

Small Questions, Big Changes:

**A Personal Journey
Through the Scholarship of
Teaching and Learning**

Prof. Sam Nolan Ph.D., NTF, PFHEA &

Claude which was used to generate some of the Images





To Cover

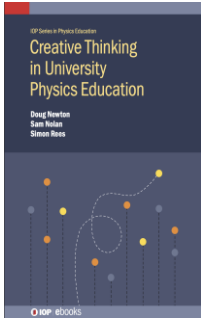
- My Background
- Learning to Use SOTL as a Change Agent at Different Levels
- The Future

Durham University Background

- Some Key Durham Facts:
- Town in North East England (pop 52,200).
- University is historic (founded in 1832), high-ranking (e.g. 3rd in UK in Times, 94th Globally in QS), University of the Year 2026
- Approx 22K students and 4.5K members of staff (approx. 1800 academic) spread across four faculties (Science, Social Science, Arts and Humanities & Business)



My



Crystal Bell's Inequality

Count Rate (Hz)		Coincidence Count Rate
Top	420	
Bottom	69	

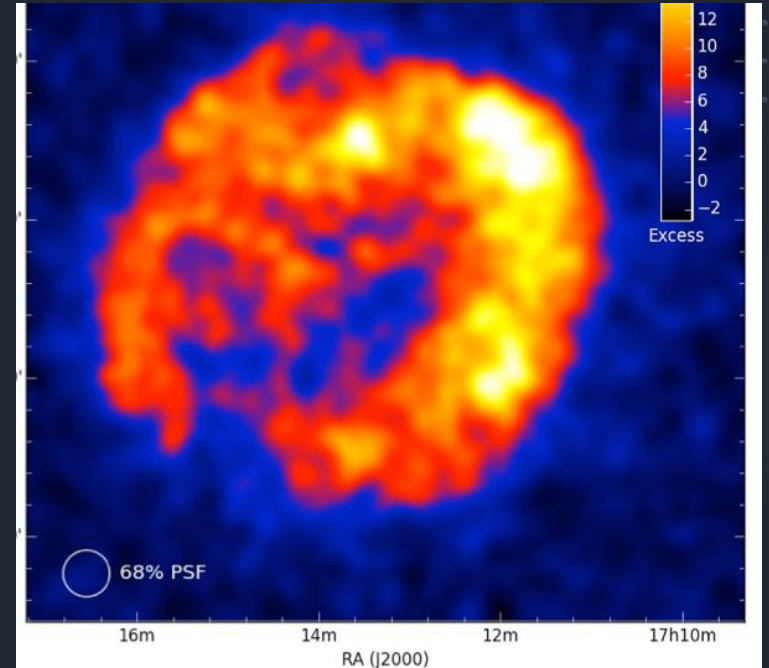
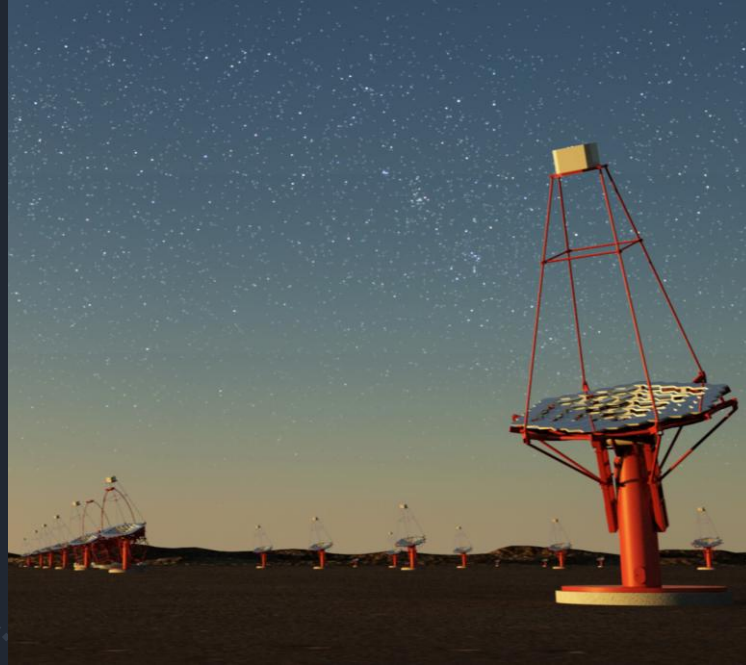
Q1 3.00 degrees Laser On/Off

Q2 6.00 degrees **LASER ON**

Goals
Maximise the coincidence count rate

- You can move the lower optics collector by dragging it.
- You can rotate it using the arrows.

[Back to Menu](#)



Durham v1 (1999-2010)

- PhD in Astroparticle Physics(1999-2002)
- NASA Fellowship (2002-2003) based in Purdue University, USA
- STFC PDRA Role (2003-2007)
- Associate Fellow in Astronomy (2007-2010)
- Deputy Lead Level 1 Lab (2007-2010)
- Funding Crisis in 2010



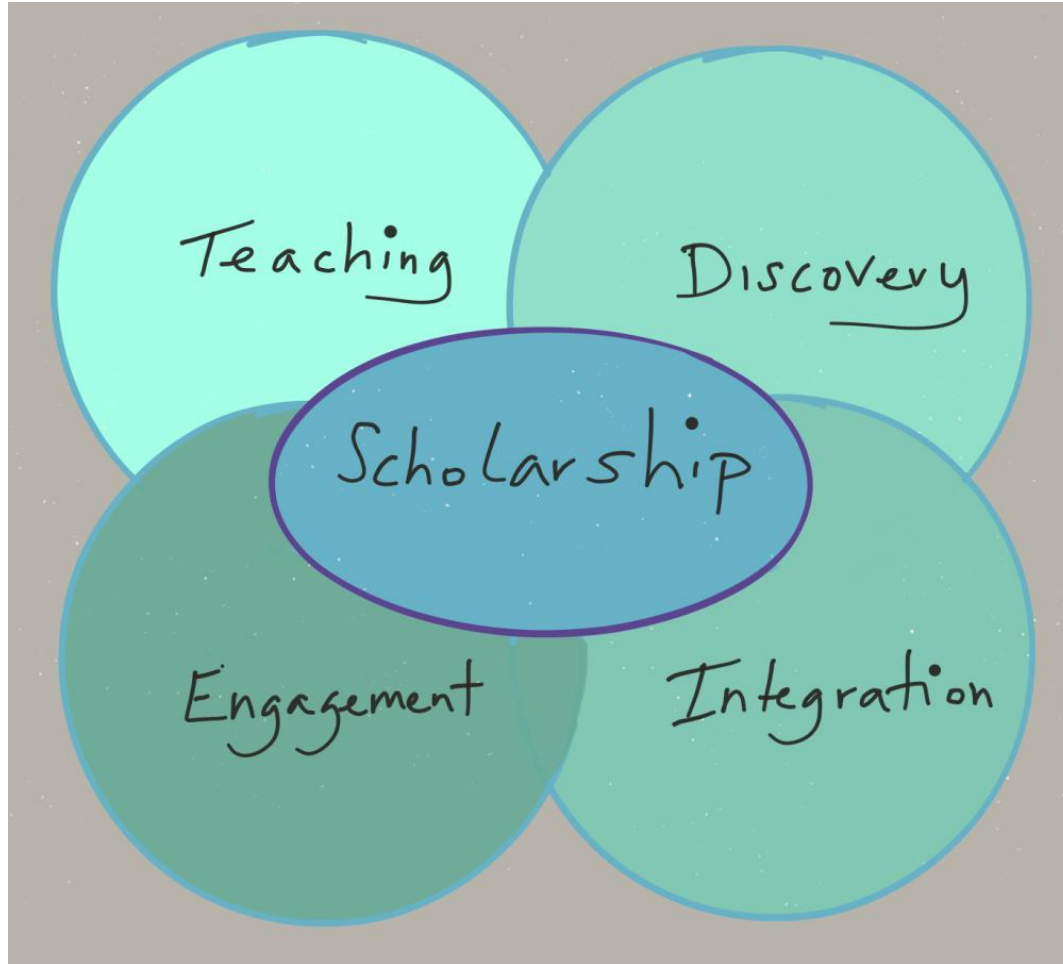
What to do you do
when you haven't got a
clue



Durham v2:
The
Foundation
Years (2010-
2015)

- Foundation Years offer 1 year of Study for students from Low Participation Neighbourhoods to join the degree programme without traditional A-Levels,
 - Barrow-in-Furness: about 13% of school leavers go to university.
 - Wimbledon: about 70% progress to university.
- Durham offers routes into most degree programmes through a Foundation Year
- As many Foundation students have jobs or caring responsibilities so classes were scheduled in blocks – mine were 4 hours each

Mentor -> Boyer's Four Scholarships



- **Discovery** – academic research
- **Integration** – synthesis and interdisciplinarity
- **Engagement** – scholarly service and consultancy
- **Teaching** – with the aim of improving knowledge of teaching and learning - SOTL

Listen

- Ran several focus groups with students to understand the issues they were having on the course
- Co-developed research solutions to each of these
- Sought Funding From a Variety of Sources to Support Each Project. Many supported through DU funding.
- Projects got bigger in scope Class->Program->Institution
- Ended up with around 8-10 student workers working with me and collaborators on projects each year.
- *My summer jobs were one of the most rewarding parts of my time at Durham University, and certainly gave me the most material for impressing job interviewers of any aspect of my time there. I walked straight into full time employment the Monday after finishing university and my time as a summer student was largely to thank.*

Katherine Hurst, Former Summer Student

- *Started to do similar activities 1 to 1 with colleagues and built a community of practice in SoTL, lead to publication of an edited volume on the work of Foundation staff.*





The Law of the Instrument

If all you have is a hammer, everything looks like a Nail – my first SOTL mistake

Force Concept Inventory

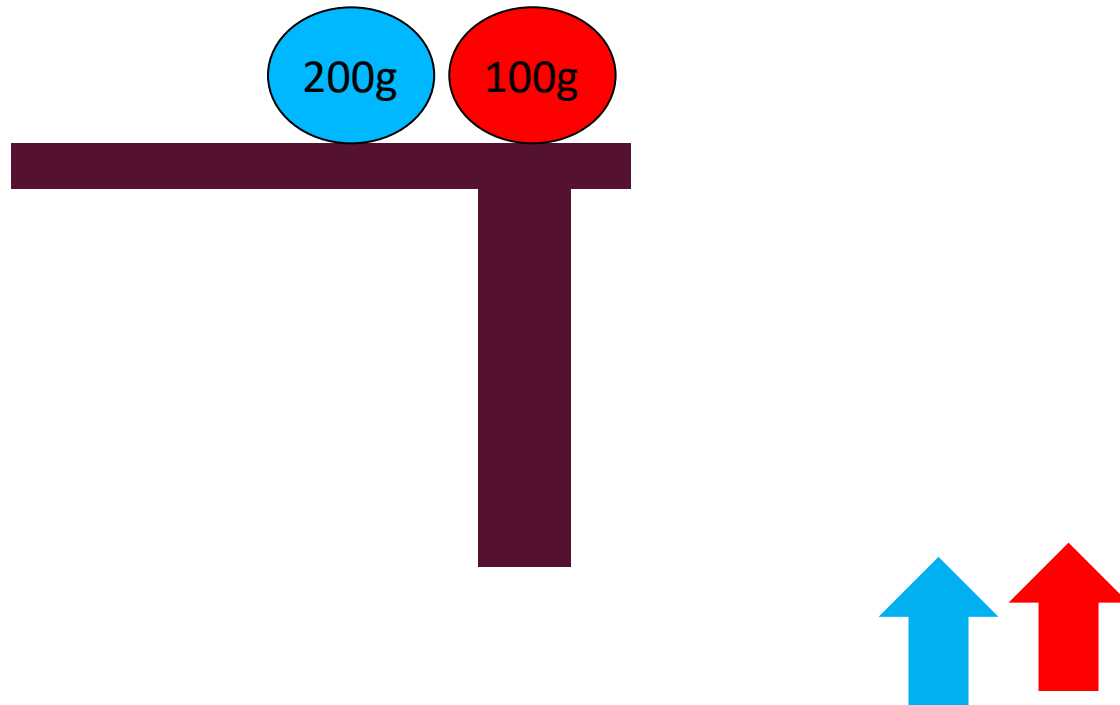
- The Force Concept Inventory (Hestenes et al. 1995) is the most frequently used diagnostic test for assessing conceptual understanding in physics:
 - Tested on > 250,000 students globally
 - Reliability checked
- It's been used to transform the way physics is taught in the US and to open up a debate on conceptual understanding in FE and HE.
- Its aim is to assess student understanding of the concept of Newtonian Force and the things most commonly misunderstood by staff (and students).

Conceptual Understanding

The two identical metal balls of different weights roll off a horizontal table with the same speed. In this situation:

- (A) the heavier ball hits the floor considerably closer to the base of the table than the lighter ball.
- (B) the lighter ball hits the floor considerably closer to the base of the table than the heavier ball.
- (C) both balls hit the floor at approximately the same horizontal distance from the base of the table.

Conceptual Understanding



The two metal balls of the previous problem roll off a horizontal table with the same speed. In this situation:
(A) the heavier ball hits the floor considerably closer to the base of the table than the lighter ball.

Conceptual Understanding

The two identical metal balls of different weights roll off a horizontal table with the same speed. In this situation:

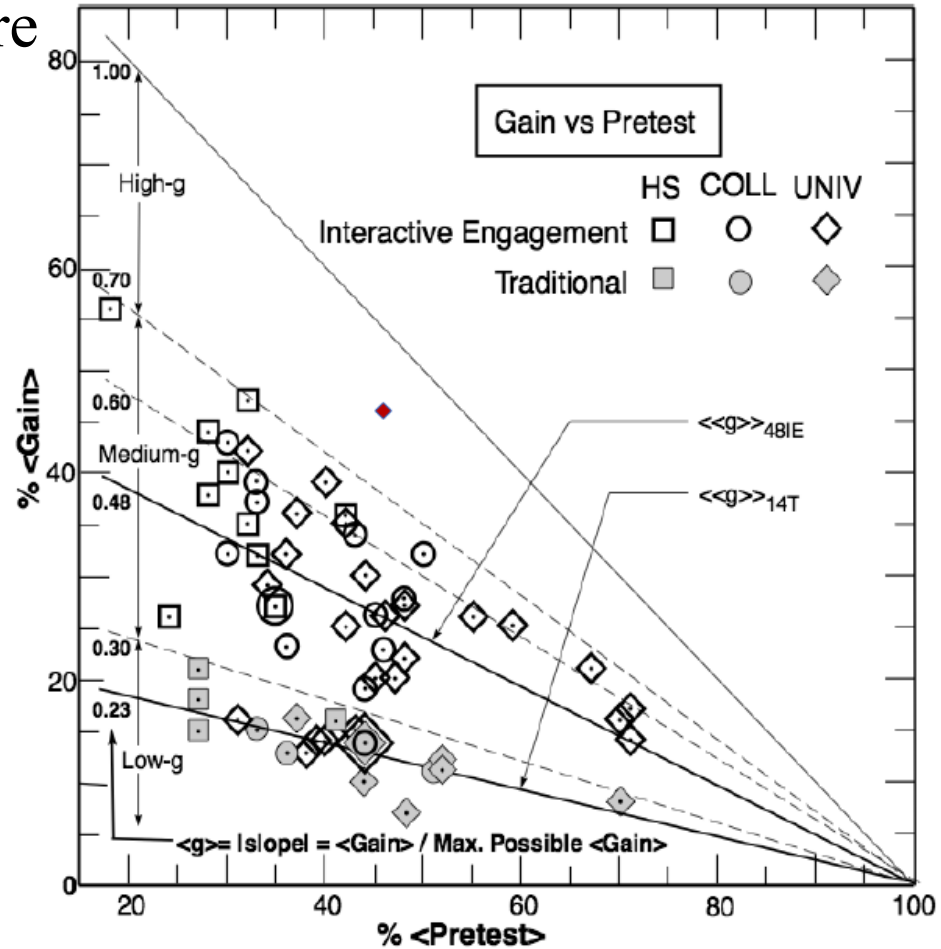
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Pre: 50-70% of Students Get This Wrong

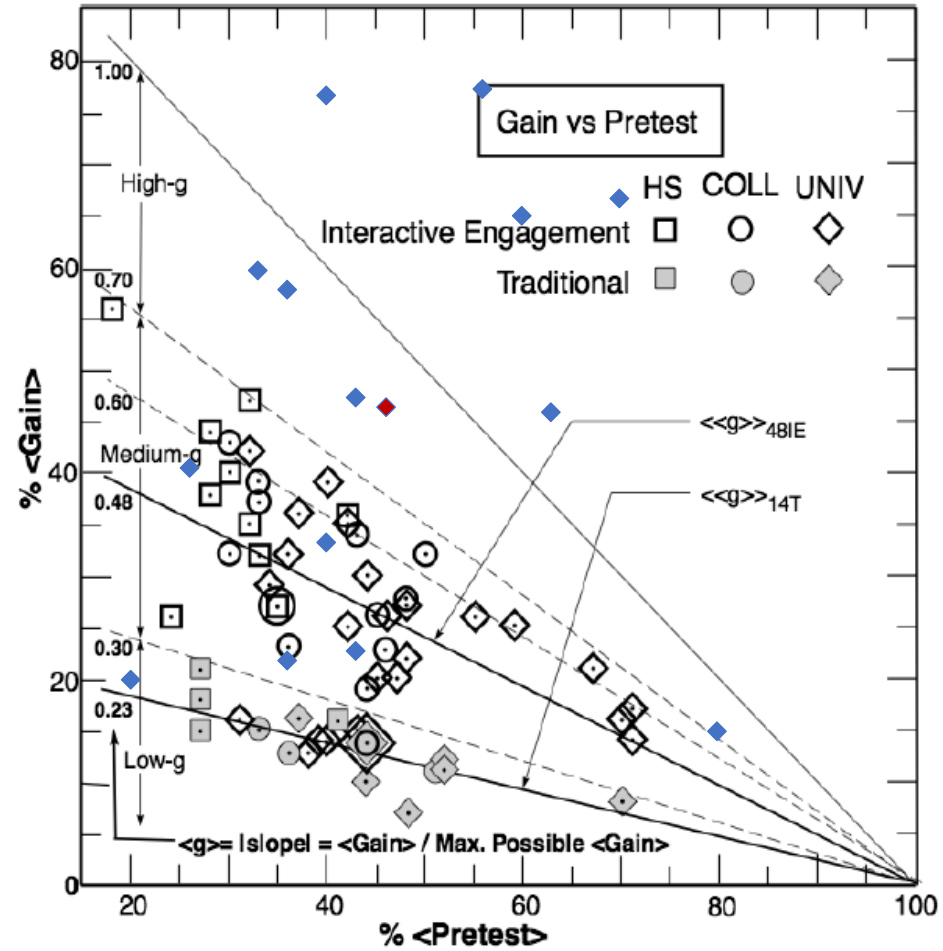
Post: 20-40% of Students Get This Wrong

How does this relate to game-changing American result ?

$$\langle g \rangle = \frac{\text{post} - \text{pre}}{100\% - \text{pre}}$$



$$\langle g \rangle = \frac{\text{post} - \text{pre}}{100\% - \text{pre}}$$



Mathias & Nolan (2013)



Toolkit

- Developing new ideas about what data is
- Learning how to pose a Research Question
- Learning how to get Ethics Approval
- Learning how to submit a different kind of funding proposal
- Learning how to evaluate qualitatively and reframing how you work quantitatively
- Learning that there is no precise answer and that people are complex

LEVEL 1

How can we
improve
laboratory
learning?



FOCUS

On what we do
in the lab

LEVEL 2

How can we
support students
joining University?



GUIDE

As they begin
their journey

LEVEL 3

How can we
raise the profile
of Education
within a University?




CONNECT

So Education is seen,
valued, and recognized

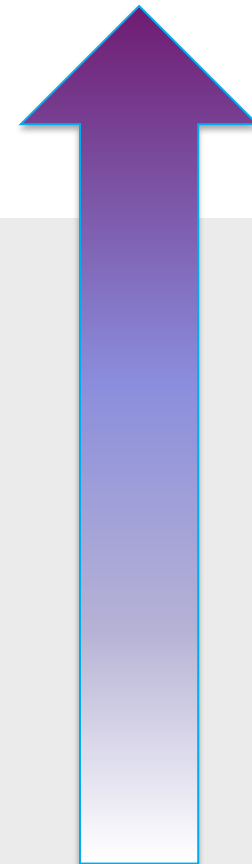
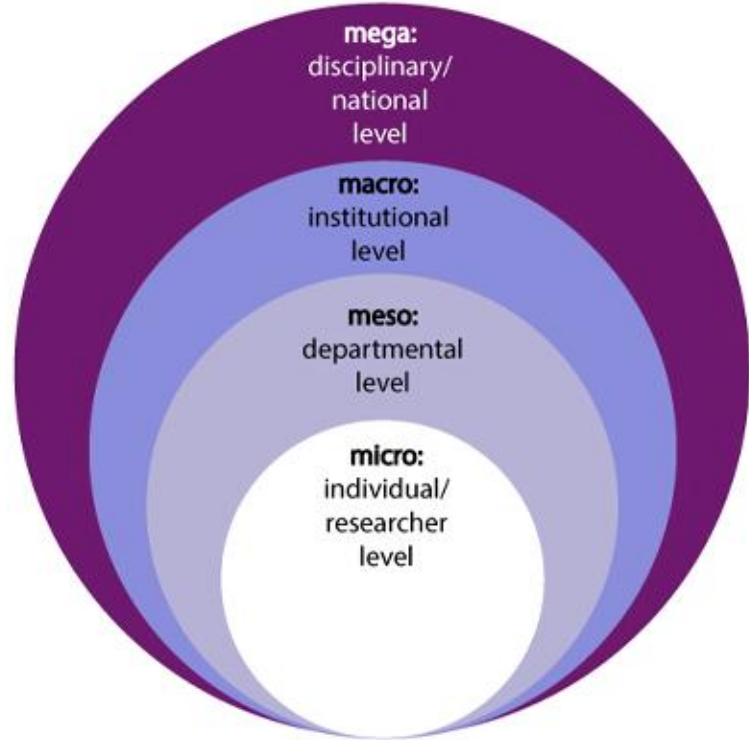
Teaching Focused Academic Staff Promotion Criteria at Durham

Durham criteria derived in consultation with staff, based on spheres of influence and stick broadly to the concept of educational “impact”:



Professor	<ul style="list-style-type: none">• Leadership of a professional network; editor of a scholarly or professional journal.• Winning a national excellence in teaching award;
Associate Professor	<ul style="list-style-type: none">• Produce scholarly pedagogic outputs and disseminate findings across the University and externally.• Success in external grant capture to support educational innovation and scholarly impact.
Assistant Professor	<ul style="list-style-type: none">• Holding an internal award (e.g. ESLE) to support educational innovation and scholarly activity.• Publication in a scholarly journal or relevant professional publication.

Developing SOTL – 4 M Model of SOTL – A Career Lifetime Pathway



Professor

Associate Professor (5-8 Years)

Assistant Professor (3-5 Years)

Assistant Professor (New Academic)

Is This Approach Entirely Successful ?



Is it for me ?

- People often struggle to engage with SoTL due to:
 - Lack of community within their discipline within the institution, e.g. lack of CoP locally
 - Holding an identity as a “teacher” or a “disciplinary researcher” not as a “SOTL researcher”
 - Taking on substantive leadership roles
 - Workloading, e.g. lack of time
- What helps success ?



Participants

- Reflective Case Study Examination from 3 Individuals Promoted to Professor on Education Track at Durham
- Data Initially Captured Through Podcast Interview Around the time of their Inaugural Professorial Lectures
- What is Presented Here Has Ethical Approval and Participants Permissions



21 OCT 2022 · S1 E1 · 45 MIN LEFT

Professor Simon Rees

Leadership in Learning and Teaching

▶ Resume



In this episode we meet with the first Education Track Professor to give an inaugural lecture at Durham University - Professor Simon Rees, Head of Academic Development at the Durham Centre for Academic Development. In conversation Simon explores his career, teaching, scholarship and leadership choices. A transcript for our discussion is available [via this link](#).

[Episode Website](#)

Information

Show
[Leadership in Learning and Teaching](#)

Frequency
Every two months

Published
21 October 2022 at 11:39 am BST

Length
46 min

Discovery of SoTL

“

*I was completely out of my depth. Mentoring saved me. He said: your research skills, your grant writing, your understanding of technology — you can still use them. **Have you heard about SoTL?***

— participant reflection

All three encountered SoTL together — and pointed to the same enabling conditions:

■ Training

■ Funding

■ Mentor from Education

■ Departmental support & time

■ Cross-disciplinary collaboration

■ Grant-writing experience

From career to chair

THE CAREER-BUILDING MOVES

- 01** Network internally — then beyond
- 02** Work across disciplines
- 03** Build grant-writing skill
- 04** Publish books & papers with confidence
- 05** Own a professional identity in SoTL

GAINING THE CHAIR

FROM

An inbuilt feeling of imposterism



TO

Owning the promotion. telling their story and helping the next generation.

The Education Lab

- A new approach to offer consultancy and support to the University in Teaching, Learning and Assessment through:
- Research Groups
 - Creative Pedagogies, Digital Learning, Leadership in HE
- Training and Development in Research Methods – developing new PGCERT/MA
- (Inter)national Collaboration
- Conferences – e.g. VR in 2021, AI in 2023, ESLTIS
- SOTL Training
- Internal Grants and Awards



Enhancing Student Learning Through Innovative Scholarship Conference

A Conference for all UK Teaching Focussed Staff in Higher Education

[Registration](#) [Keynotes](#) [Call for Papers](#)
[Organisers](#) [About](#)



We invite contributions that explore how teachers are responding—practically and purposefully—to the multiple disruptions currently reshaping higher education.

Examples – AI in Teaching, Learning & Assessment



- Suite of projects exploring initial uses, including:
 - Using AI Chatbots to support students laboratory learning
 - Exploring students use of AI in Language Learning
 - Exploring how AI can support neurodivergent students
 - Exploring AI as an academic tutor to facilitate critical thinking in the Biosciences
- Several nominated for QS Reimagine Education Global Awards

Generative AI Advice in a rapidly changing world <https://ai.webspace.durham.ac.uk>

Puzzled by all the hype?
Start with our guide to everything AI
[What is genAI?](#)

Learning
How to use generative AI in your studies without falling into the trap of offloading your thinking

Teaching
How to use generative AI to help you teach - and what to tell your students!

Research
How to use generative AI to help you in your work, without compromising your data or integrity

Process
How to use generative AI to help automate tasks, provide insights and simplify processes

Managing
Questions you should ask people before rolling out generative AI tools across the workplace

Teaching Focused Academic Staff Promotion Criteria at Durham

Durham criteria derived in consultation with staff, based on spheres of influence and stick broadly to the concept of educational “impact”, examples include:




<h2>Professor (29)</h2>	<ul style="list-style-type: none">• Leadership of a professional network; editor of a scholarly or professional journal.• Winning a national excellence in teaching award;
<h2>Associate Professor (58)</h2>	<ul style="list-style-type: none">• Produce scholarly pedagogic outputs and disseminate findings across the University and externally.• Success in external grant capture to support educational innovation and scholarly impact.
<h2>Assistant Professor (120)</h2>	<ul style="list-style-type: none">• Holding an internal award (e.g. CIG) to support educational innovation and scholarly activity.• Publication in a scholarly journal or relevant professional publication.

LEVEL 1

How can we
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 **FOCUS**
On what we do
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 **CONNECT**
So Education is seen,
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LEVEL 4

How should we
**lead change
in Higher Education?**



 **SHAPE**
Influencing the future
of the system

Programme Leaders

A programme lead is responsible for the running of a degree program, such as an undergraduate or masters degree

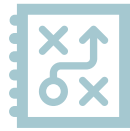
They lead on the day to day management of staff teaching on the programme, changing its curriculum design and ensuring it runs successfully.

They usually have no line management responsibilities and are a member of academic staff in the role for 3 years, so need to lead utilizing soft power.

They are almost always leading a change.

They weren't recruited to be leaders, so development and support in this space is critical

Leadership in Learning and Teaching



6 Day Course, taken by up to 20 Programme Leads. Its objectives are:

Explore from a strategic to an operational level the development of inclusive, innovative programmes in learning and teaching

Develop skills in embedding sustainable change with taught programs.



Individuals are nominated by their Head of Department, as they are leading (or about to lead) a significant change in their curricula



We utilise active learning, mentoring and Action Learning Sets as primary modes of participant support



Each of the 6 days involves an external guest speaker (themselves a education leader at another institution) who focuses on a particular topic



This Study

- We gained ethical approval and have conducted 1-hour interviews with 12 former participants in the program to explore:
 - The quality of the support offered by the Leading Learning & Teaching Course
 - How they led their change project and how they measured its success
 - The challenges and opportunities of leading change in a University Environment
- The aim of this study was to explore the question what helps and what hinders leading change in learning and teaching in the context of the University ?

**Explaining
Phenomenography**

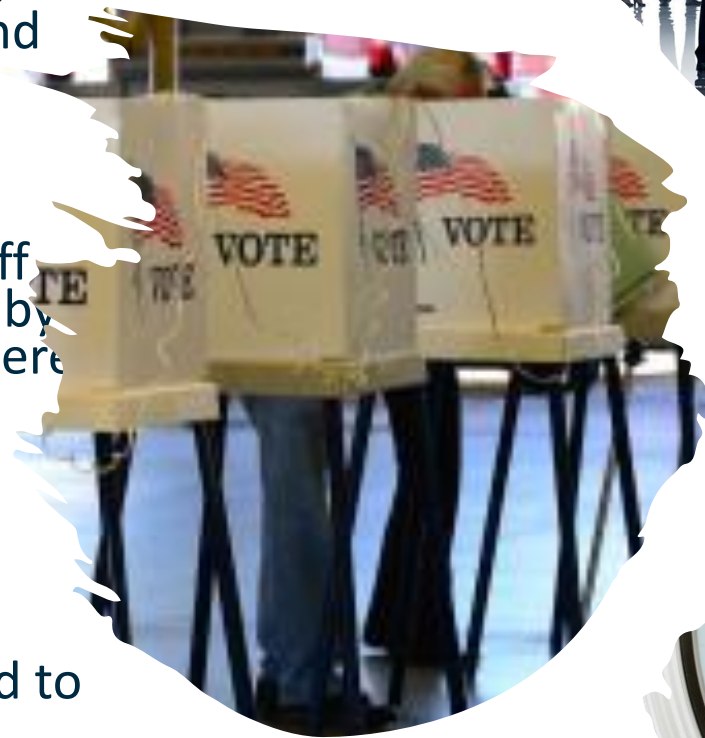


Leading Change – Most Important Factor

“I think to really understand what the benefits are and then communicate those out to people. Especially in university there's lots of demands on people's time and there's lots of other changes and things happening and there's lots of competing priorities.”

“The Departmental Board, which all academic staff take part in approves things, but doesn't approve by vote. Basically it approves by consensus, so are there any objections? This is often how things are questioned and derailed, it never votes”

“You've got to have the support from the management above you, but then its about consultation and buy-in and those would be linked to each other. So I think giving people the sense of ownership and input into the changes that we're doing.”



Clustering of Differing Perceptions

Motivation to Engage in Leadership		
Perception of their own Workload		
Perceptions of Consulting on Change		
Perception of Autonomy		

Clustering of Differing Perceptions

Motivation to Engage in Leadership	CV/Promotion	Curiosity and Feelings of Duty
Perception of their own Workload	My Burden	Shared Burden
Perceptions of Consulting on Change	My Vision	Co-Create a Path
Perception of Autonomy	Powerless	Broker & Advocate

Clustering of Differing Perceptions

Motivation to Engage in Leadership	CV/Promotion Intrinsic Motivation	Curiosity and Feelings of Duty Extrinsic Motivation
Perception of their own Workload	My Burden Self Interest	Shared Burden Community Interest
Perceptions of Consulting on Change	My Vision Exclusive Vision	Co-Create a Path Inclusive Vision
Perception of Autonomy	Powerless Passive	Broker & Advocate Agentic

“I Must Do This”



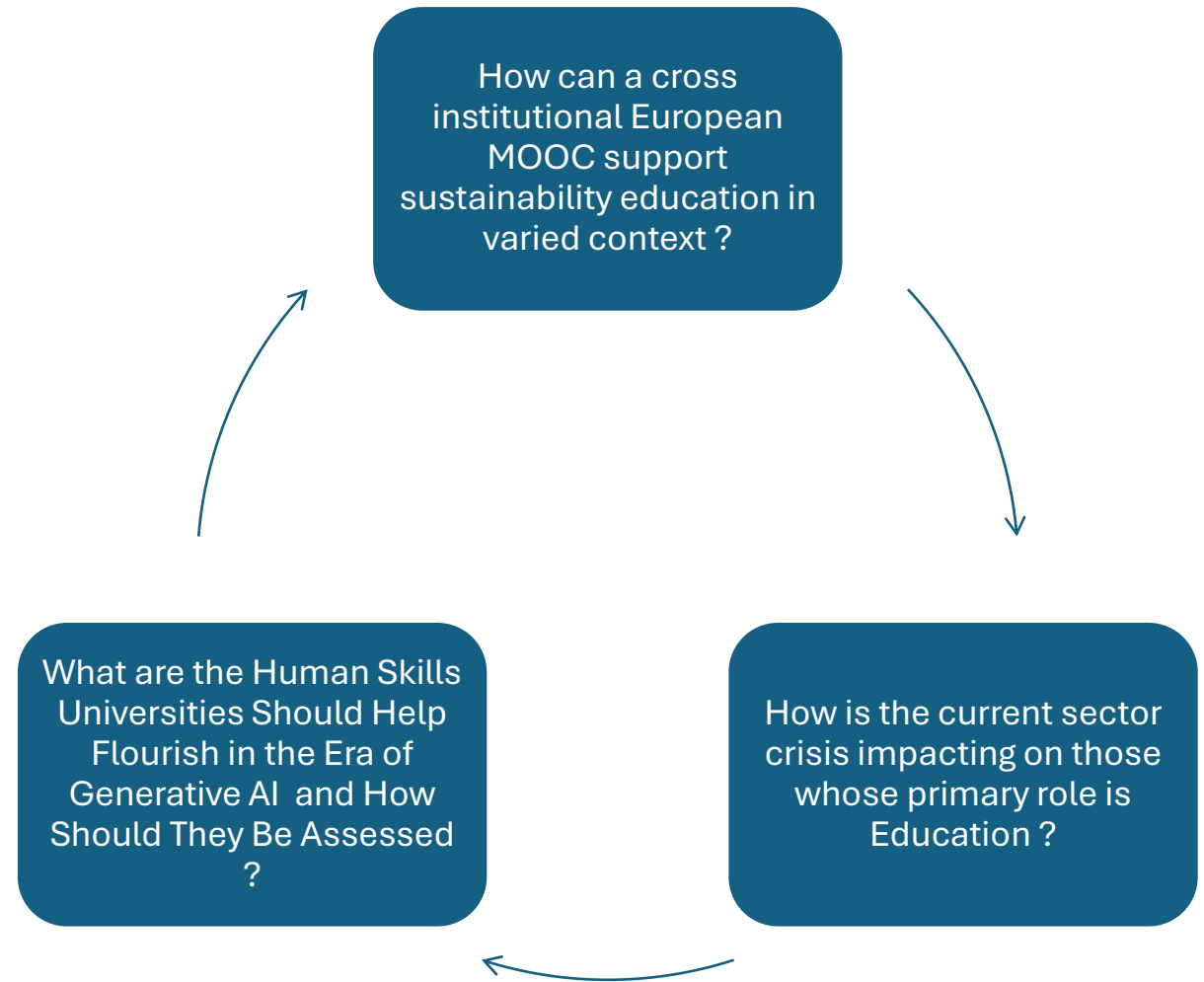
“We Can Do This”

From Pushing Change to Leading Change



Collaborative Leadership Emerges Here →
Alignment • Networks • Shared Values • Credibility

Next Questions For Me to Explore



Conclusions

- Start Small with Your Own SOTL
- Never be limited by your own personal horizon
- Mentoring is Key
- Partner:
 - With Advocates
 - With Colleagues
 - With Students



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Learn More Here:

<https://www.dur.ac.uk/dcad>