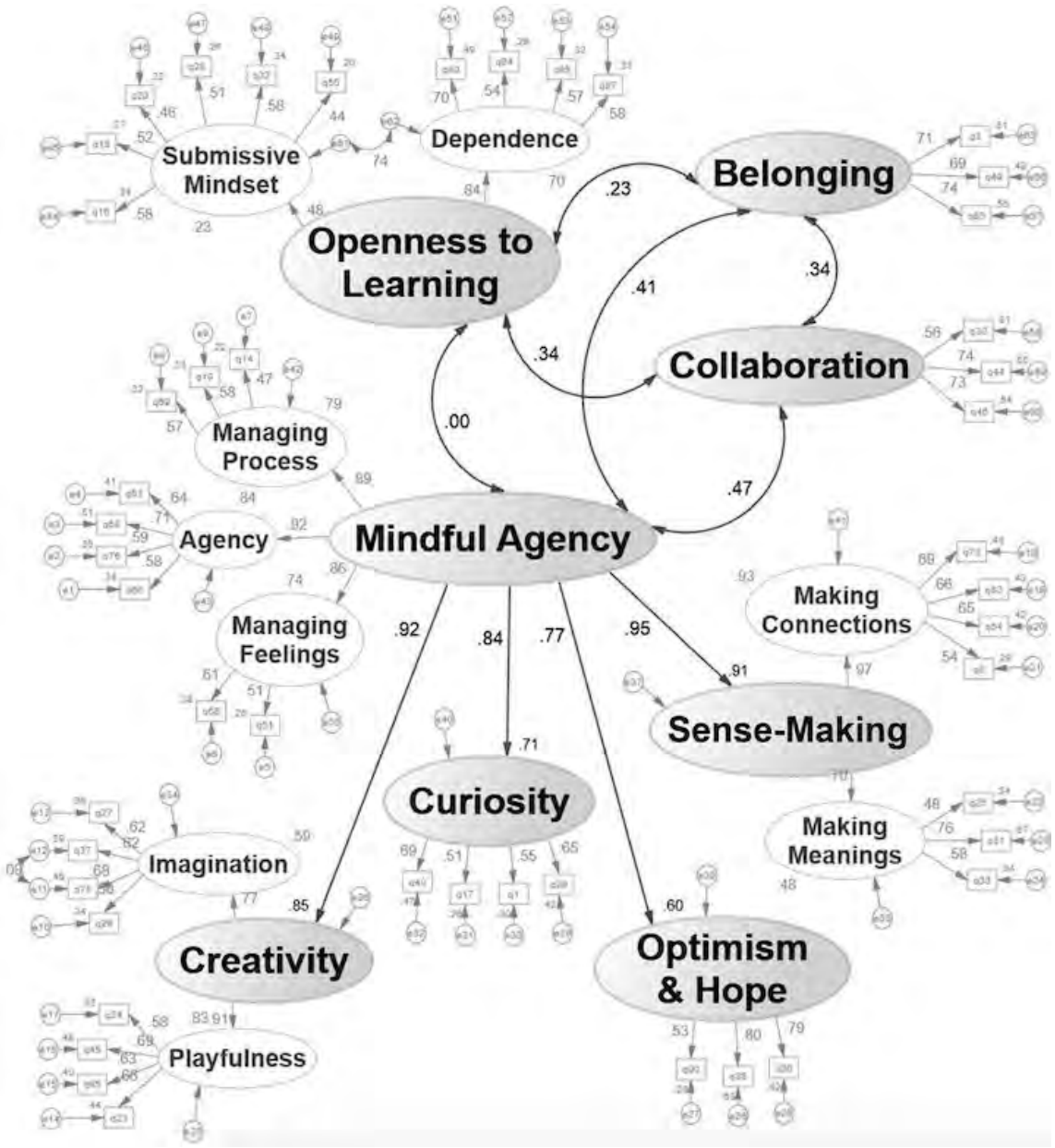
You might be fine for a while, learning without this close connection and support, but your success is likely to be greater in the long run if you have a stronger sense of Belonging in your learning.

Could any of the other learning dimensions help you with this?

Your coach, if you have one, is the ideal person to support you.

“Learning Power” is a multi-dimensional construct for assessing learning dispositions

The structural equation model underpinning the Learning Power survey



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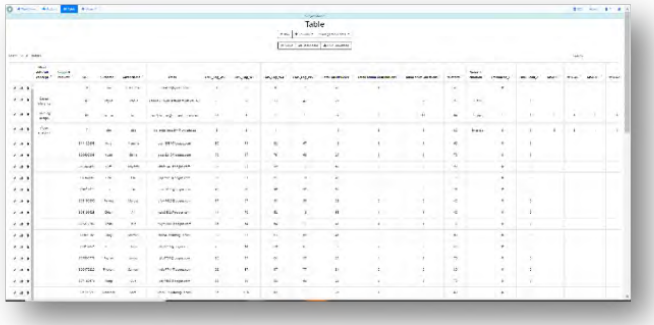
https://cic.uts.edu.au/tools/ontask

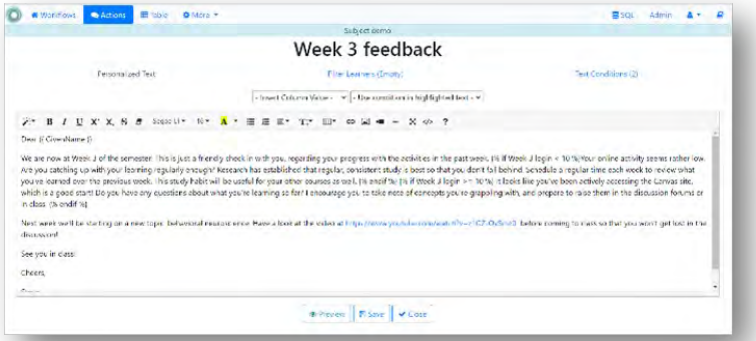
Amplifying teacher presence via personalised feedback using OnTask

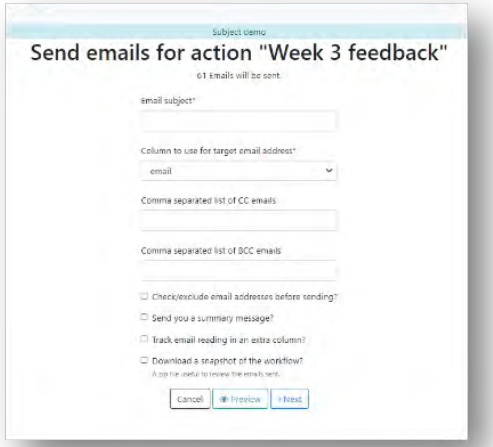
Repository of student data
(e.g. online activity; attendance; survey responses…)

Message editor
to differentiate feedback based on the student data

Delivery system
to preview and send email feedback







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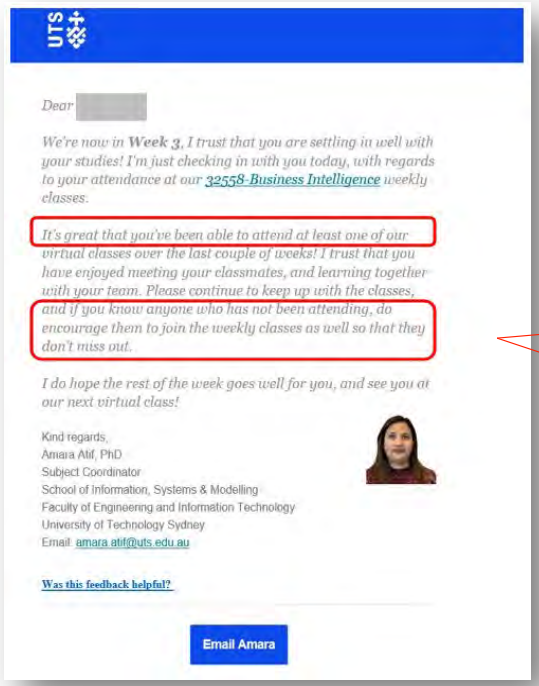
Tailored feedback at scale



Dear [redacted]

We're now in **Week 3**, I trust that you are settling in well with your studies! I'm just checking in with you today, with regards to your attendance at our 32558-Business Intelligence weekly classes.

It's great that you've been able to attend at least one of our virtual classes over the last couple of weeks! I trust that you have enjoyed meeting your classmates, and learning together with your team. Please continue to keep up with the classes, and if you know anyone who has not been attending, do encourage them to join the weekly classes as well so that they don't miss out.

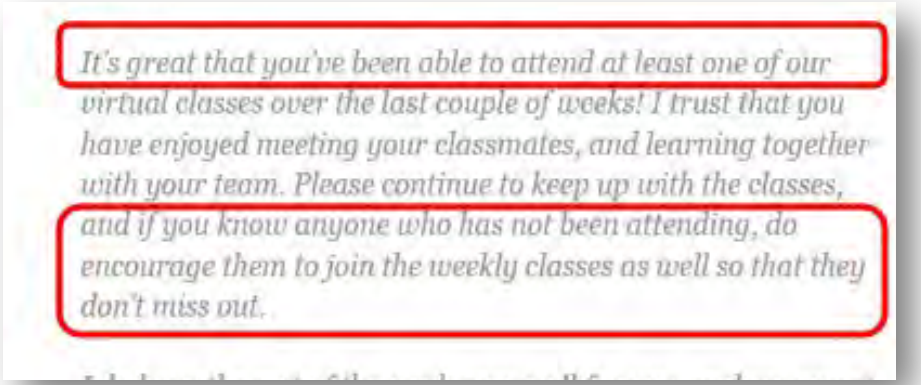
I do hope the rest of the week goes well for you, and see you at our next virtual class!

Kind regards,
Amara Atif, PhD
Subject Coordinator
School of Information, Systems & Modelling
Faculty of Engineering and Information Technology
University of Technology Sydney
Email: amara.atif@uts.edu.au

Was this feedback helpful?

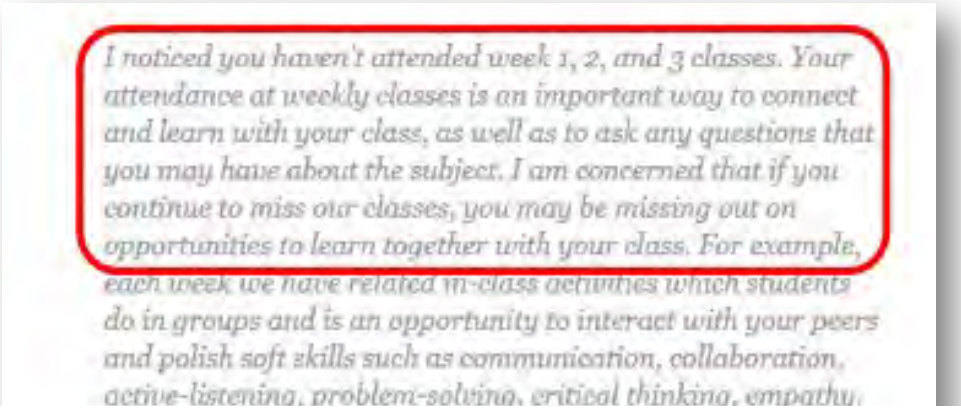
Email Amara

(a) Feedback message to **students who attended at least 1 class**



It's great that you've been able to attend at least one of our virtual classes over the last couple of weeks! I trust that you have enjoyed meeting your classmates, and learning together with your team. Please continue to keep up with the classes, and if you know anyone who has not been attending, do encourage them to join the weekly classes as well so that they don't miss out.

(b) Feedback message to **students who missed all classes weeks 1-3**



I noticed you haven't attended week 1, 2, and 3 classes. Your attendance at weekly classes is an important way to connect and learn with your class, as well as to ask any questions that you may have about the subject. I am concerned that if you continue to miss our classes, you may be missing out on opportunities to learn together with your class. For example, each week we have related in-class activities which students do in groups and is an opportunity to interact with your peers and polish soft skills such as communication, collaboration, active-listening, problem-solving, critical thinking, empathy,

Lim, et al. (2022). 'Made good connections': Amplifying teacher presence and belonging at scale through learning design and personalised feedback. https://doi.org/10.14742/apubs.2022.55

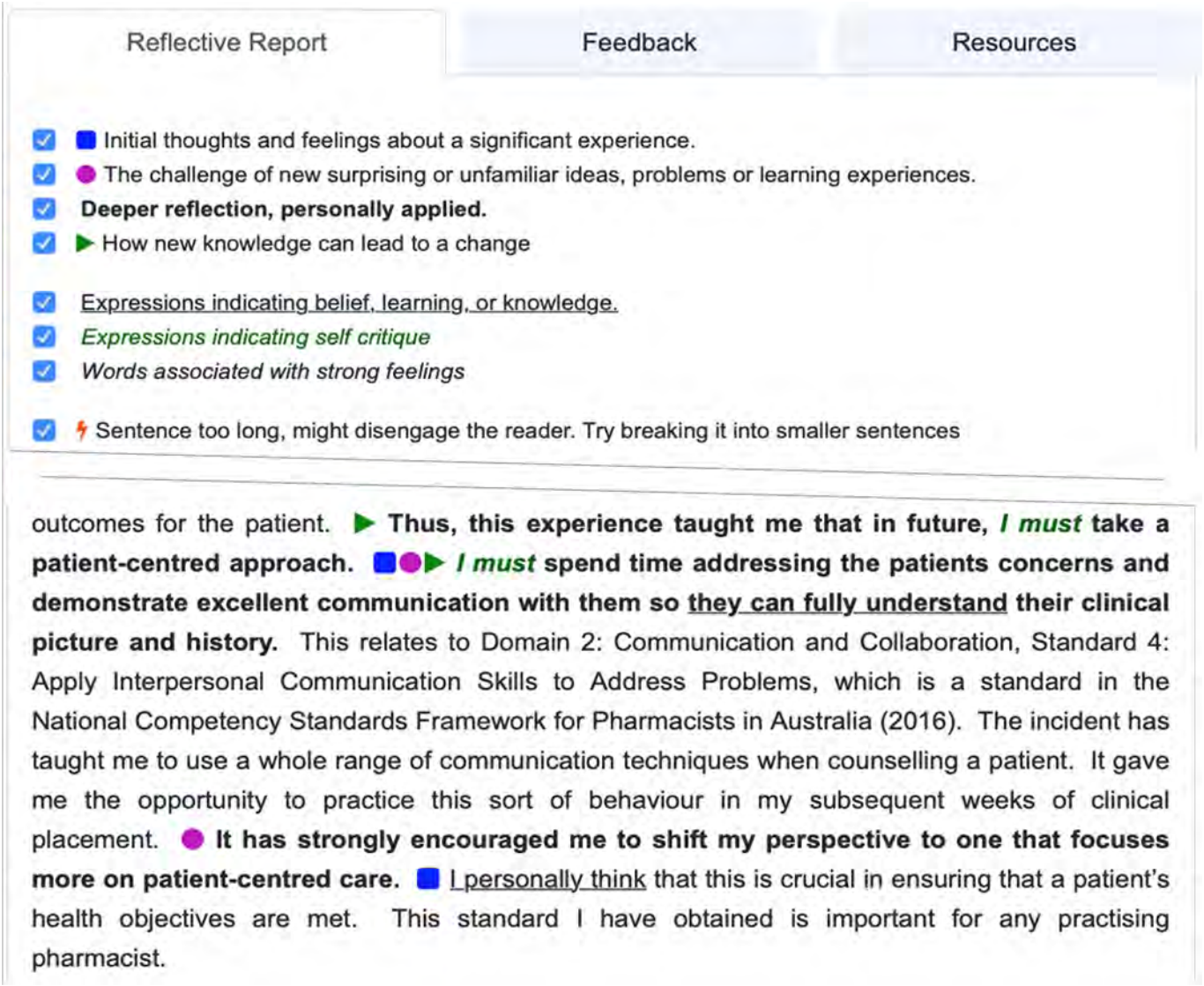
Reflective writing is a widely used activity to deepen experiential learning

"Before I came to this class I had never really thought much about gender and what it means or that it is something that is fluid. Taking this course was completely eye opening and really made me think about things I have never had the chance to think about."

Buckingham Shum, S., Sándor, Á., Goldsmith, R., Bass, R., & McWilliams, M. (2017). Towards Reflective Writing Analytics: Rationale, Methodology and Preliminary Results. *Journal of Learning Analytics*, *4*(1), 58-84. https://doi.org/10.18608/jla.2017.41.5

https://cic.uts.edu.au/tools/awa

AcaWriter 24/7 personalised feedback on drafts



Knight, S., Shibani, A., Abel, S., Gibson, A., Ryan, P., Sutton, N., Wight, R., Lucas, C., Sándor, Á., Kitto, K., Liu, M., Mogarkar, R. and Buckingham Shum, S. (2020). AcaWriter: A Learning Analytics Tool for Formative Feedback on Academic Writing. *Journal of Writing Research*, 12, (1), 141-186. https://doi.org/10.17239/jowr-2020.12.01.06