

## **Dr Gwyneth Hughes**

**Developing student research capability  
for a ‘post-truth’ world: three  
challenges for integrating research  
across taught programmes**

# Outline

- Skills and citizenship in a post-truth world
- Research based education (RBE)
  - Research development and threshold concepts
  - Longitudinal approach and ipsative assessment
- Study of 5 RBE programmes
  - Challenges of identifying research skills, recording research development and student support

# What does a post-truth world look like?

- Knowledge decoupled from experts, growing populism, multiplying digital sources of knowledge, alternative facts



Malaysian  
airlines plane  
disappearance

Disproving the link  
between the MMR vaccine  
and autism

**...IT'S NOT REAL**



Donald J. Trump  
*President*

The concept  
of global warming  
was created by  
and for the  
Chinese in order  
to make U.S.  
manufacturing  
non-competitive.



# Role of higher education to help students develop

- criticality: to judge range of sources of knowledge and data reliability
- scepticism about popular knowledge and ‘alternative facts’
- The ability to ask good questions for knowledge generation

# Research based education key literature

- Not only new knowledge production but includes questioning, enquiry and problem solving as part of a research-teaching nexus (Healey and Jenkins 2009)
- Maybe only some (stronger) students benefit (Taraban and Logue 2012)
- End of year research project vs research development over time – research throughlines (Fung, 2017)

# Research skills development framework from Adelaide

<https://www.adelaide.edu.au/rsd/framework/rsd7/>

# also vitae researcher development framework

<https://www.vitae.ac.uk/researchers-professional-development/about-the-vitae-researcher-development-framework>

# Research development and threshold concepts

“A threshold concept can be considered as akin to a portal, opening up a new and previously inaccessible way of thinking about something. It represents a transformed way of understanding, or interpreting, or viewing something without which the learner cannot progress.” (Meyer and Land, 2003,1)



# Research development and threshold concepts

- Argument; Theorising; Framework; Knowledge creation; Analysis and interpretation; and Research paradigm (Kiley and Wisker (2009) )
- Literature reviewing (Timmermann *et al.* (2013) )
- Critical thinking (Rattray, 2017; Arum & Roksa, 2011)

# Research development and assessment

- Students need time to master threshold concepts and repeated assessment opportunities (Rattray, 2017)
- Scaffolding (Brew, 2013)
- Feedback on research development over time-ipsative feedback (Hughes, 2014)

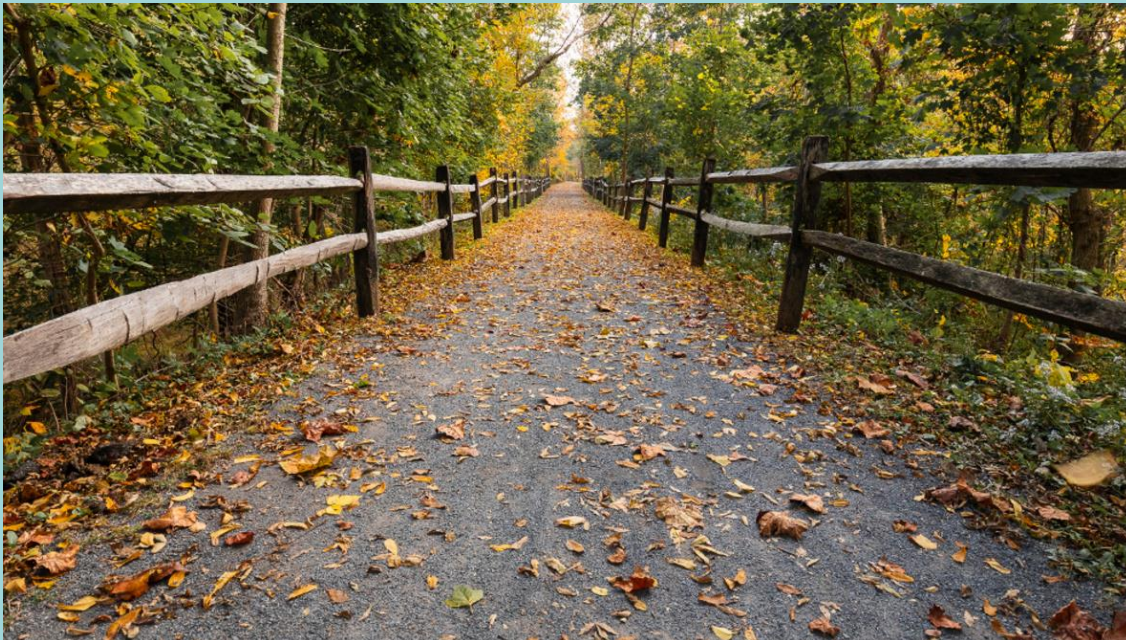
Ipsative assessment as an alternative to judging against external standards

“an ipsative assessment is a comparison with a previous performance, it is a self comparison” (Hughes, 2011, 353)

# Personal best



Is the potential of RBE being met in an institution which promotes research throughlines?



Programme	Method of embedding a research throughline
<b>BA/BSc Archaeology</b>	A series of modules which empower students to undertake research and enquiry (through fieldwork) plus a core portfolio that builds through connected modules.
<b>MSc Engineering degrees</b>	Capstone research project supported by research skills workshops.
<b>BEng and MEng in Engineering (Biomedical)</b>	A series of core modules with Problem Based Learning scenarios which empower students to undertake research and enquiry.
<b>BA Education Studies</b>	A tutorial system with reflection on research and other skills plus a narrative portfolio throughout the programme.
<b>BSc Natural Sciences</b>	A planned long thin, group work research module, no credit

## Three challenges

- *Conceptualising disciplinary and generic research skills*
- *Student and staff recording of the accumulation and enrichment of research skills*
- *Supporting the research development and self-regulation of all students in preparation for a post-truth world*

## *Conceptualising disciplinary and generic research skills*

- Not very clear on research development
- General academic
  - literature searching (MSc Eng., BSc Nat. Sci.),
  - academic writing (BA Ed.),
  - creating an argument (BA Arch.),
  - being critical (BA Ed., BSc Nat. Sci.),
  - analysis (BA Arch.),
  - communicating ideas (all)
  - collaborative/team working (all)



- a) cumulatively by increasing the range of skills (Natural Sciences and Education)

“In year one that’s mostly developing their practical skills, in year two it’s mostly developing the scientific computing and communication skills and year 3 they have to do a literature review so it has to be some critical review of literature” (BSc Natural Sciences).

- b) developmental by advancing the level of a particular skill (Biomedical Engineering , Archaeology)

“ One of the key things is . trying to get them to figure out how to frame questions as you go through and that’s obviously something you ramp up over the years not necessarily expecting them to walk in being able to pose their own questions but we certainly hope by the time we’ve got to the dissertation . you shouldn’t actually be having to (do it)” (BA Arch.)

## *Student and staff recording of the accumulation and enrichment of research skills*

- Mainly self assessment of skills development but not accredited e.g. BA Ed. Portfolio mixed student engagement
- MA Eng. The better students were aware of research development
- No systematic or ipsative approach to assessment to capture progress

- Research development not formally assessed

“They’re calculating how to get x % to get a first class degree ... “well actually your ability to synthesise, communicate make archaeology relevant should stand you in good very good stead for your interviews etc.” “oh I suppose so but if I don’t get the grade it’s not worth it is it? ” so it’s really interesting there’s this very clear tension there between . them really chasing that grade and wanting to play safe and our aspiration to actually (stretch them)” (BA Arch.)

# *Supporting the research development and self-regulation of all students*

- Who provides support?
  - For lab skills lab technician
  - PhD student
  - Personal tutor

“If the work in that individual scenario would be assessed and the tutor will kind of have a feel as to whether that particular student isn’t progressing, but we don’t have a formal way of looking at progression from one to the other . I don’t really know how we’d do that quite tricky . . I think within the small group you can manage that . informally fairly well . we do have a good sense of which students aren’t engaging or who struggle with group work.” (MEng/BEng Biomed.)

## More systematic support included

- Team meetings (BA Arch.)
- Students undertaking a summer research project and possibly publish (MEng/BEng Biomed.)

“ We catch that (student stress and mental well-being issues) partly by progress (at) these tutorial meetings .. that is actually linked to a progress system so actually after that meeting . we have a staff meeting which is purely looking at student progress where we go through every student and identify how they are doing . particularly if there is a problem.” (BA Arch. Interviewee 2)



# Further thoughts on RBE for a post-truth world

1. Research development framework
  - Judging evidence
  - Critical of sources
  - Asking useful questions

2. Identifying threshold research concepts and encouraging students master these through repeated assessment and feedback

Value ipsative assessment as well as outcomes assessment

3. Support for all students not just those who are earmarked to continue as researchers

– Emotional – allowing students to get it wrong many times

- Rewarding progress for all

# Being skeptical

Is there evidence that following a research throughline (RBE) enables students to reject misinformation and be less swayed by popular discourse in other contexts?

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