



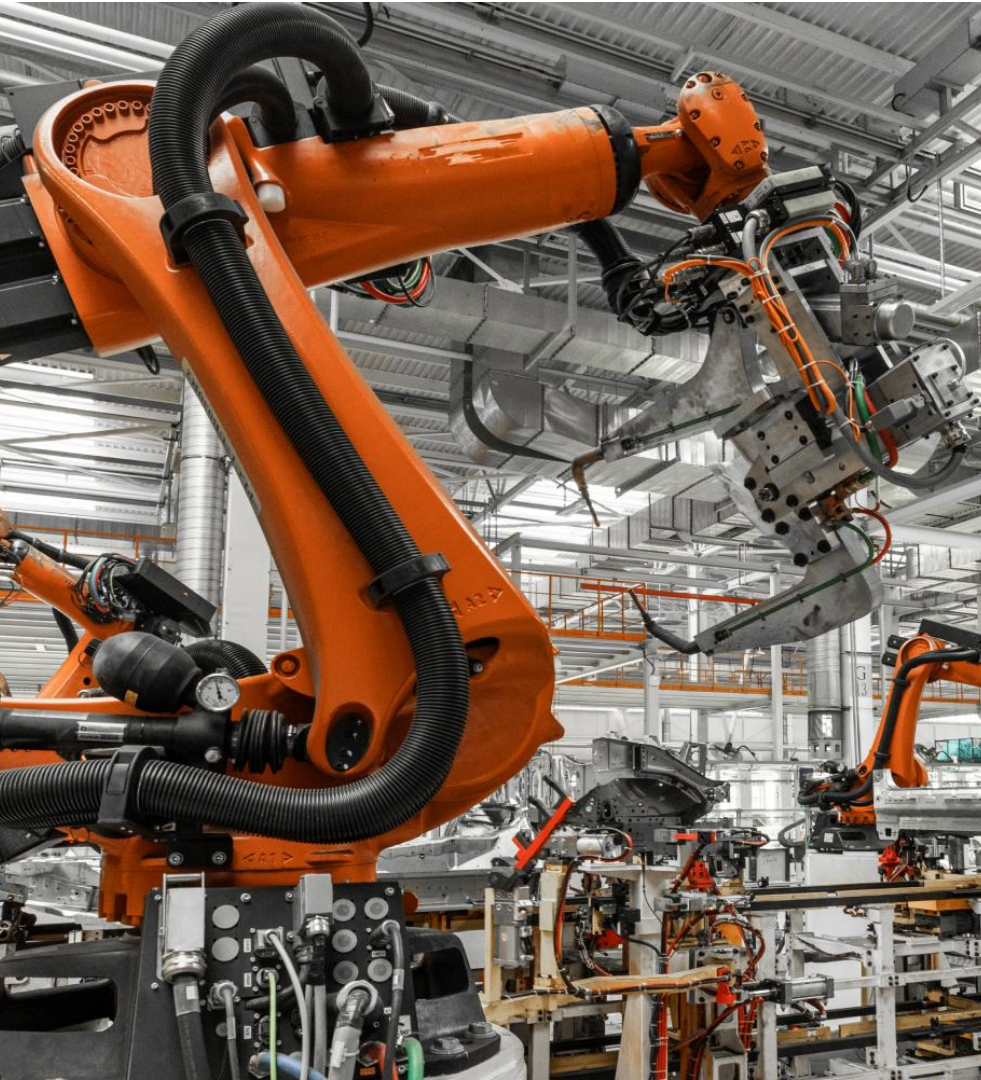
Preparing students for AI-enabled life and work futures

Professor Ruth Bridgstock ALTF PFHEA

@RuthBridgstock
futurecapable.com



future capable



artificial intelligence everywhere

robotics & automation

quantum computing

extended reality

internet of things & edge computing

hyperconnectivity



global warming

sharing economy

innovation economy

increasing social inequality

population changes &
diaspora

mental health crisis

pandemic

dissatisfaction with government

slido



Does your institution offer some kind of professional learning for educators about generative AI?

① Click **Present with Slido** or install our [Chrome extension](#) to activate this poll while presenting.

slido



Does your institution offer opportunities for students to learn about / use generative AI?

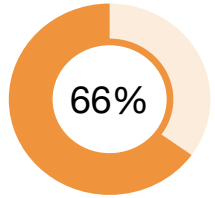
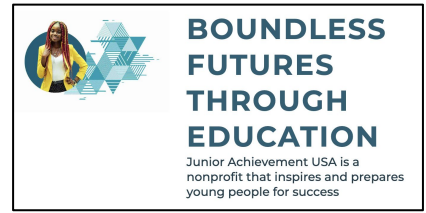
① Click **Present with Slido** or install our [Chrome extension](#) to activate this poll while presenting.

'The future is bleak': how AI concerns are shaping graduate career choices

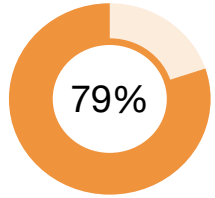
From illustration to translation, young people worry that they will have to choose their paths carefully



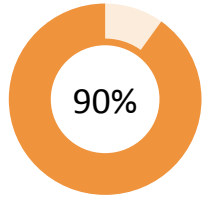
Young people's perspectives



concerned that they might not be able to find a good job because of AI
(30% very or extremely concerned)



still believe they will find well-paying and meaningful jobs as adults



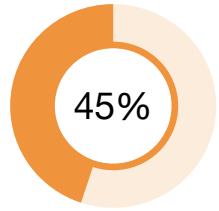
say they would be interested in learning about how to work with artificial intelligence in high school

n=1,005 13-17 year olds, US

March 2023

<https://jausa.ja.org/>

Australian higher education students



worried that their planned career role might be redundant in a few years



9%

students who had used AI were significantly less concerned than those who had not



19%

students who had learned to use AI at uni much less concerned than those who had not



social media influencer
who
uses AI tools regularly



part-time prompt
engineer

“freaking out a bit”

- first in family
- low SES
- living with a disability or health concern
- mixed messages from the institution about AI
- certain disciplines

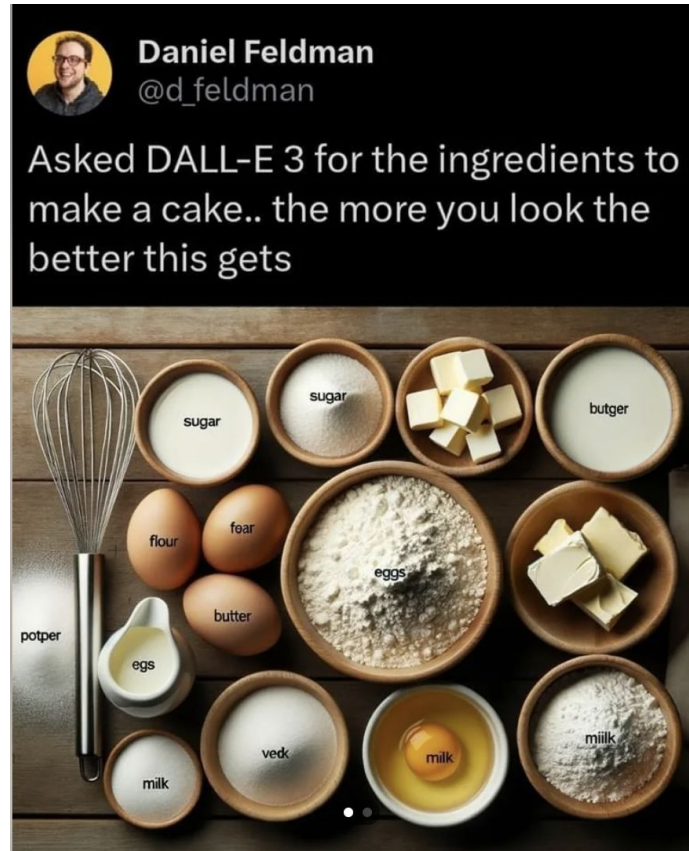


“AI is a bit crap now... it’s useful but will always have limitations. It needs people”



Source: Adobe Firefly – search prompt: teacher teaching students in the future with AI

“AI is a bit crap now... it’s useful but will always have limitations. It needs people”



gpt-4/dalle-3: search prompt: "a cake with ingredients labelled"

“Artificial intelligence is going to eliminate a lot of current jobs, that’s true.”

Sam Altman, CEO of Open AI

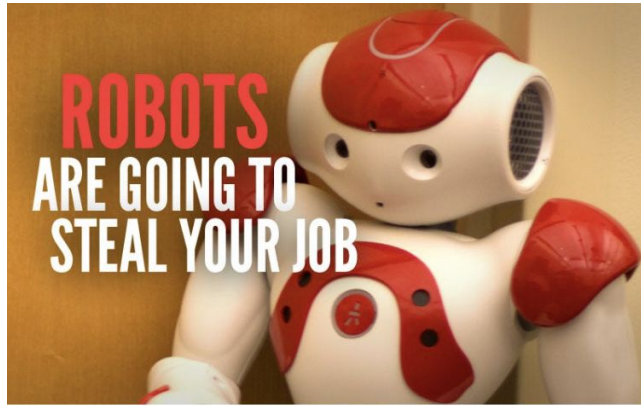


almost definitely not true, Sam

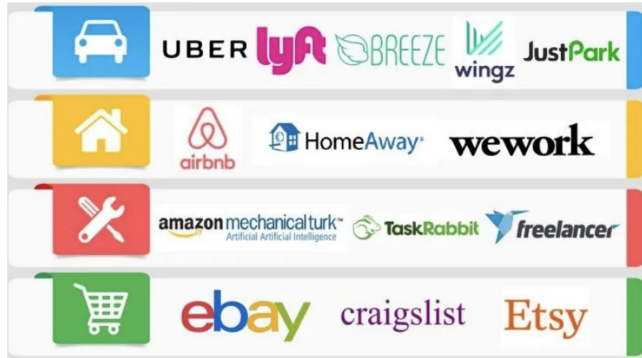
much more likely:

- limited displacement of roles
- some creation of high value roles
- a lot of change of tasks inside roles

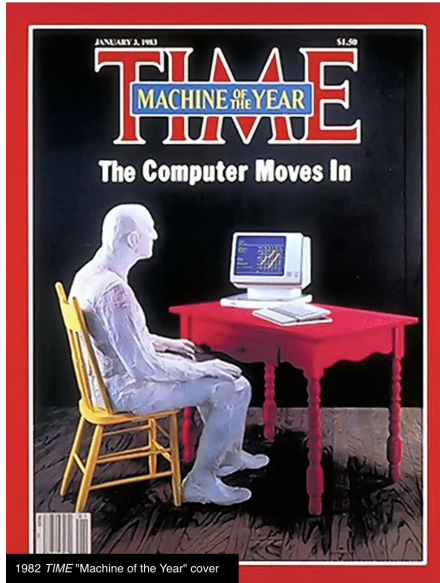
+ changes to the way we obtain & manage work



2013



2015

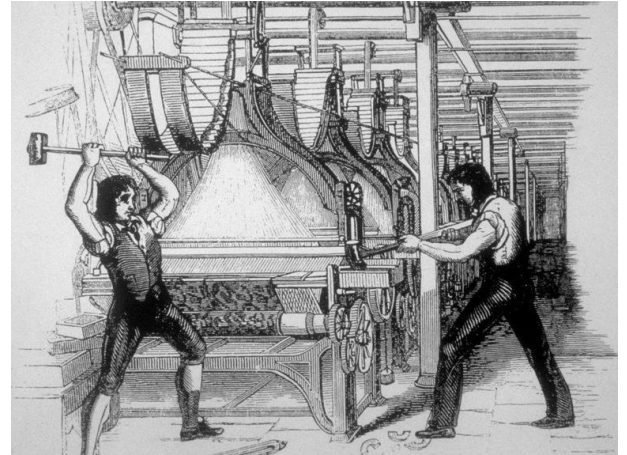


1982



2004-2006

2010



1812

Looking at tasks inside roles



O*NET OnLine



European
Commission

ESCO (European Skills, Competences, Qualifications and Occupations)



ANZSCO (Australian and New Zealand Standard Classification of Occupations)

Briggs & Kodnani. (2023). The Potentially Large Effects of Artificial Intelligence on Economic Growth. *Goldman Sachs*.

Felten, E., Raj, M., & Seamans, R. (2023). How will Language Modelers like ChatGPT Affect Occupations and Industries? *arXiv preprint arXiv:2303.01157*.

Mandala Partners. (2023) How generative AI will impact tasks, not jobs.
<https://mandalapartners.com/posts/generative-ai-impacts-2023>

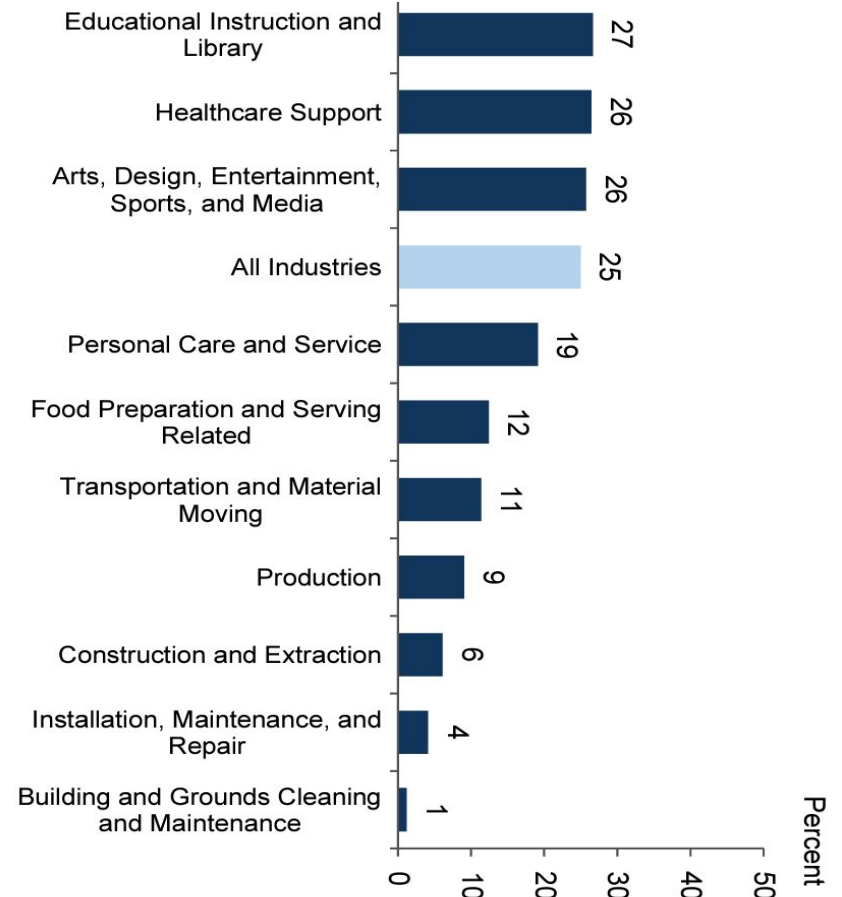
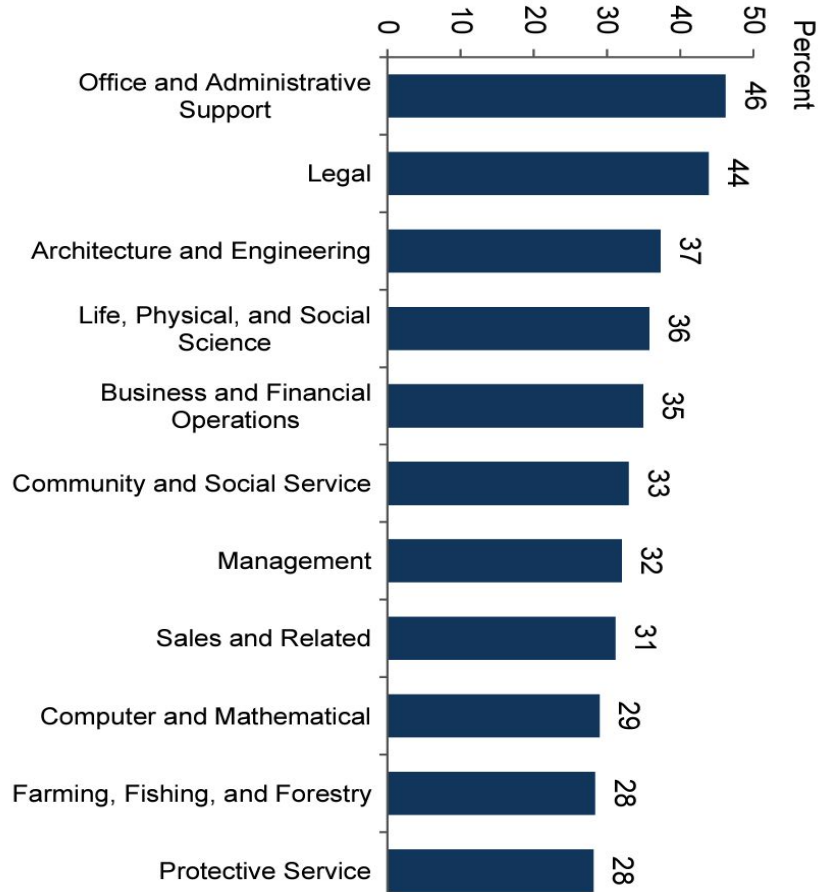
AI-Exposed Work Activity	Examples of Automation	Examples of Tasks by Difficulty (O*NET 1-7 Scale)
Getting Information	Web scrape data from online sources and consolidate into a clean dataset; conduct and summarize a review of prior research based on a textual query and answer follow-up questions	2: Follow a standard blueprint 4: Review a budget 6: Study international tax laws
Monitoring Processes, Materials, or Surroundings	Monitor sensor input and system logs for manufacturing and utilities system anomalies; monitor internet activity for changes in sentiment or trending themes	2: Check to see if baking bread is done 4: Test electrical circuits 6: Check the status of a patient in critical medical care
Identifying Objects, Actions, and Events	Identify objects, music, terminology, and people when provided with textual/visual/auditory input; provide context on identified subject	2: Test an automobile transmission 4: Judge the suitability of food products for an event 6: Determine the reaction of a virus to a new drug
Estimating the Quantifiable Characteristics of Products, Events, or Information	Produce market size estimates based on assumptions grounded in existing research; estimate parameters using statistical modeling on input data and select optimal model	2: Estimate the size of household furniture to be shipped 4: Estimate transportation delays from inclement weather 6: Estimate the size of resource deposits beneath the world's oceans
Processing Information	Process raw data from documents, sensors, and humans into clean datafiles that are easily subscribable for analysis; provide summaries of data relevant to user needs	2: Calculate the costs for shipping packages 4: Calculate the adjustments for insurance claims 6: Compile data for a complex scientific report
Evaluating Information to Determine Compliance with Standards	Review documents and proposed actions for compliance with legal, regulatory, and corporate standards; provide arguments and scenarios for and against compliance in unclear cases	1: Review forms for completeness 4: Evaluate a complicated insurance claim for policy compliance 6: Make a ruling in court on a complicated motion
Analyzing Data or Information	Perform statistical analysis of and identify trends within large datasets; forecast future data based on optimal combination of variables and model with best out-of-sample predictive power	1: Skim a short article to gather the main point 4: Determine the interest cost to finance a new building 6: Analyze the cost of medical care services for all US hospitals
Updating and Using Relevant Knowledge	Draft and update reports in corporate knowledge base; update statistical and financial models based on new data which challenges prior scenarios/assumptions	2: Track price changes in a small retail store 4: Track changes in maintenance procedures for repairing SUVs 6: Learn information about a complex and rapidly-changing technology
Scheduling Work and Activities	Automatically schedule meetings and work activities using availabilities and emails; assign tasks and estimate time to completion based on past experience	2: Make appointments for patients using a predetermined schedule 4: Prepare the work schedule for salesclerks in a large retail store 6: Schedule a complex conference program with parallel sessions
Organizing, Planning, and	Delegate and prioritize tasks based on time to completion and	2: Organize a work schedule that is repetitive and easy to plan

If generative AI delivers on its promised capabilities, the labor market **could face significant disruption**. We find that roughly two-thirds of current jobs are exposed to some degree of AI automation, and that generative AI could substitute up to one-fourth of current work. Extrapolating our estimates globally suggests that generative AI could expose the equivalent of 300 million full-time jobs to automation.

The combination of labor cost savings, new job creation, and higher productivity for non-displaced workers will likely lead to a productivity boom that raises economic growth substantially.

Briggs & Kodnani,
2023

Exposure of occupational categories to AI by average percentage of tasks

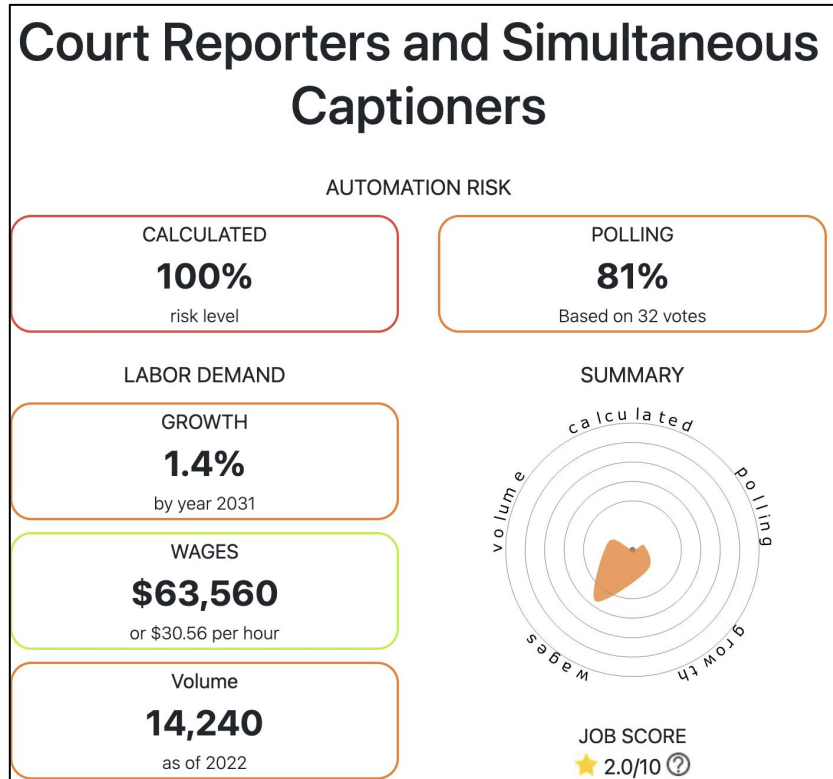


Most exposed skills of AI exposed occupations

Occupation	Impact of AI on Occupation
Telemarketers	Telemarketers will find generative AI is able to support customer interactions by automatically generating responses like answers to questions and cold emails and identifying potential leads. This will free up telemarketers to focus on leads with more concrete potential.
Tertiary Educators	Tertiary educators will be able to direct students to use generative AI to answer some questions. This will allow them to focus on more difficult questions and curriculum development and allows the students to receive responses instantly.
Social Professionals	Social professionals like interpreters and translators will find generative AI useful in providing initial drafts of documents. This will allow the professional to focus on the most difficult or most impactful sections.
Intelligence and Policy Analysts	Analysts will be able to use generative AI as both an information processing tool and as support in generating insights from data. This will enable analysts to focus on the implications of the insights AI helps to generate and focus on policy development.
Judicial and Other Legal Professionals	Legal professionals will find generative AI is able to quickly draft standardised legal documents and letters and allow them to focus on the deviations the client requires.

(Mandala,
2023)

<https://willrobotstakemyjob.com/>



slido



To what extent are your institution's courses designed to prepare students for an AI-enabled future of life and work?

① Click **Present with Slido** or install our [Chrome extension](#) to activate this poll while presenting.



How future-capable are our university courses?

Method: Coding the published curriculum

course and unit outlines

eight undergraduate degree programs
across two Australian universities

four disciplinary areas:

- civil engineering
- environmental science
- creative arts (drama)
- business (management)

185 units (core, major)

three coders



Method: Coding the published curriculum



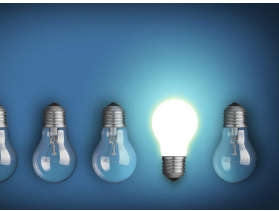
Future focus (changing & future professions / contexts / applications, lifelong learning)



Experiential learning ('hands on', enquiry-based, learning by doing, reflection on experience)



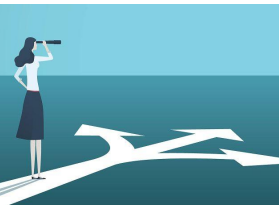
Interdisciplinary learning (translating and integrating perspectives from multiple disciplines)



Innovation & entrepreneurship (creating something useful / valued, finding and solving complex problems)



Collaborative learning – communities of practice, authentic collaboration



Career self-management, career adaptability



Learning & working through networks




How future-capable are our university courses?

	Experiential learning	<ul style="list-style-type: none">- work integrated learning- studios, labs, pracs- needs to start earlier in courses- disciplinary strengths in science and arts

How future-capable are our university courses?

Innovation + entrepreneurship Career self-management Interdisciplinary learning Digital literacies Collaborative learning		<ul style="list-style-type: none">- tends to happen in capstones, needs to start earlier in courses- tends to focus on short-term job acquisition- found towards the ends of courses or in co-curricular spaces- need to teach explicitly for adaptability and change- tends to be multidisciplinary (e.g., majors) rather than interdisciplinary- exception is some capstone industry projects- relies on students to make connections- uneven, an 'add on', has a tendency to be tacit or procedural in nature- not much criticality- common, but the dreaded unidisciplinary 'now form groups of 4' model still ubiquitous- minimal community of practice / learning-based models
Experiential learning		<ul style="list-style-type: none">- work integrated learning- studios, labs, pracs- needs to start earlier in courses- disciplinary strengths in science and arts

How future-capable are our university courses?

	<p>Future focus</p> <p>Networked learning</p>	<ul style="list-style-type: none"> - 'now' and short-term industry / professional needs - assumption that tasks / skills (and knowledge sets) won't change - still not much of a focus - largely incidental to placements, internships, projects - peer mentoring
	<p>Innovation + entrepreneurship</p> <p>Career self-management</p> <p>Interdisciplinary learning</p> <p>Digital literacies</p> <p>Collaborative learning</p>	<ul style="list-style-type: none"> - tends to happen in capstones, needs to start earlier in courses - tends to focus on short-term job acquisition - found towards the ends of courses or in co-curricular spaces - need to teach explicitly for adaptability and change - tends to be multidisciplinary (e.g., majors) rather than interdisciplinary - exception is some capstone industry projects - relies on students to make connections - uneven, an 'add on', has a tendency to be tacit or procedural in nature - not much criticality - common, but the dreaded unidisciplinary 'now form groups of 4' model still ubiquitous - minimal community of practice / learning-based models
	<p>Experiential learning</p>	<ul style="list-style-type: none"> - work integrated learning - studios, labs, pracs - needs to start earlier in courses - disciplinary strengths in science and arts

Finally...

Thank you for fostering the digital literacies of students & educators, including demystifying generative AI

Some potential opportunities??

- support our careers consultants to come into the 21st century
- more & better industry- and community-partnered authentic learning experiences? (WIL etc)
- develop and emphasise institutional partnerships with organisations & businesses operating at the 'cutting edge'





Preparing students for AI-enabled life and work futures

Professor Ruth Bridgstock ALTF PFHEA

@RuthBridgstock