

Aligning STEM Education with Employer Needs

16-17 February 2016

What Are the Jobs of the Future?

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The Big Scare!!

You have seen the headlines - beware the bots!

Man v machine: Half of NSW jobs at risk of computerisation

Date

January 9, 2016

Read later



Thousands of NSW printing jobs under threat

Wednesday, 13 January 2016

By Print21

- See more at: <http://print21.com.au/thousands-of-nsw-printing-jobs-under-threat-govt-paper/98399#sthash.XY4nE7Bt.dpuf>

Emerging technology posing a threat to Blacktown's workforce

January 19, 2016 12:59pm

Jessica Oxford Blacktown Advocate

Will your job be done by a machine?

Teaching assistants – 55.7%

Librarians - 64.9%

Professors 3.2%

High School teachers – 0.8%

<http://www.npr.org/sections/money/2015/05/21/408234543/will-your-job-be-done-by-a-machine>

World Economic Forum

Davos, January 2016 www.weforum.org/

The Fourth Industrial Revolution

- The 4.9 billion items connected via the Internet of Things in 2015 will reach 25 billion by 2020.
- Advanced manufacturing technologies are expected to double in value to \$85 billion by 2019.
- Venture capital investment in robotics and artificial intelligence has grown more than 70% pa since 2011.

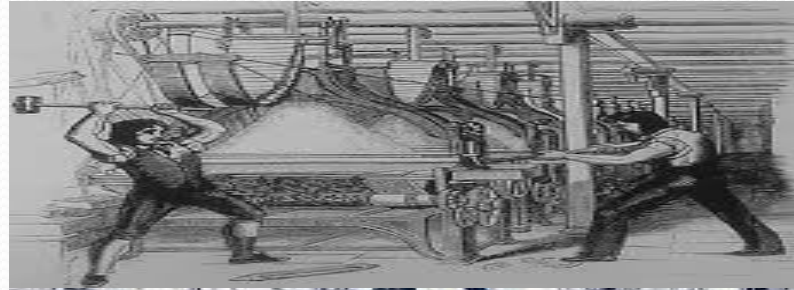




The History

A long history of worry about job destruction and deskilling

- 19th Century – Luddite opposition to mechanisation of spinning and weaving
- 20th Century – concerns over automation of manufacture, word processing
- 21st Century – smart machines

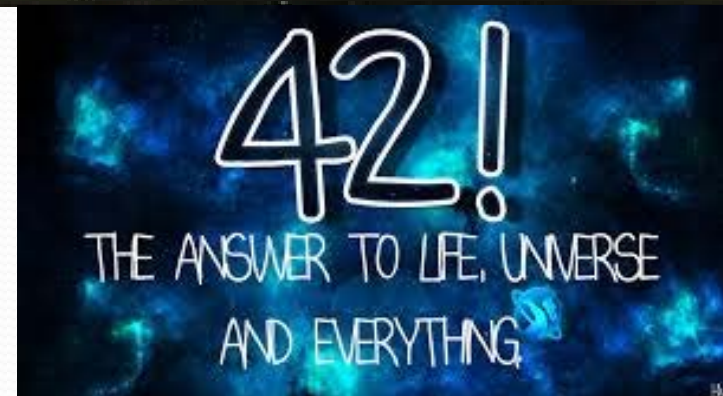
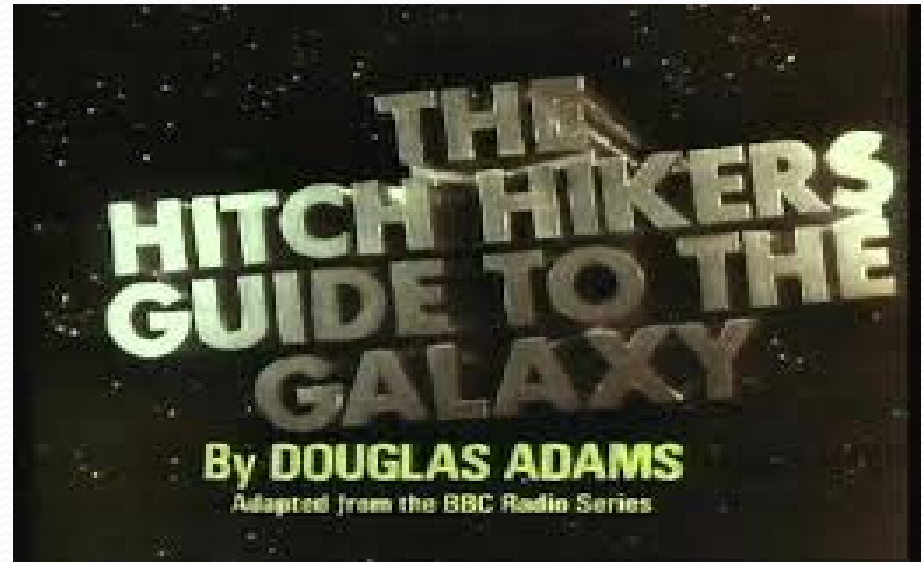




Is technology at fault

Technology is a strange beast

Technology is strangely impermanent. It burst onto the scene with great celebration and/or alarm, but once widely adopted, technology strangely disembodies, to become 'part of the furniture' – simply a natural part of how our world works.




Understanding technological change

1. Technological change is intrinsically, and unavoidably, uncertain
2. New technologies are never entirely new
3. The potential impacts of a technology are difficult to establish, still less quantify
4. All technologies have risks
5. Technological change does not just happen. Nor is it prescribed by laws of nature



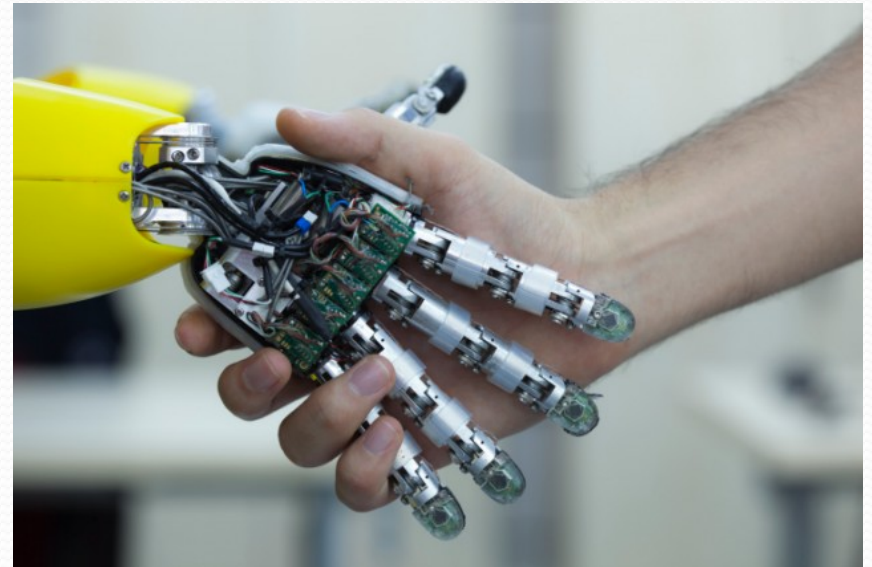
© Can Stock Photo - csp11731315



Do we know what the future
jobs will be?

It is easier to predict jobs that will be lost than those that are created

1. Bot lobbyist
 2. Future currency speculator
 3. Productivity counselor
 4. Microbial balancer
 5. Meme agent
 6. Big data doctor
 7. Crowdfunding specialist
 8. Jobs of the future recruiter
 9. Corporate disruptor
 10. Privacy Consultant
- (cheatsheet.com)



Or how about?

1. Tele-surgeon
2. Nostalgist
- 3 Re-wilder
4. Simplicity expert
5. Garbage designer
6. Robot counsellor
7. Healthcare navigator
(Business Insider)



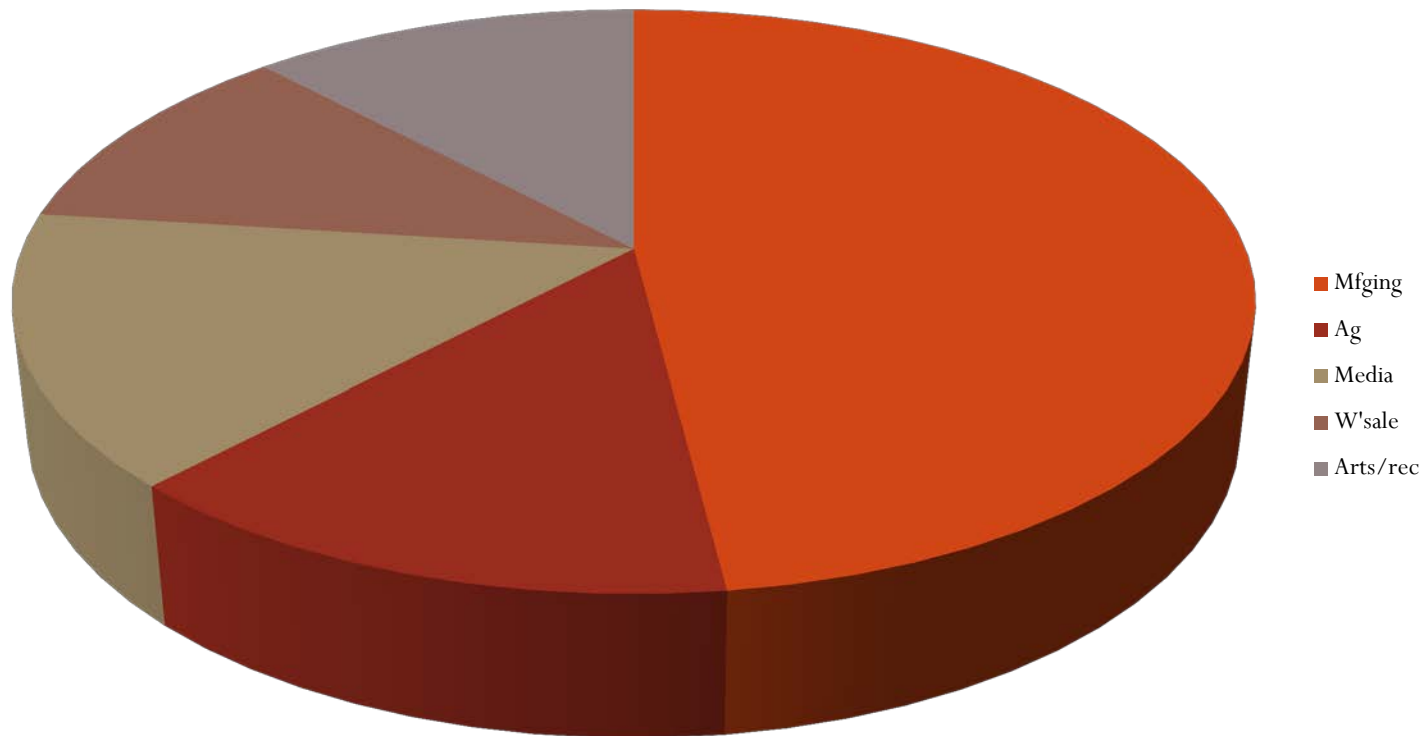


What is the Data on Job Destruction and Job Creation in Australia?

Job Destruction in Australia -146,800

5 years to June 2014

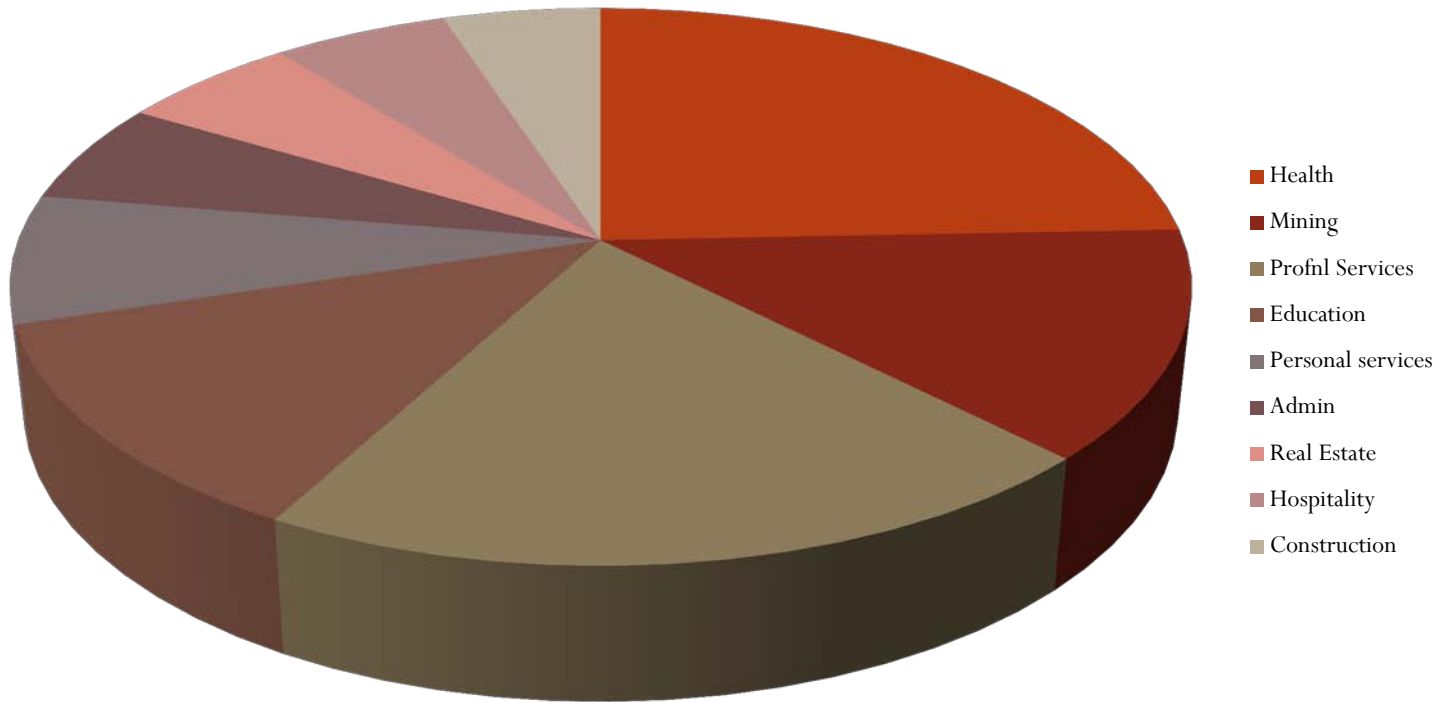
(Phil Ruthven in CEDA, Australia's Future Workforce, 2015)



Job Creation in Australia -944,500

5 years to June 2014

(Phil Ruthven in CEDA, Australia's Future Workforce, 2015)



Super-connected jobs

(Bernard Salt, for NBN, 2015)

- 3 million new jobs will be created by 2030
- Job growth has exceeded job loss by 10:1 since 2000
- Small businesses have grown by 39% over past decade



The Essence of Future Work

NON-ROUTINE!

Key human factors required are: (Frey and Osborne, 2013)

- Social perceptiveness
- Assisting/caring
- Persuasion
- Negotiation
- Originality



The Five Skillsets for Future Jobs

- *Care Givers* – outsourced personal services
- *Technocrats* – specialised knowledge workers
- *Specialist Professionals* – the professions and regulators
- *Do-ers* – trades and retail services
- *The Creatives* – lifestyle services



So How Do We Equip STEM Graduates with the Skills for Future Employment?

Understand the Knowledge Economy

- In a knowledge economy the production, distribution and use of knowledge is the main driver of growth, wealth creation and employment across **all industries**.
- Because knowledge does not wear out it is a source of super-value and super-productivity.
- Knowledge alone can add value to an otherwise closed, zero-sum system.

Knowledge work is...

- Complex
- Uncertain
- Ambiguous
- Unstructured
- Difficult to assess
- High risk



The skills required are ...

- Intuitive pattern recognition
- Flexibility and tolerance for ambiguity
- Collective “sense making”
- Information sifting and evaluation
- Thriving on uncertainty
- Resilience and agility

