Keynote, ACM Learning@Scale 2023, Copenhagen (July 2023)

Trust, Sustainability & Learning@Scale

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UTS CRICOS 00099F

The planetary window for change is closing

Excessive heat: Why this summer has been so hot

Europe heatwave: Extreme heat leads to Greece Acropolis closure

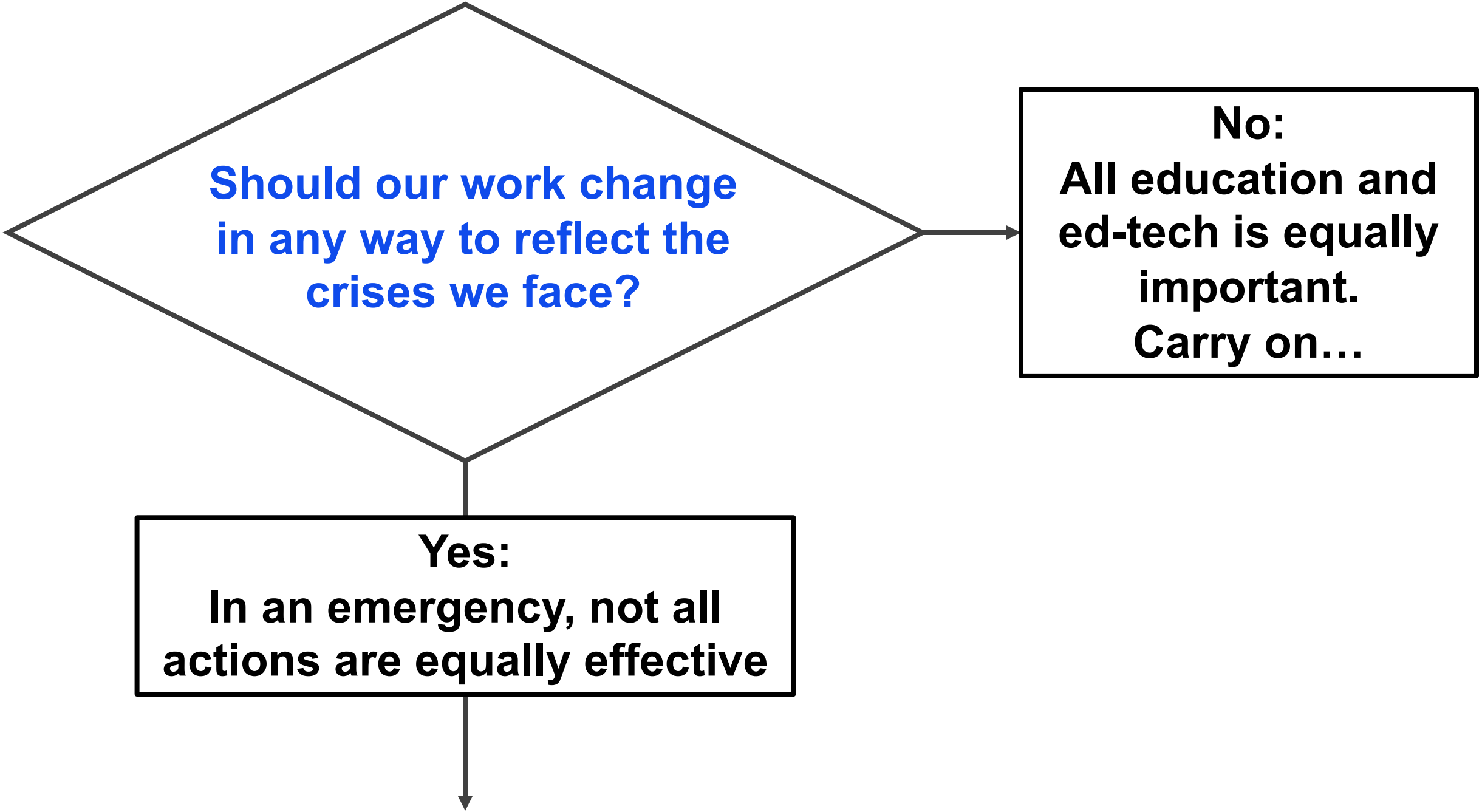
Excessive heat scorches millions across US southwest

Unbridled growth on a finite planet doesn’t compute.
Yet we seem to be paralysed.

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

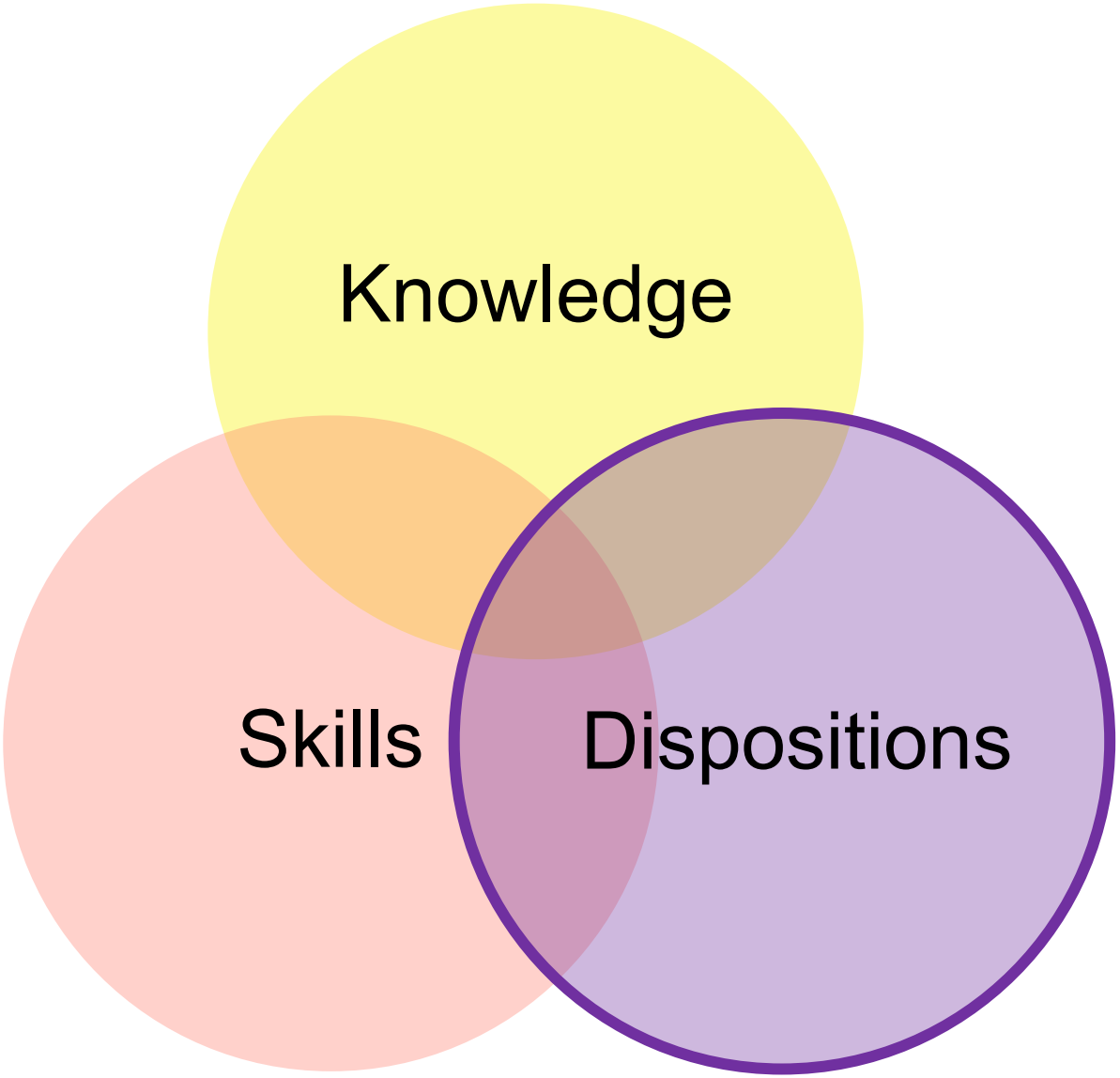
Diagnosis: Failure to learn.

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 …


Should our work change in any way to reflect the crises we face?
No:
All education and ed-tech is equally important.
Carry on…
Yes:
In an emergency, not all actions are equally effective

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

Can we articulate how our work might focus?

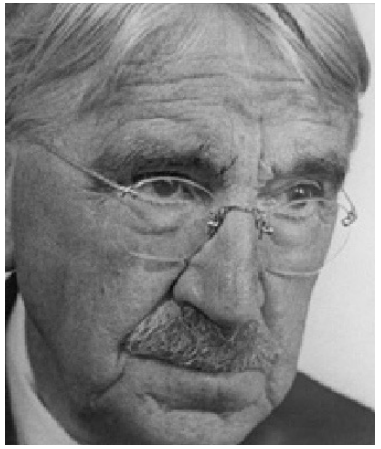


Dispositions?

"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



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

Dispositions?

"A disposition is a tendency to exhibit frequently, consciously, and voluntarily a pattern of behavior that is directed to a broad goal."

"one of the most important dispositions to be listed in educational goals is the disposition to go on learning. Any educational approach that undermines that disposition is miseducation."

Lilian Katz

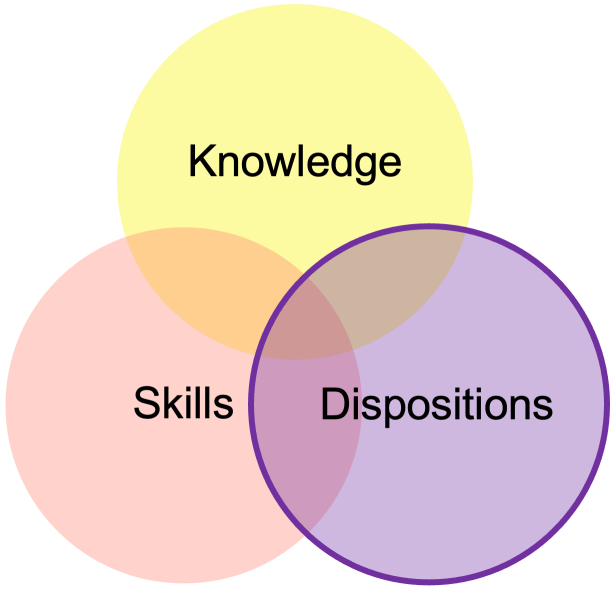
Lilian G. Katz (1993). *Dispositions: Definitions and Implications for Early Childhood Practices*. Urbana, IL:ERIC Clearinghouse on Elementary and Early Childhood Education. 1993 https://eric.ed.gov/?id=ED360104

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



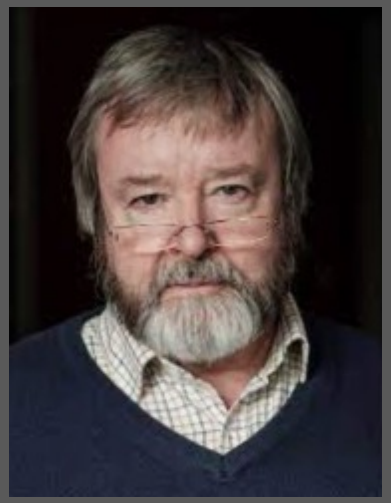
2 diagnoses of why we seem to be locked into dysfunctional cycles, and what needs to change

Iain McGilchrist

Henry Giroux

Diagnosis 1 (Iain McGilchrist)

neuroscience researcher, philosopher, literary scholar, psychiatrist



Neuropsychology provides robust evidence (reinforced by philosophy, physics, art, social sciences + more) that a relation-centric, process-oriented, context-sensitive disposition should govern abstraction, analytical models and technologies

https://channelmcgilchrist.com

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

“How we attend to the world is a profoundly moral act”

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

Why is the brain asymmetric in both form and function?

- The brain is asymmetrical in almost everything that can be measured, at many levels, in both its structure and function. Why?
- The power of the brain exists only through making connexions (between neurones) – and the reach of that power depends on the number of connexions it can make. Yet it is deeply divided down the middle. Why?
- The principal band of fibres that connects the two hemispheres at their base in humans, known as the corpus callosum, has got proportionately smaller, not larger, over evolution – and is, in any case, to a large extent inhibitory in function. Why?

The hemispheric specialisation hypothesis: It's no accident that across history and civilisations, two different ways of attending to the world are in recurring tension: it's in our 'Brain OS'

While both brain hemispheres are involved in everything we do, they attend to the world (and thus create our experience of the world) in very different (incompatible) ways

NB: McGilchrist debunks pop psychology and management snake oil:

"Left Brain = logical/reliable
Right Brain = creative/unreliable"

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 we're not after equal balance:

RH should be the master
LH should be the servant

When LH reductionist attention takes control we see, and create, a distorted world

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

- 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

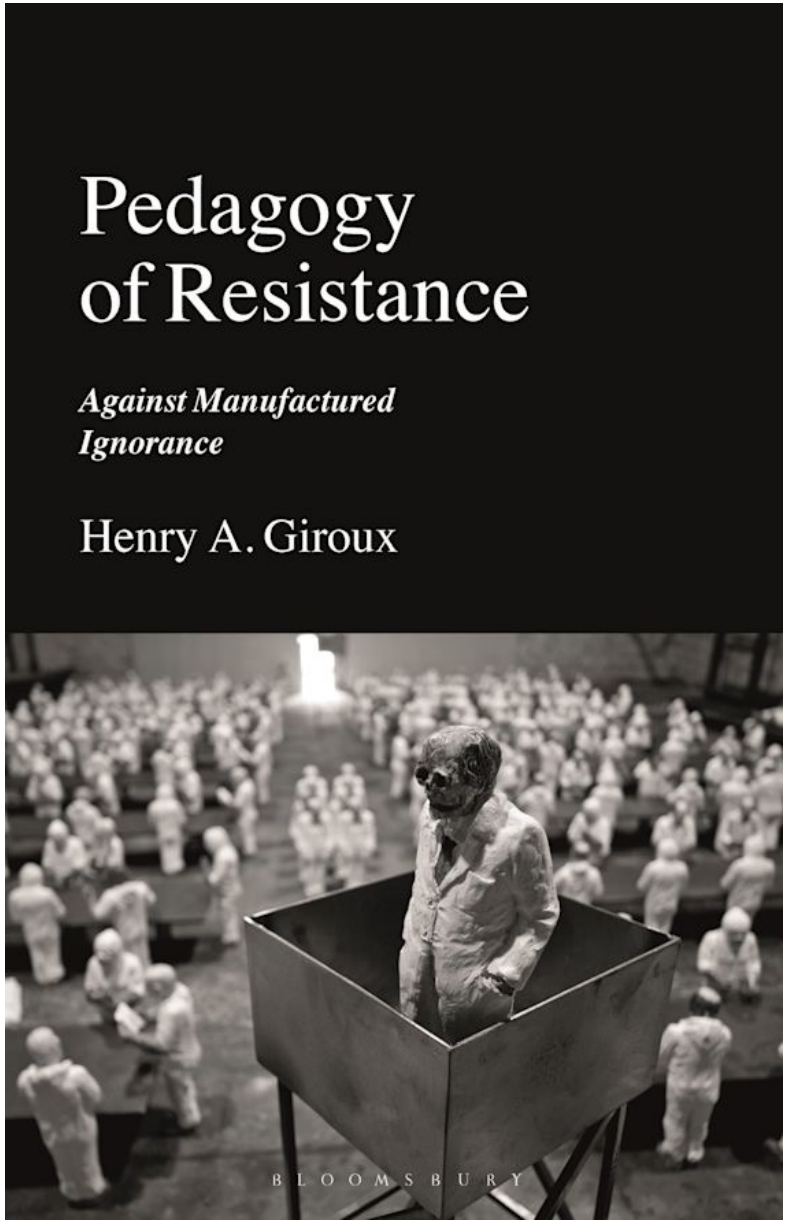
Tyson Yunkaporta: *Sand Talk*

+ **Angie Abdilla** et al: *Indigenous AI protocols*

Diagnosis 2 (Henry Giroux)

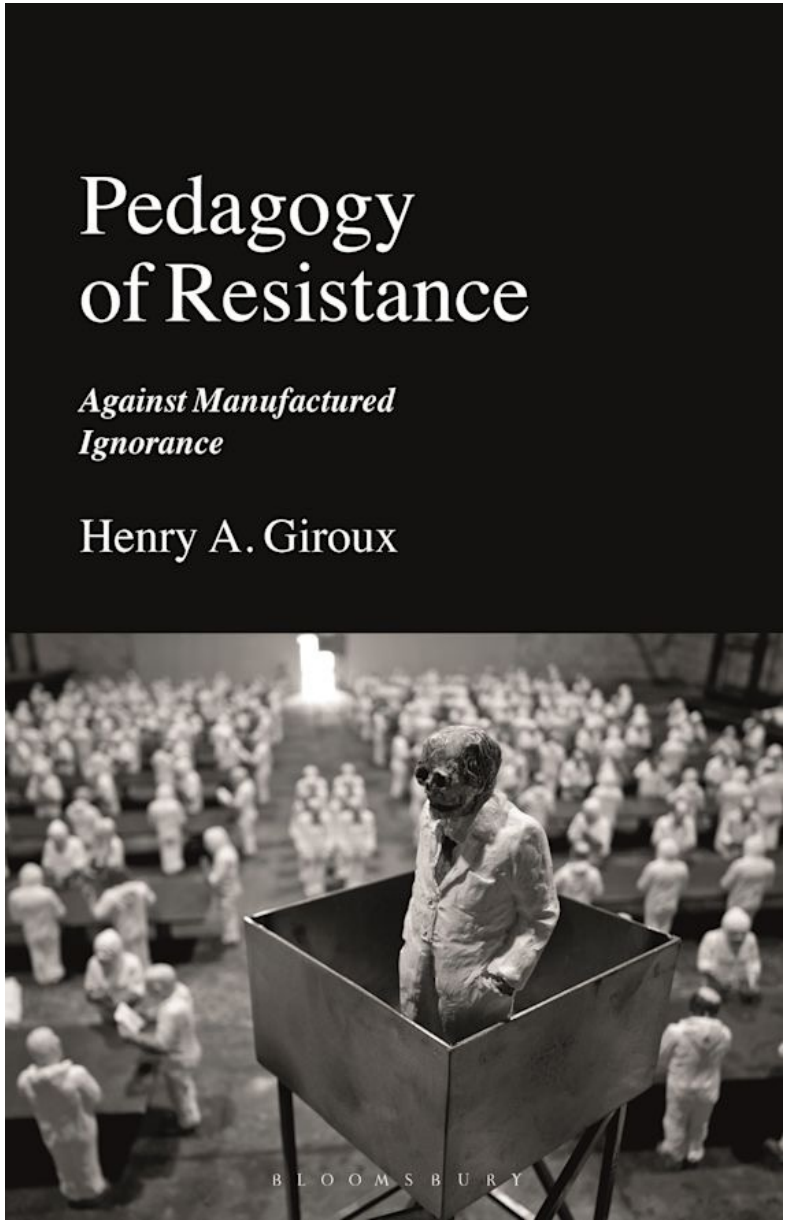
Education is increasingly so infused by market forces that our educators and students are losing their critical consciousness to fight for a more just society (after Paulo Freire)

https://www.henryagiroux.com

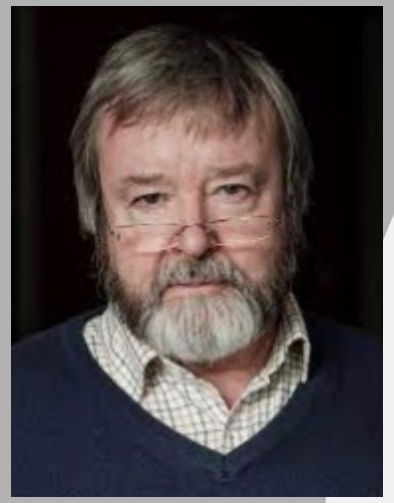


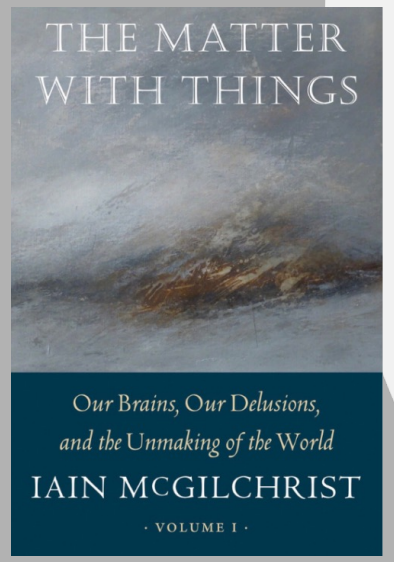
"It is hard to imagine a more urgent moment for taking seriously ongoing attempts to make education a fundamental element of politics. At stake here is the notion that education is a social concept, one rooted in the goal of emancipation for all people. Moreover, this is an education that encourages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

(emphasis added)



"This is a pedagogy that calls us beyond ourselves, and engages the ethical imperative to **care for others, dismantle structures of domination**, and to become **subjects rather than objects** of history, politics, and power. If we are going to develop a politics capable of awakening our **critical, imaginative, and historical sensibilities**, it is crucial for educators and others to remember Freire's ongoing project of radical literacy."

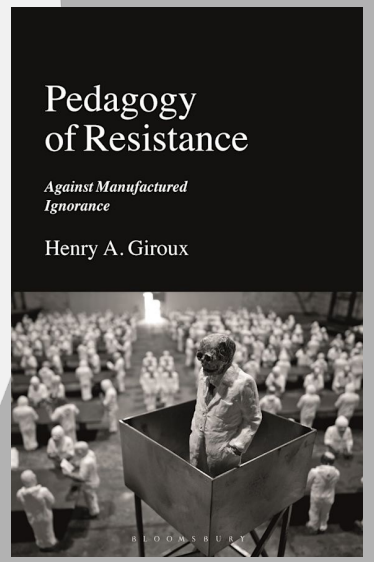


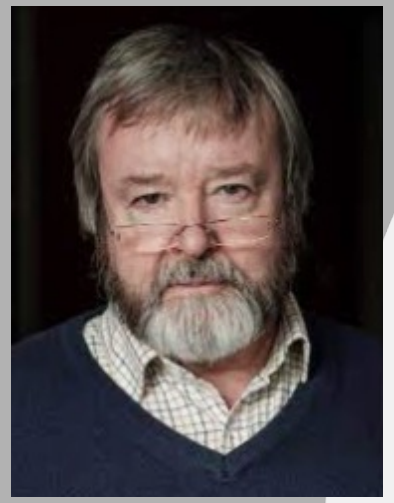


McGilchrist and Giroux converge

Giroux documents the havoc right-wing, neoliberal extremism *(LH++)* is wreaking on democracy and education

Giroux & McGilchrist call for **resistance: critical modes of attention which reaffirm hope and purpose**





While technology clearly turbocharges distorted LH visions of the world, McGilchrist asks us…

…can we scale 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

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

We are confronting
failure to learn@scale

Do these framings provide
clues regarding the choices
we can make about our work?

2 ways to think about our response…

the way we engage with stakeholders:
human-centered + democratic

the educational affordances
of the sociotechnical systems we build

Deliberative Democracy

to cultivate trust

among students and staff

https://cic.uts.edu.au/projects/edtech-ethics

The "**EdTechEthics**" Consultation

5 online Deliberative Democracy workshops, 3-4 hrs in Zoom (pandemic lockdown), with UTS students, tutors and academics

Sept. 2021 → **Oct – Nov** → **Dec**

Recruit a "Deliberative Mini-Public"

20 students and staff

Commit to learning from 'expert witnesses' and to reflective deliberation

Interactive workshops

Numerous hands-on activities to help engage with LA/AIED ethical dilemmas

Identify, discuss and prioritise principles and develop UTS examples

Present principles to UTS leadership

Open dialogue with Data/Analytics Governance

https://cic.uts.edu.au/projects/edtech-ethics

Deliberative Democracy → University Policy

Dec. 2021

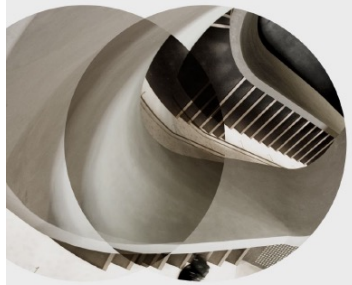
UTS

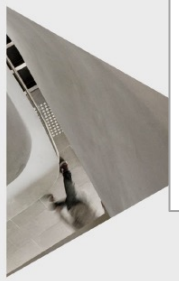
The UTS "EdTech Ethics" Deliberative Democracy Consultation: Rationale, Process and Outcomes

Simon Buckingham Shum

Professor of Learning Informatics
Director, Connected Intelligence Centre, University of Technology Sydney

31st January, 2022





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6.3 Bias/Fairness

Principle: UTS should aim to reduce bias involved in AAI-EdTech programs, and maintain the fairness in their development, use, and application of these tools.

Rationale: Bias: The application of AAI-EdTech programs may incur a level of bias as it is modelled against the majority of the population. It needs to be developed, maintained and reviewed to ensure nuances and inferences are not biased against minority groups.

Fairness: The use of AAI-EdTech programs need to consider fairness, avoid and evaluate inevitable bia
groups/indivi

Examples

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6.4 Equity and Access

Principle: UTS should aim to ensure that AI-Edutech programs promote social justice and are equitable and accessible. This includes ensuring equitable access to information and technology that is delivered in language and formats that reflect the diverse needs of the UTS community and equitable access and input to the review of AI-Edutech systems

Rationale: Technology should promote social justice, affirmative action and positive discrimination (rather than merely preventing inequities). Access encompasses both access to information and access to technology in the fields of learning and teaching. Access to
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6.6 Human Authority

Principle: UTS commits to preserving human autonomy, agency and decision-making while harnessing the opportunities presented by AAI-EdTech

Rationale: AAI-EdTech presents many opportunities and affordances in the educational context. These are likely to grow in both number and complexity in the future. AAI-EdTech has potential to free educators from repetitive tasks so they can have more meaningful interactions with students and each other. For students, it has potential to personalise the learning experience and enhance formative and self-regulated learning opportunities. However, human educators bring an important personal dimension to the education process that cannot be fully replicated by AI or captured solely by an algorithm. AAI-EdTech should therefore be a tool or an assistant to students and educators, but should not replace human decision-making. AAI-EdTech systems should be designed with safeguards that allow human input, interventions and challenges to outcomes at appropriate points.

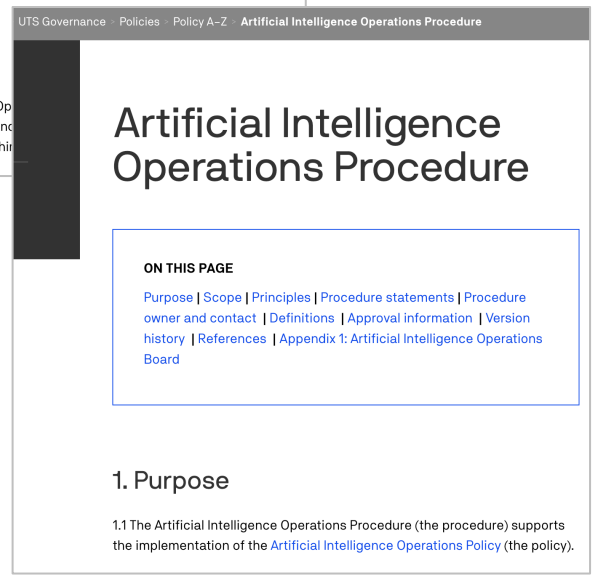
Examples

Students

1. AAI-EdTech systems that allow self-pacing / self-regulated preparation for live classes (examples?)
2. AAI-EdTech tools (eg, AcaWriter, dashboards) that help students improve their own work
3. Formative not summative use of these tools
4. Student right to opt-out (Q: technical feasibility?)
5. Ensuring that the students maintain the majority of responsibility over their own learning (instead of leaving it all up to AAI-EdTech)
6. Students may have a learning disability that a human educator can customise learning for.
7. A student can be rest assured that the information collected by an AAI-EdTech tool will have a human that understands the unique challenges the student faces. For example, students may have a learning disability that a human educator can customise learning for.
8. Maintaining the choice to be able to opt for a face-to-face or direct to tutor option over choosing AAI-EdTech feedback or assistance.
9. Students not boxed in by a one-size fits all AAI-EdTech system that doesn't take into account the diverse needs of individual students

Educators

June 2023



https://www.uts.edu.au/about/uts-governance/policies/uts-policy/artificial-intelligence-operations-policy

https://cic.uts.edu.au/projects/ai-ethics-consultation-2023

Student Partnership in AI (May 2023)

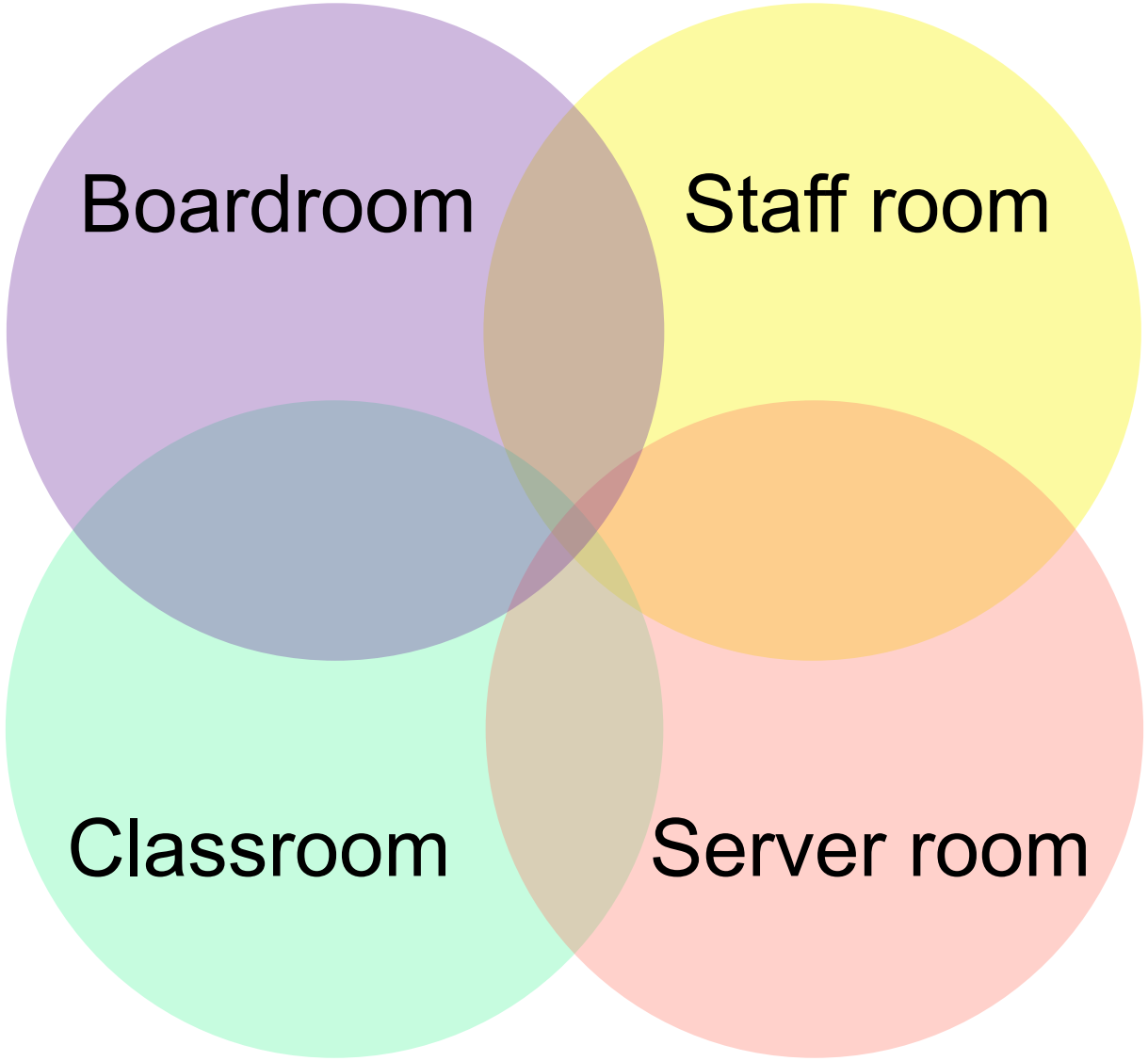
Student workshops in collaboration with the Students Association

- Stratified sample of 40 students selected from >150 applicants
- Briefings from UTS experts:
  - Generative AI & Predictive AI
  - Leading edge practice
  - Ethical dimensions
  - Turnitin — turn it on?

→ Jointly approved reports

Trust in LA/AIED is built through intersecting conversations in 4 different ‘rooms’ in the university…

These have been key to the progress we’ve made at UTS embedding tools into practice, coupled with our organisational structure



Chapter & webinar:
Buckingham Shum, S. (2023). Embedding Learning Analytics in a University: Boardroom, Staff Room, Server Room, Classroom.
In Viberg, O. & Grönlund, Å. (Eds.), *Practicable Learning Analytics,* Springer Nature.

2 ways to think about our response…

the way we engage with stakeholders:
human-centered + democratic

the educational affordances
of the sociotechnical systems we build

A working example to help think this through…

“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.

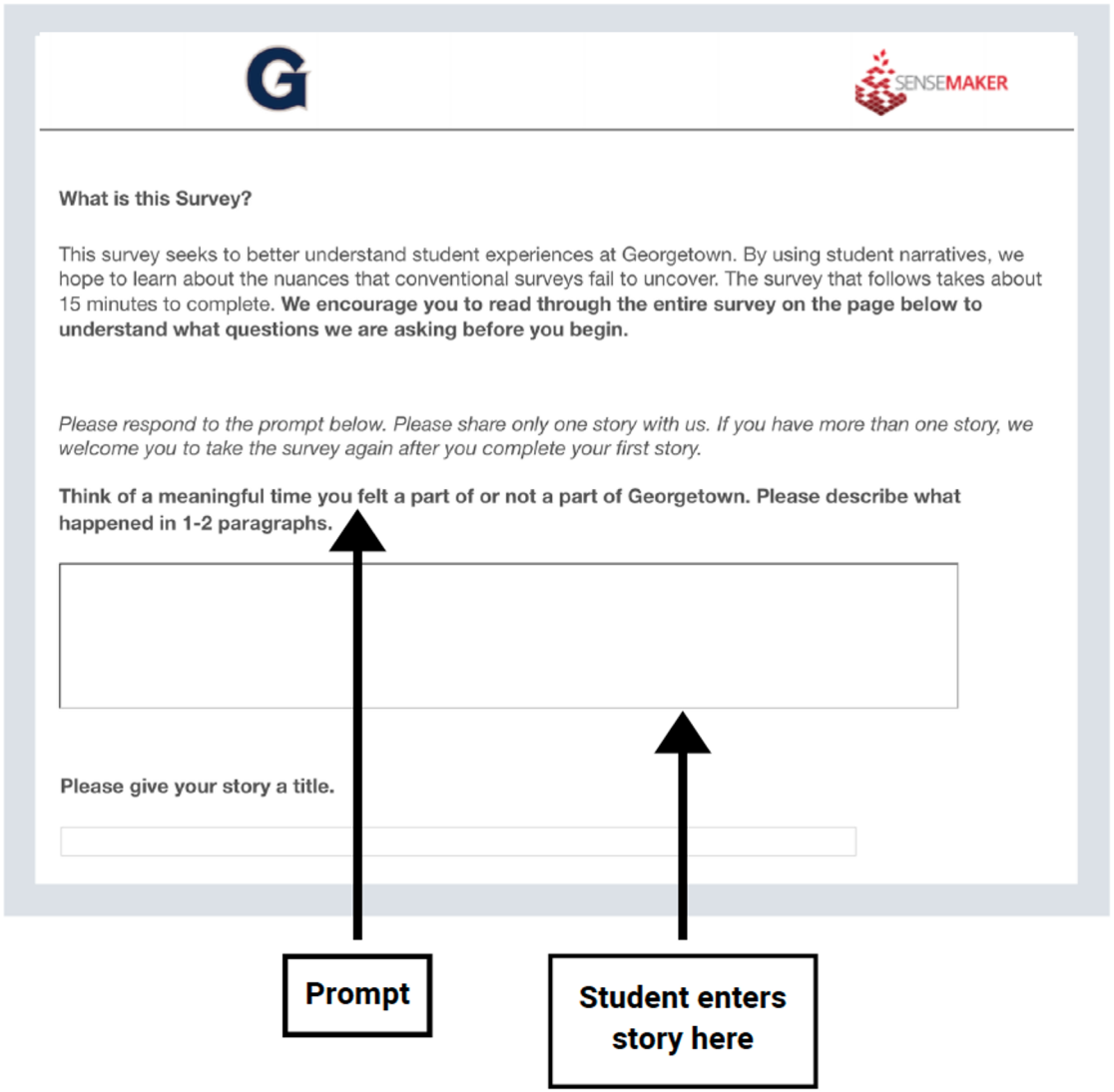
Hypothesis:

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.

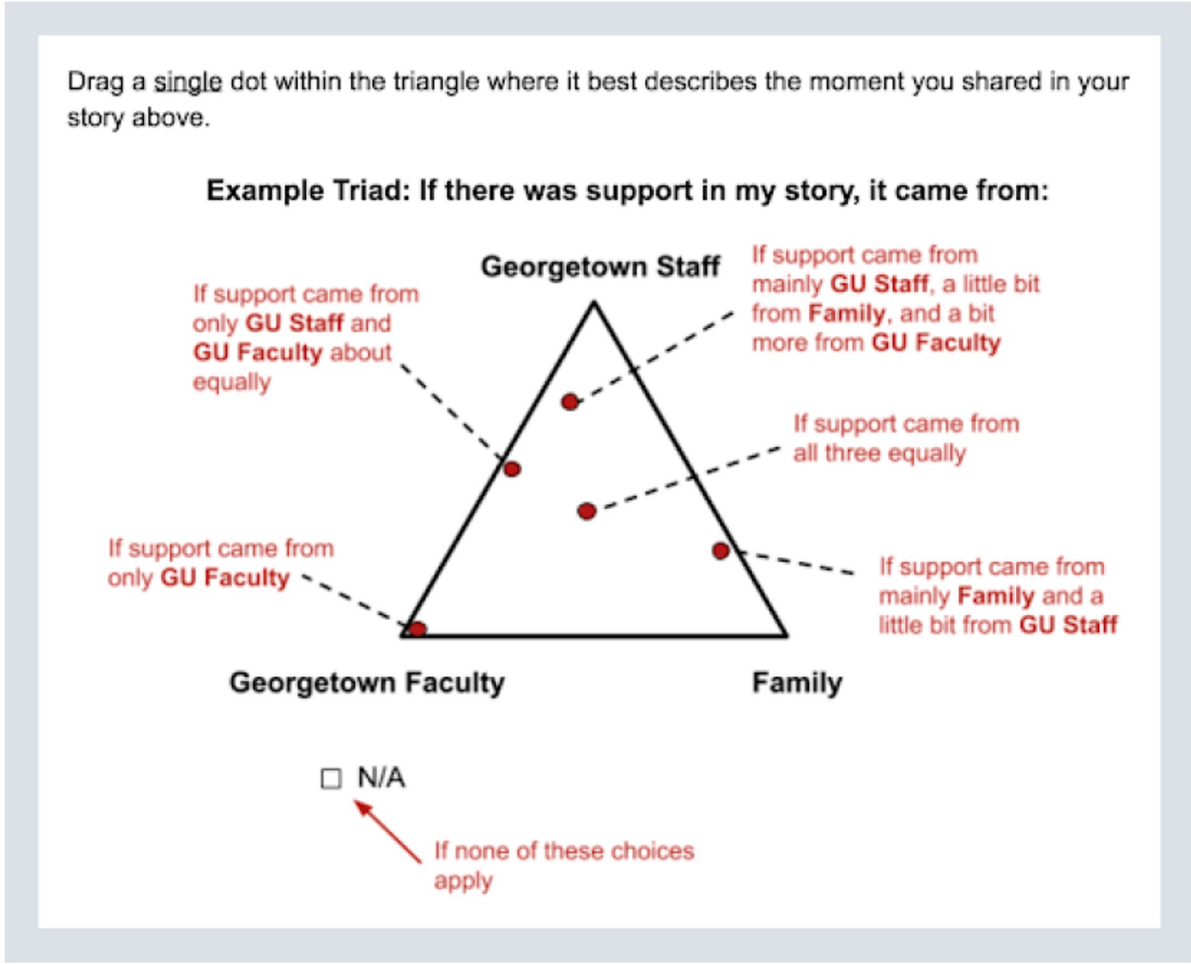
Snapshots of 4 complementary approaches…

Participatory Narrative Analytics for “belonging”

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



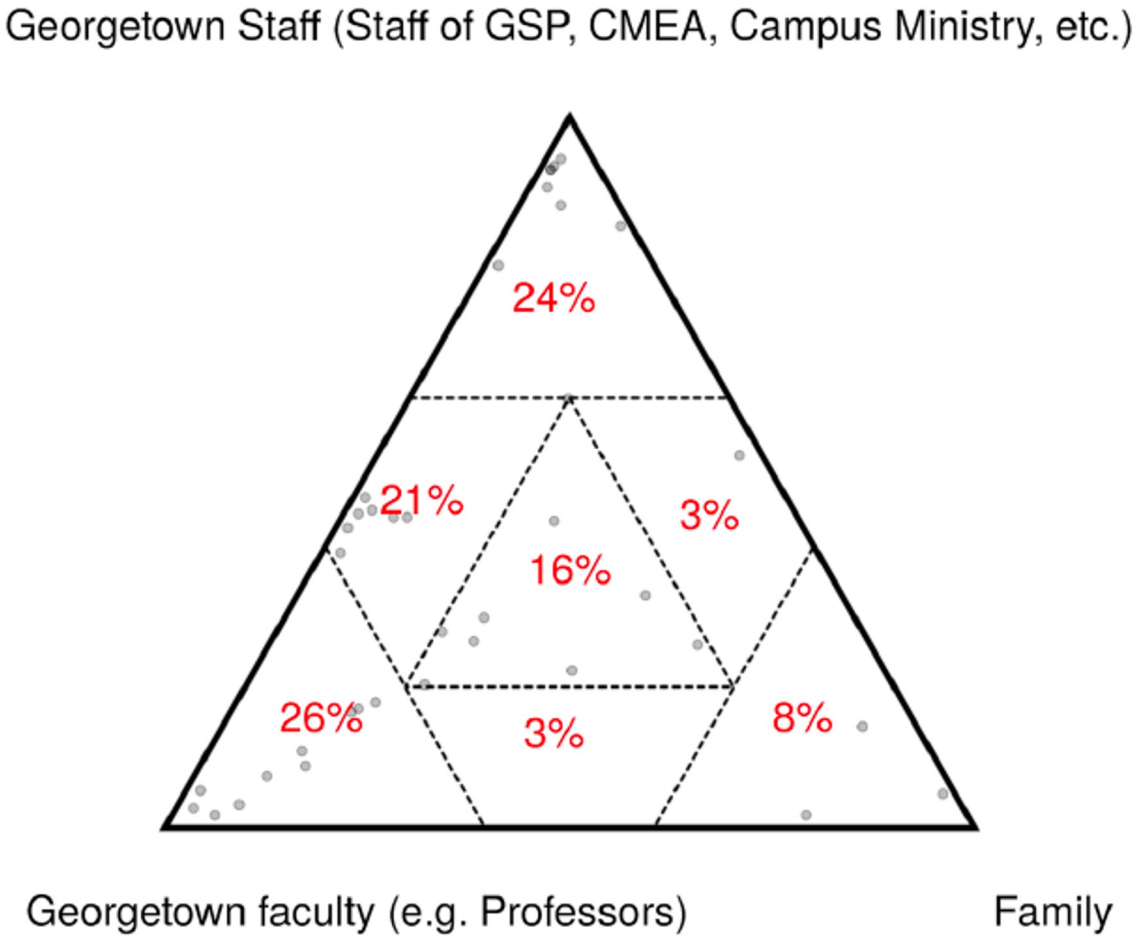
Respondents ‘code’ their stories themselves



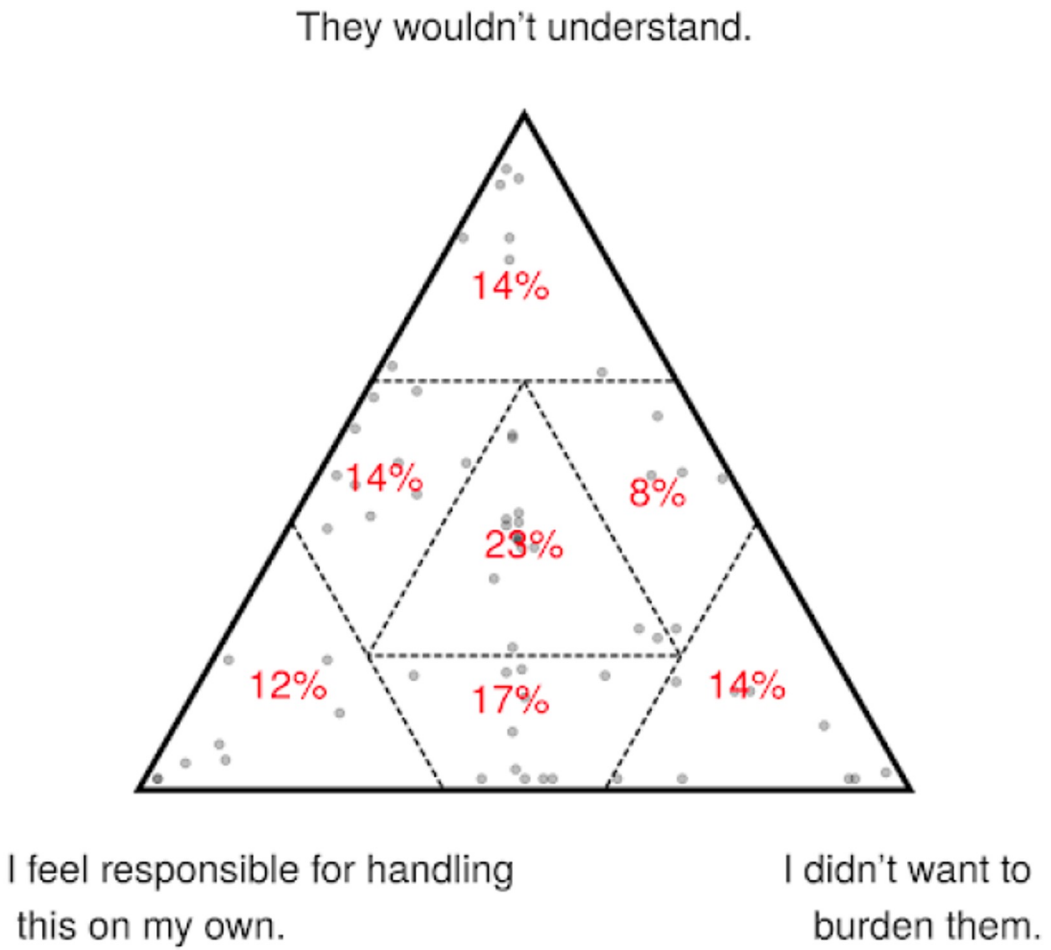
Participatory Narrative Analytics for “belonging”

Online survey integrated into a narrative analytics platform

If there was alienation in my story, it came from…



If I felt discouraged to turn to my family for support at the time of my story, it was because:

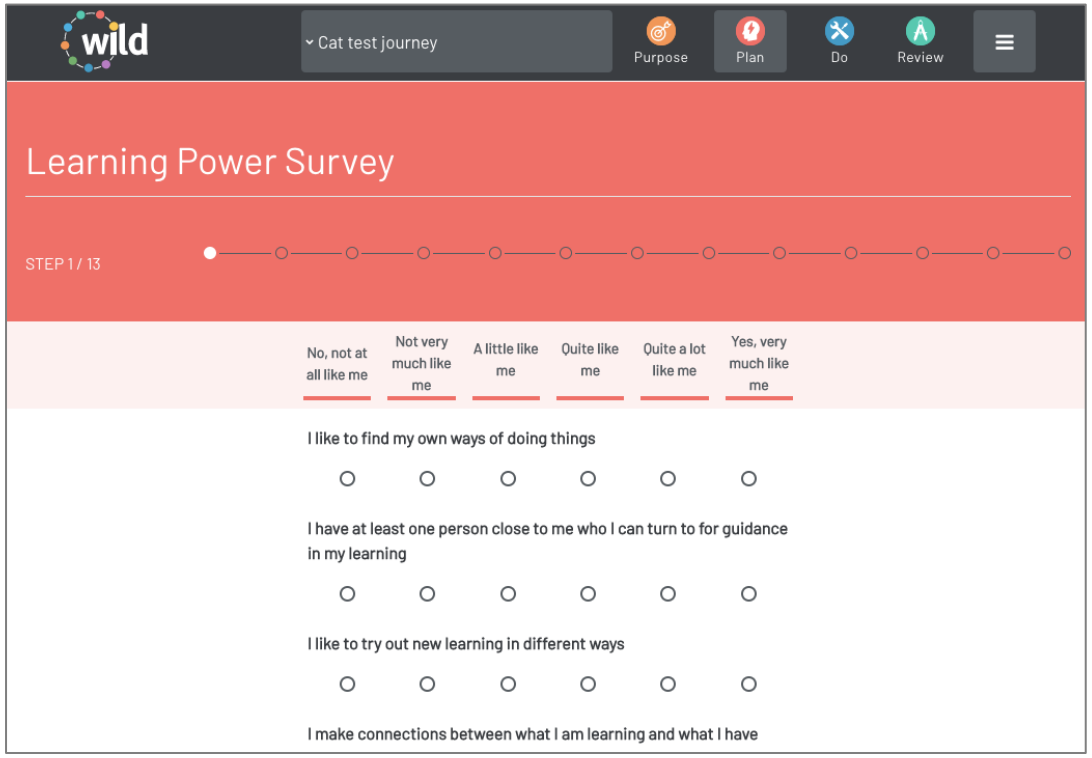


https://cic.uts.edu.au/tools/learning-power

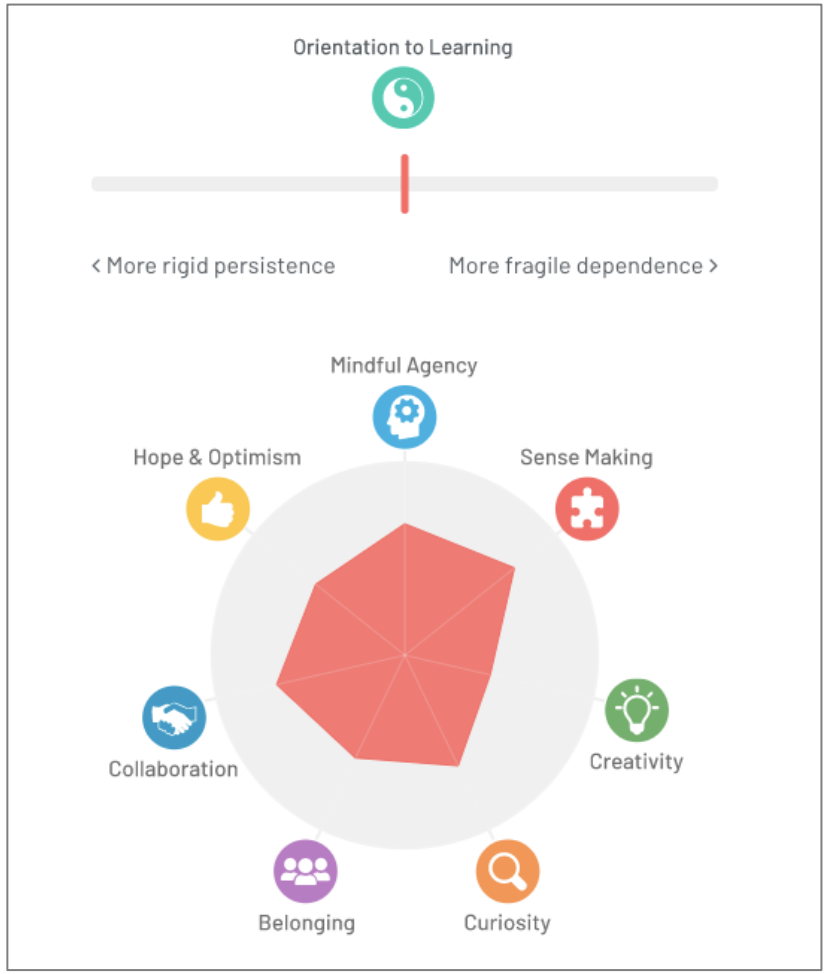
Dispositional Learning Analytics

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?

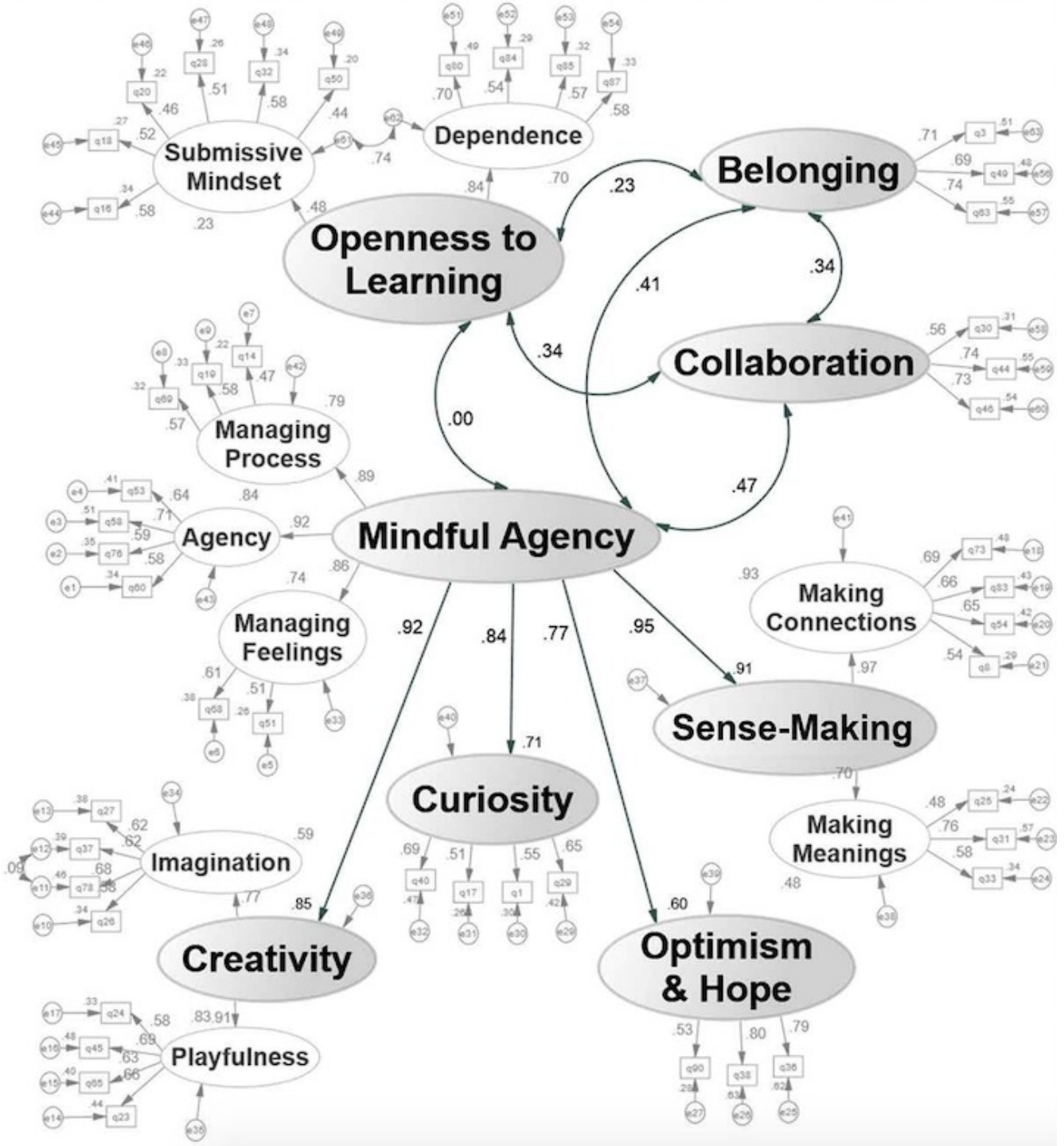
You might be fine for a while, learning without this close connection and support, but your success is likely to be greater in the long run if you have a stronger sense of Belonging in your learning.

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



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

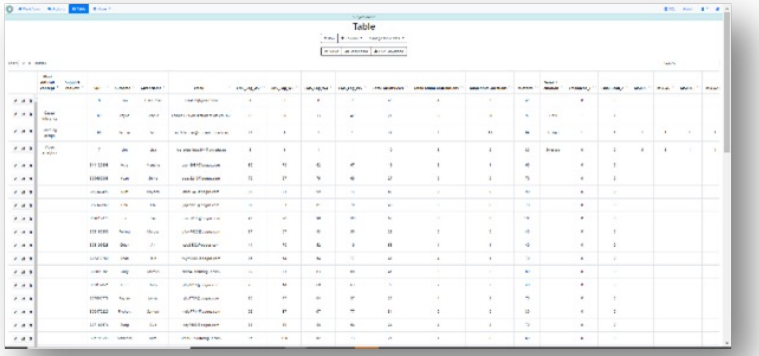
https://cic.uts.edu.au/tools/ontask

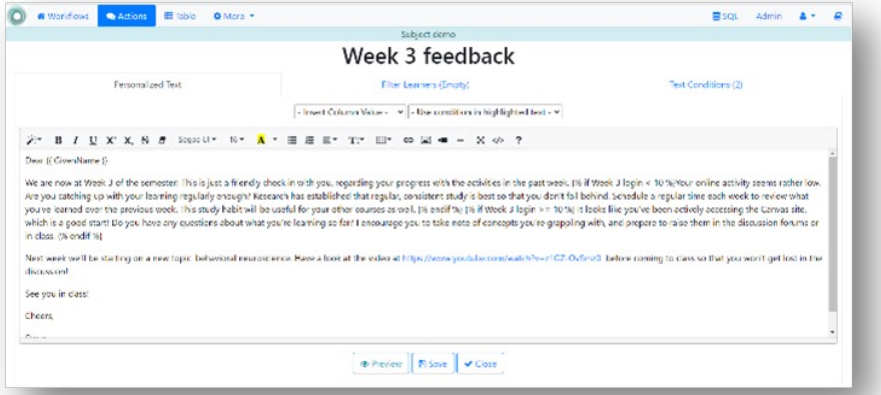
Amplifying teacher presence via personalised feedback using OnTask

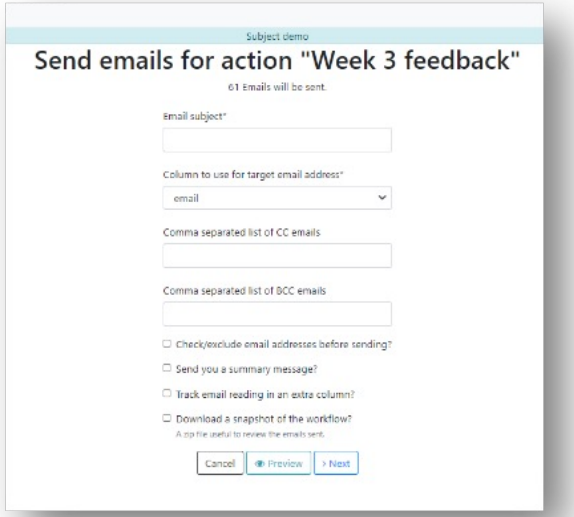
Repository of student data
(e.g. online activity; attendance; survey responses…)

Message editor
to differentiate feedback based on the student data

Delivery system
to preview and send email feedback

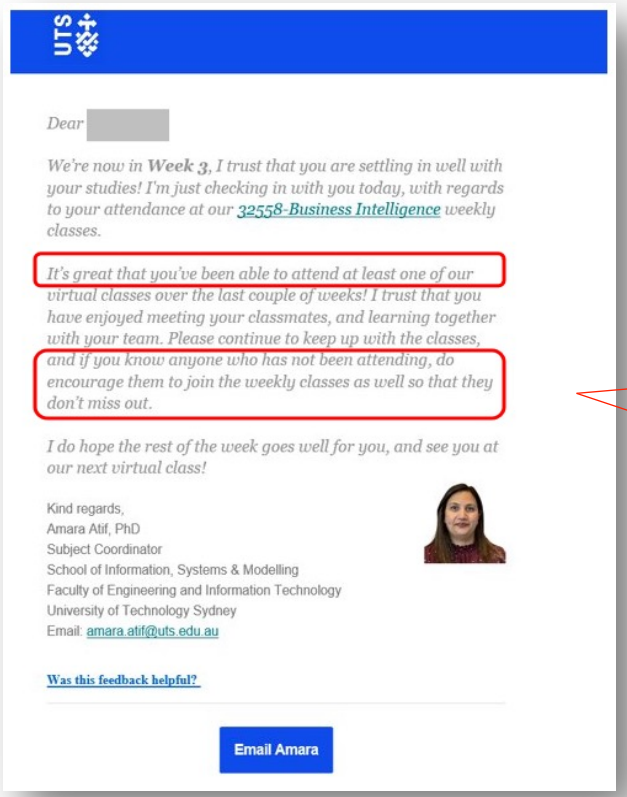






https://cic.uts.edu.au/tools/ontask

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.

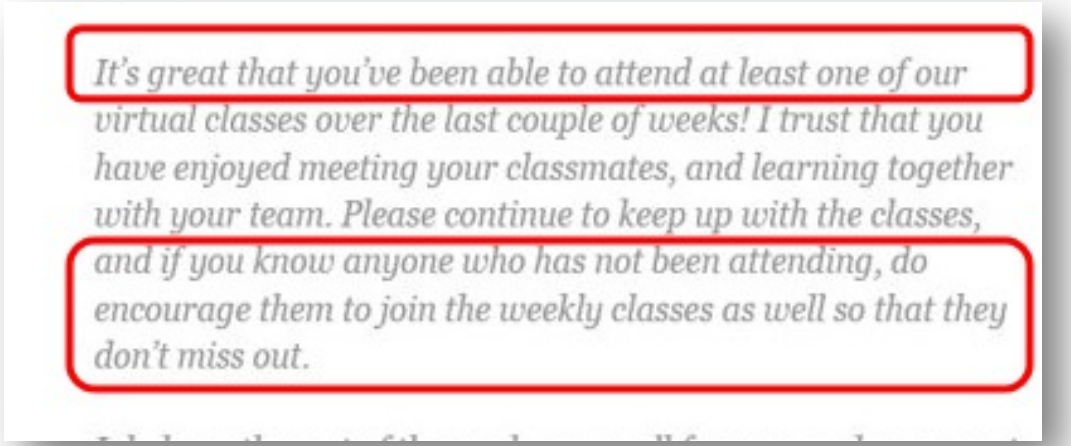
I do hope the rest of the week goes well for you, and see you at our next virtual class!

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?

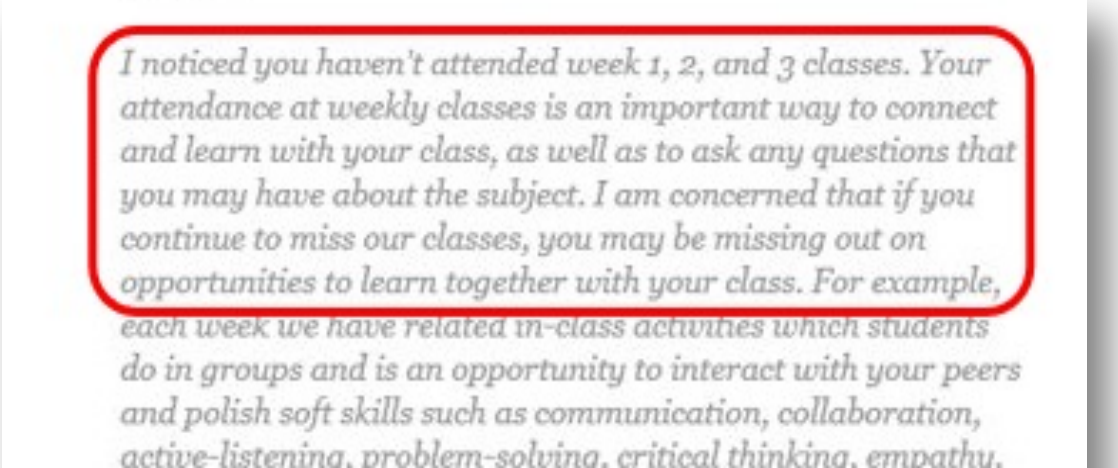
Email Amara

(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

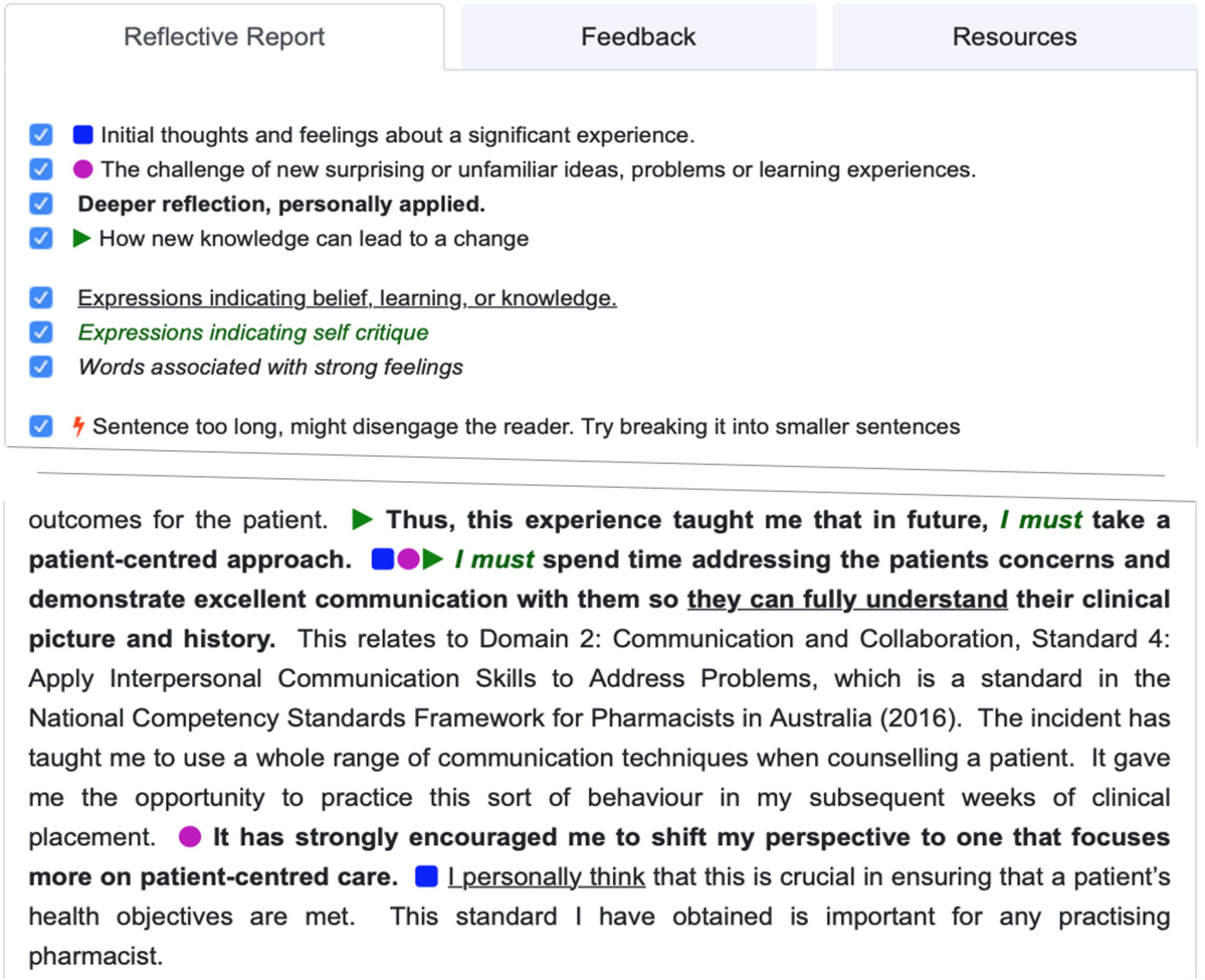
Reflective writing is a widely used activity to deepen experiential learning

"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

Conclusions

“Failure to learn”…

Designing sustainable, sociotechnical ecosystems requires trust

McGilchrist & Giroux offer sharp diagnoses of our condition, challenges for education, and inspiration

Learning@Scale community has a critical role to play

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

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 …