

Applying Agnotology Based Learning in a MOOC to Counter Climate Misconceptions

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Meeting the challenge of change

gciQ Global Change Institute

The University Of Queensland AUSTRALIA

Agnotology

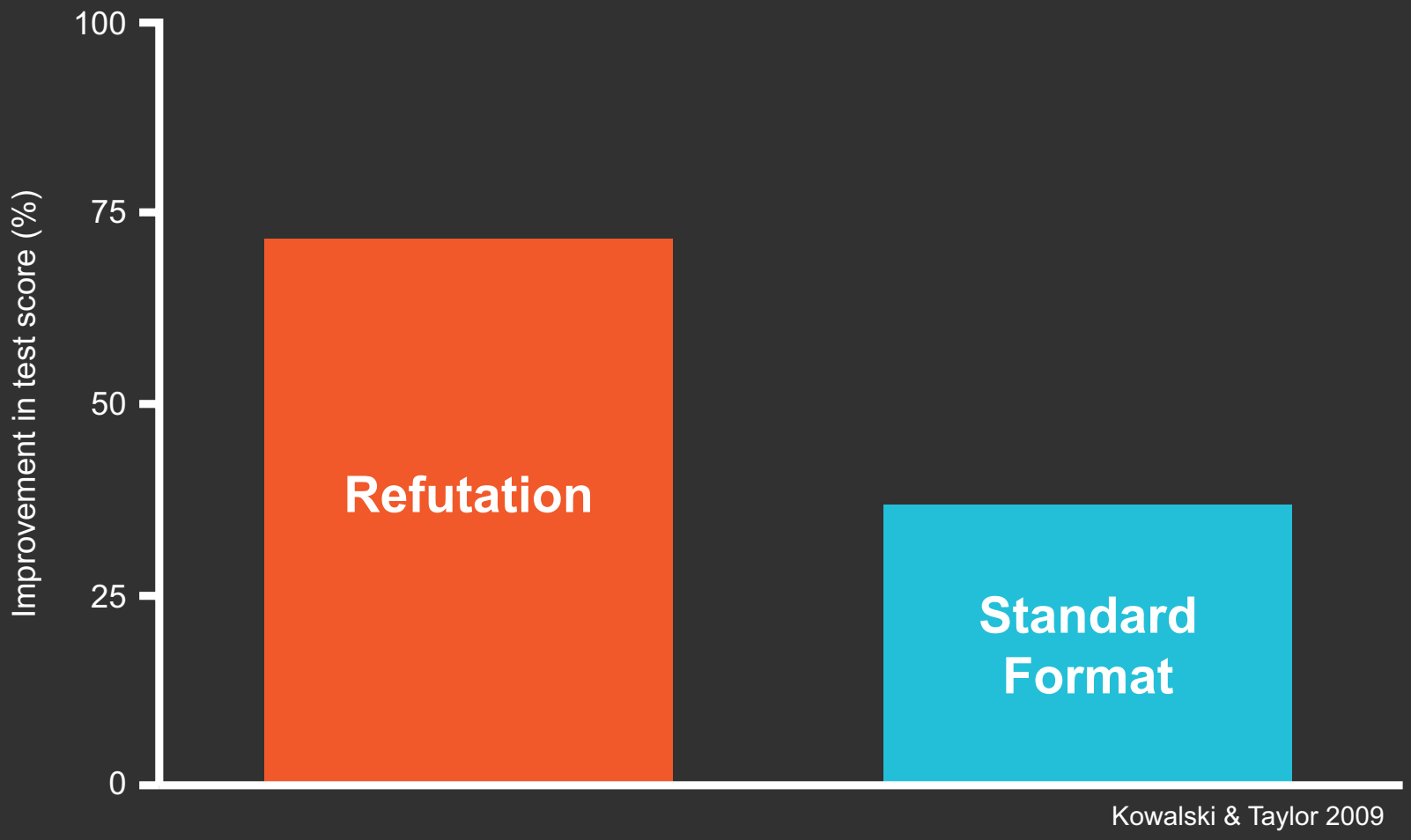
- Agnotology is the study of how and why misconceptions and ignorance exist (Proctor, 2008).
- Agnotology-based learning is addressing misconceptions directly as an educational opportunity (Bedford, 2010).
- Misconception-based learning (McCuin, Hayhoe & Hayhoe, 2014).

“Comprehending why ideas are wrong matters as much as understanding why some ideas may be right.”

JONATHAN OSBORNE

Why address misinformation?

- Misconceptions interfere with new learning.
- Not all misconceptions are created equal. “Gateway beliefs” have a flow-on effect to other beliefs and attitudes:
  - Perception of scientific consensus on human-caused global warming influences acceptance of climate change and support for mitigation policies (Ding et al, 2011).
  - Understanding the mechanism of the greenhouse effect increases acceptance of climate change (Ranney & Clark, 2014).

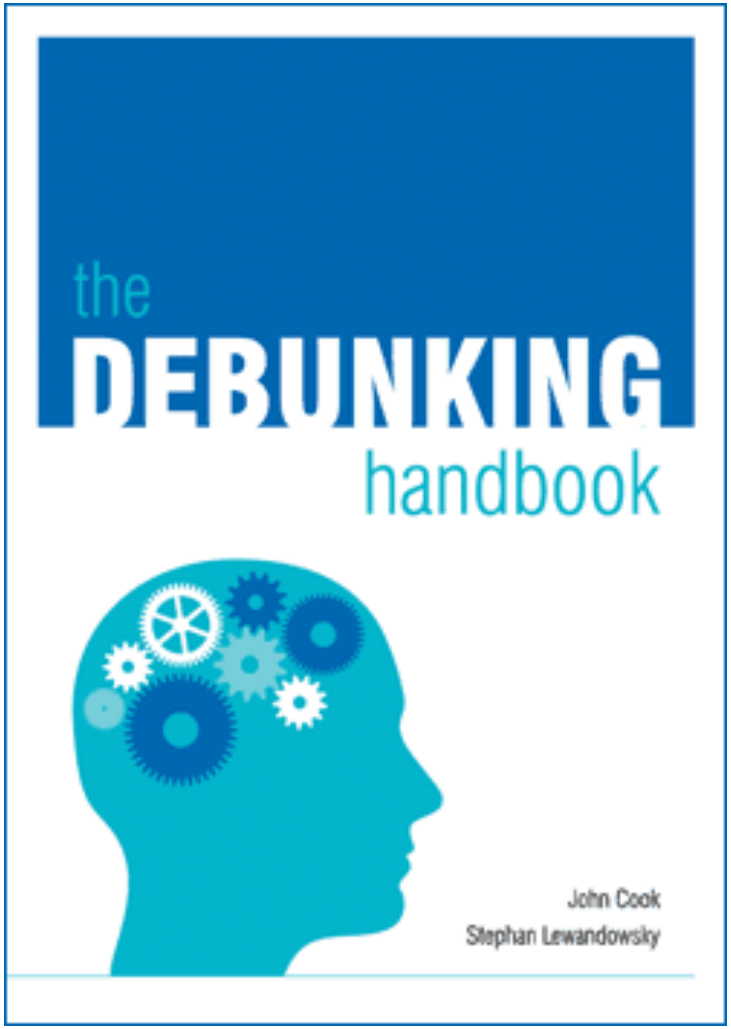


Cook, J., Bedford, D., & Mandia, S. (2014). Raising climate literacy through addressing misinformation: Case studies in agnotology-based learning. *Journal of Geoscience Education*, *62*(3), 296-306.

Removing Misconceptions

- The Debunking Handbook
  http://sks.to/debunk

- Scholarly review of misinformation research:
  http://sks.to/pspi



Removing Misconceptions

- People build a mental model of the world

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- People build a mental model of the world
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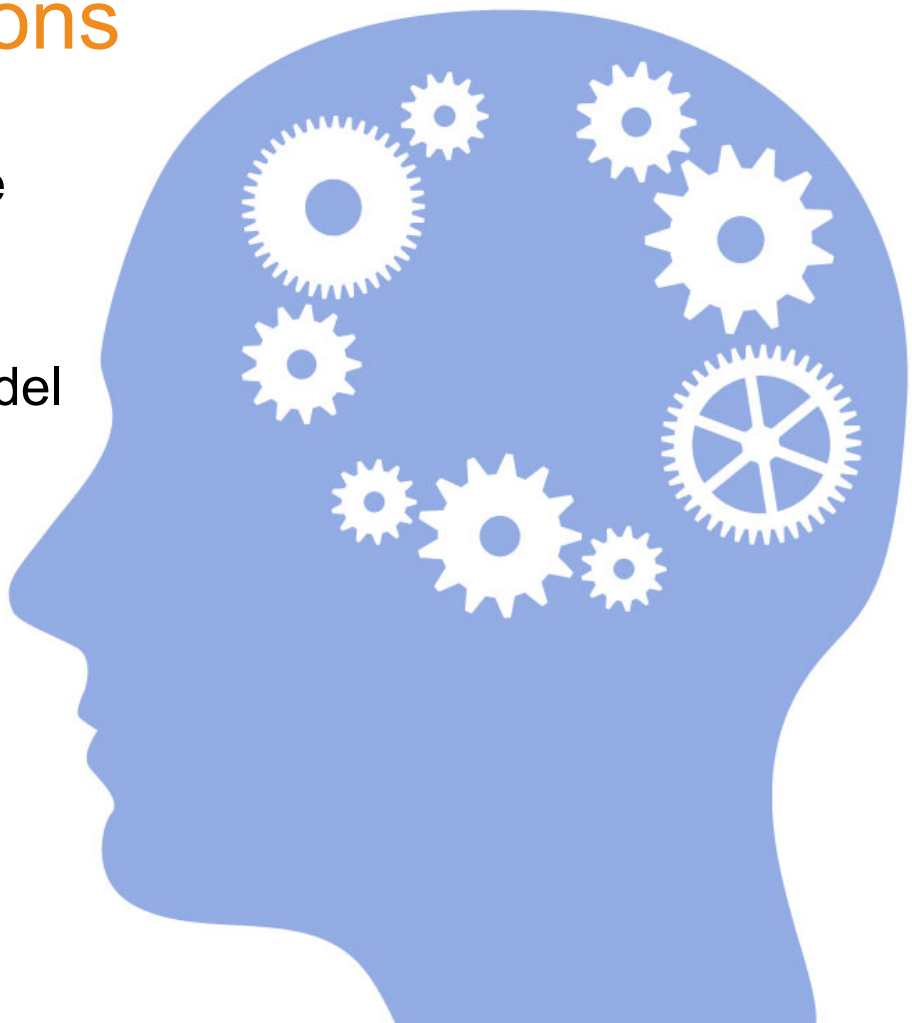

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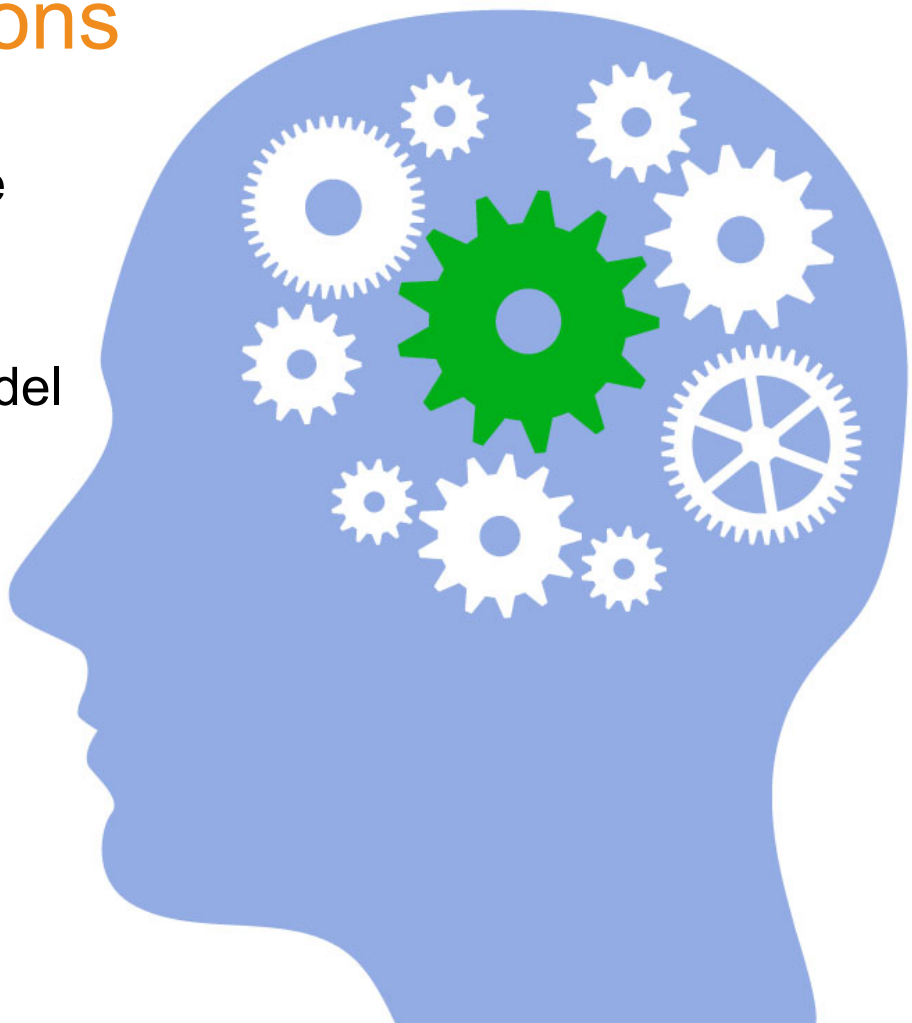
Removing Misconceptions

- People build a mental model of the world
- Debunking leaves a gap in the model
- People prefer a false, complete model to a true, incomplete model
- Fill the gap with an alternative fact



1 Factual Alternative

It's not enough to show the myth is wrong. You need to replace it with an alternative that meets all the causal requirements left by the myth:

Fight sticky myths with stickier facts

2 Explicit Warning before the myth

Cue the reader that you're about to mention the myth. This puts them cognitively on guard so they're less likely to be influenced by the misinformation.

3 Myth

Mentioning the myth makes people more familiar with the myth, which risks a *Familiarity Backfire Effect*. Nevertheless, you do have to mention the myth. Reduce the risk of the backfire effect by warning before mentioning the myth and putting the emphasis

4 Explanation of how myth distorts facts

Once you've presented the factual alternativeand the myth, your audience holds two contradictory ideas. You resolve this contradiction by showing how the myth distorts the facts or how the myth came about in the first place. For example, this might involve explaining the logical fallacy within the myth.

http://gci.uq.edu.au/mooc

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Making Sense of Climate Science Denial

Climate change is real, so why the controversy and debate? Learn to make sense of the science and to respond to climate change denial.

About this Course

In public discussions, climate change is a highly controversial topic. However, in the scientific community, there is little controversy with 97% of climate

THE UNIVERSITY OF QUEENSLAND AUSTRALIA

UQx

School:	UQx
Course Code:	Denial101x
Classes Start:	10 Mar 2015
Course Length:	7 weeks
Estimated effort:	1-2 hours per week

Prerequisites:

Basic high school science recommended.

Register for **Denial101x**
and choose your student track

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Making Sense of Climate Science Denial

1. Why is climate change a public controversy?
2. Is global warming happening?
3. Are humans causing it?
4. What does the past tell us about the future?
5. What are the impacts of climate change?
6. How do we respond to climate science denial?

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