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Undergraduate Research: Supporting teaching and learning and developing graduate attributes

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Learning 2020 Best Practice
UWE Bristol , 29 January 2016



Learning 2020
Best Practice

Share. Explore. Discuss.

Who are we?

Harry West

3rd Year Geography Undergraduate, PAL Intern, LTSE Rep and Researcher



Marcela Usmari Moraes

3rd Year Biomedical Science Undergraduate, Researcher and Sci Tech Editor for WesternEye



Jenny Hill

Associate Professor, Geography Department



Presentation outline

1. Why engage your students in research?
2. Mapping opportunities – how to engage your students in research
3. Benefits of student research engagement
4. Example of student research engagement at UWE: BCUR
5. Challenges of student research engagement
6. Implications of student research engagement
7. Conclusions – link to UWE Bristol Futures Award

1. Why engage your students in research?

‘Undergraduate research is the pedagogy of the twenty-first century’

(CUR, 2005)

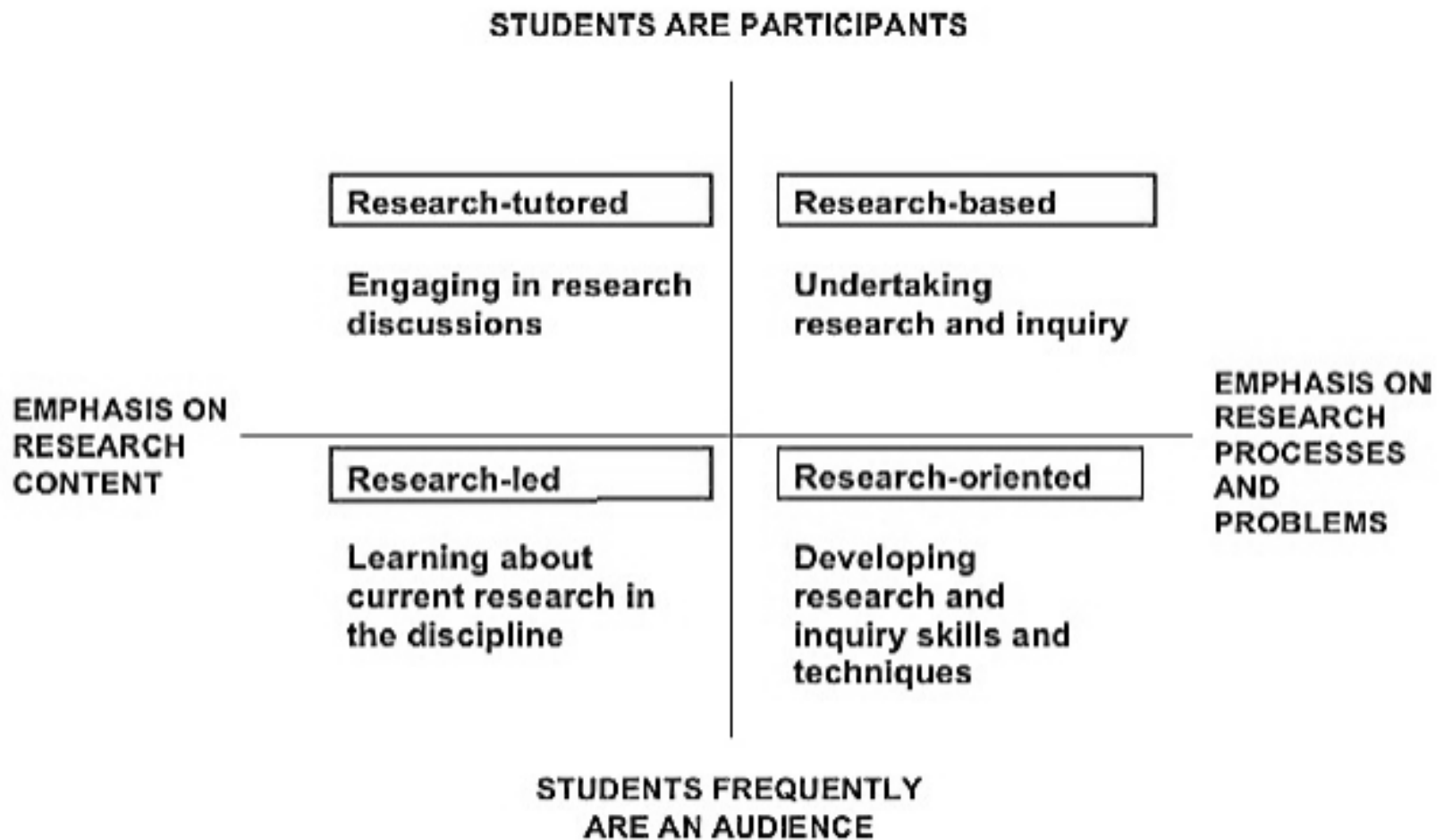
but

- undergraduates believe themselves to be recipients rather than producers of research (Healey & Jenkins, 2009; Hill et al., 2011)
.....
- whilst recognising that they will develop their research skills most when they are actively engaged in the research process
- tension needs resolving – see also BIS (2015)

2. Mapping research opportunities

- a key goal is how to adopt strategies that enhance the relationship between teaching and research ... and between teacher and researcher
- in particular, how and where should undergraduate students actively engage in research ...
 - individually, in groups, with staff?
 - in the curriculum, outside of the curriculum?

Figure 1.1: The nature of undergraduate research and inquiry



Source: Amended from Healey (2005, 70)

Figure 1.1: The nature of undergraduate research and inquiry



Source: Amended from Healey (2005, 70)

Break out activity 1

- In small groups:
 - introduce yourselves / your interest in students as researchers
 - on individual post-its, note examples of how you **have** engaged your undergraduate students in research AND how you **might like to** do this in future
 - share an example with us
 - hand the post-its to us for collation

(10 minutes)

3. Benefits of student research engagement

*‘Research promotes “active student-led learning”; promoting better retention and reinforced subject **knowledge**’*
(Chung & Chow, 2004)

*‘Practicing research gives students an insight into the “real” research **process**’*
(Jenkins et al., 2003)

- research is a **high impact educational practice** (Kuh, 2008)

Develops **graduate attributes**:

‘skills, knowledge and abilities of university graduates, beyond disciplinary content knowledge, which are applicable to a range of contexts’

(Barrie, 2004)





... and **self authorship** (Baxter-Magolda 2004):

As students become self authors they are able to:

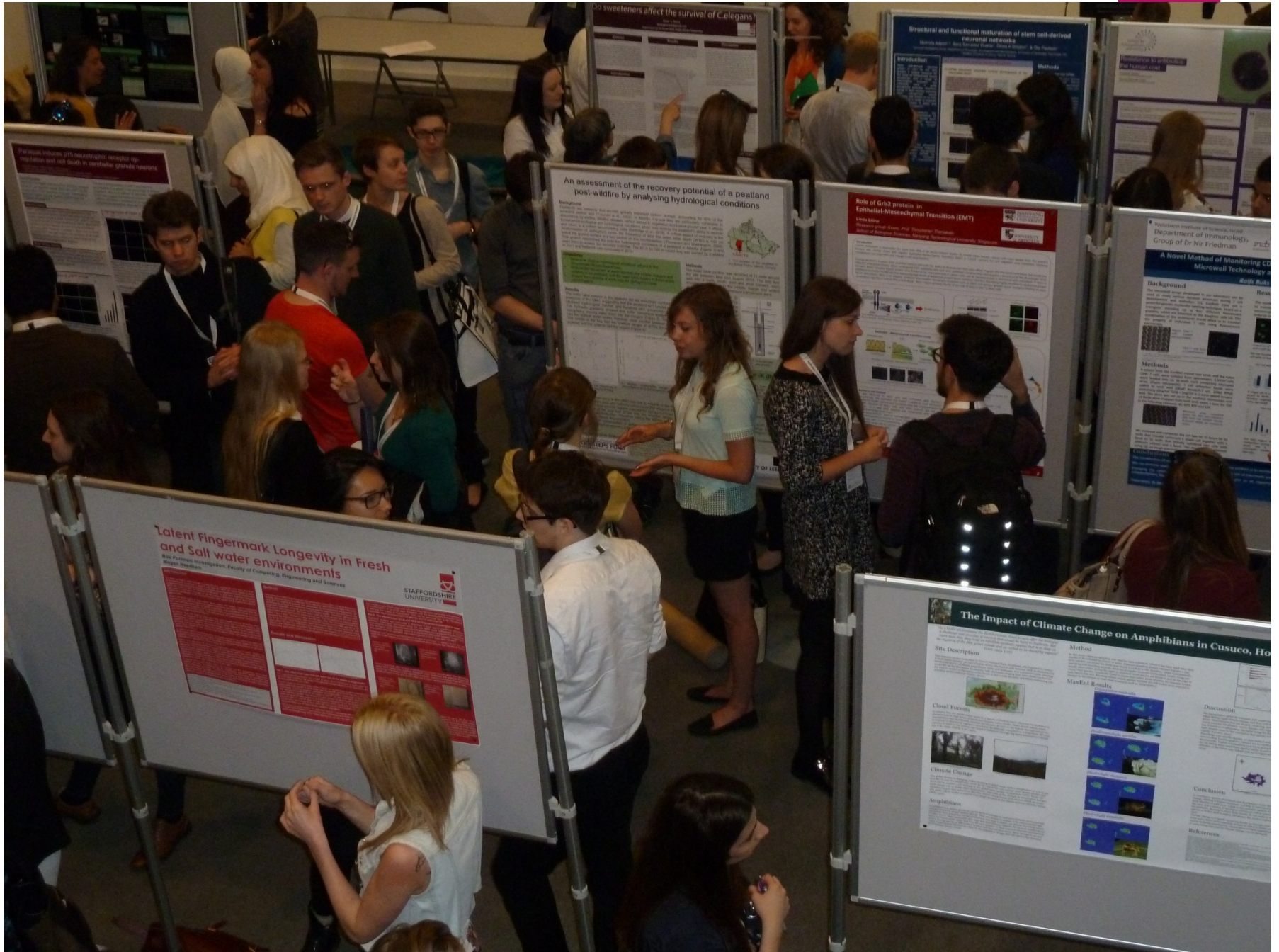
- Consider who they are
- Consider what they know and how they came to know it
- Reflect on and judge the suitability of their knowledge as applied in particular contexts
- Be able to reframe their knowledge purposefully for different contexts

4. Example of student research engagement

- we have researched how participation in BCUR by undergraduate students has developed their **graduate attributes** (Hill & Walkington, 2016)
- BCUR provides a threshold experience for development of self authorship



BCUR BRITISH
CONFERENCE OF
UNDERGRADUATE
RESEARCH



Parasitic induces p75^{NTR} neurotrophin receptor up-regulation and cell death in cerebellar granule neurons

An assessment of the recovery potential of a peatland post-wildfire by analysing hydrological conditions

Background: Peatlands are important carbon stores and water reservoirs. Following the loss of the peat surface, the peatland is at risk of becoming a source of greenhouse gases. An understanding of the recovery potential of peatlands after wildfire is essential for the development of peatland restoration strategies.

Methods: Hydrological data were collected at 12 peatland sites in the UK, including peatlands that have been affected by wildfire. The data were analysed to determine the recovery potential of peatlands after wildfire.

Role of Gln3 protein in Epithelial-Mesenchymal Transition (EMT)

Lead Author: Dr. [Name]

Address: [Address]

Introduction: Epithelial-Mesenchymal Transition (EMT) is a process by which epithelial cells lose their cell-cell contacts and become highly migratory, mesenchymal cells. Gln3 is a transcription factor that is involved in EMT.

Methods: [Methods]

A Novel Method of Monitoring CD4 MicroRNAs Technology

Background: CD4 MicroRNAs are small non-coding RNA molecules that regulate gene expression. They are involved in various biological processes, including immune response.

Methods: [Methods]

Latent Fingermark Longevity in Fresh and Salt water environments

Staffordshire University

Abstract: [Abstract text]

Introduction: [Introduction text]

Methods: [Methods text]

Results: [Results text]

Conclusion: [Conclusion text]

The Impact of Climate Change on Amphibians in Cusuco, Ho

Site Description: [Site Description text]

Method: [Method text]

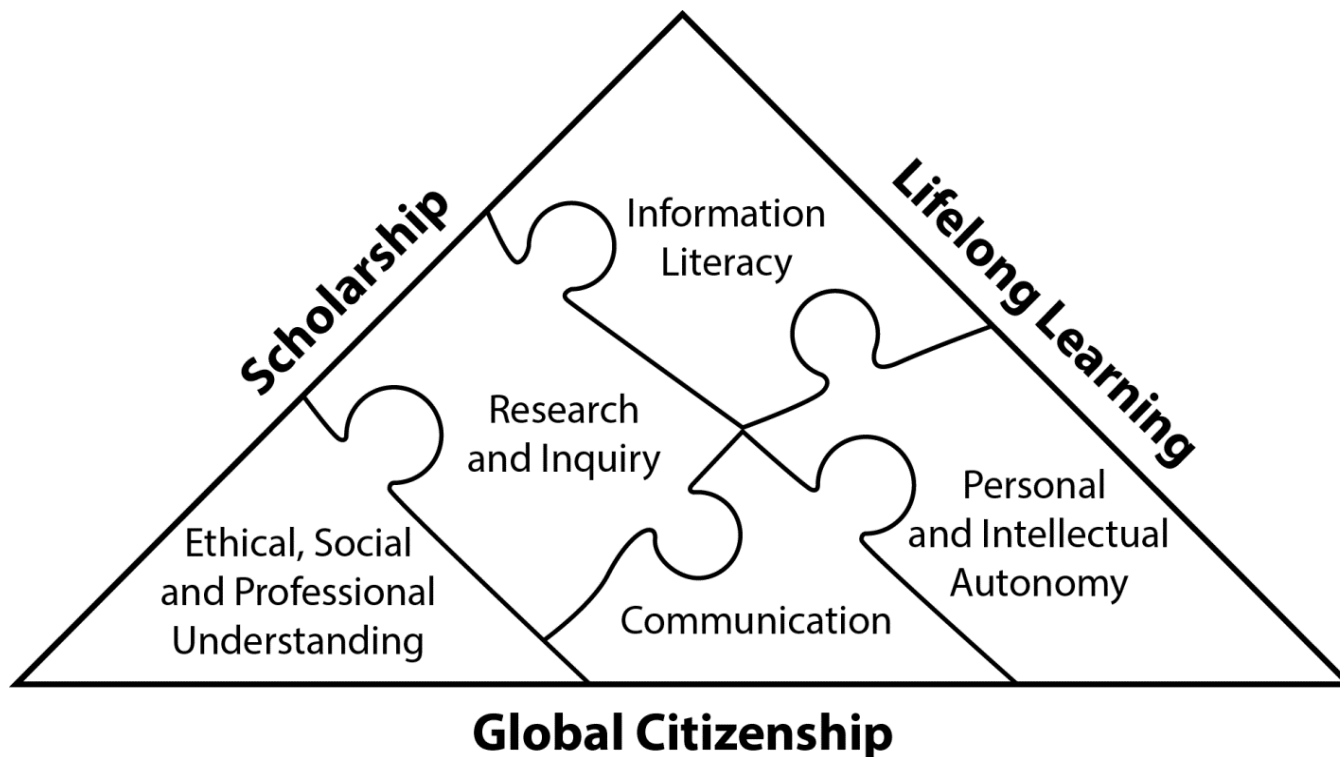
MaxEnt Results: [MaxEnt Results text]

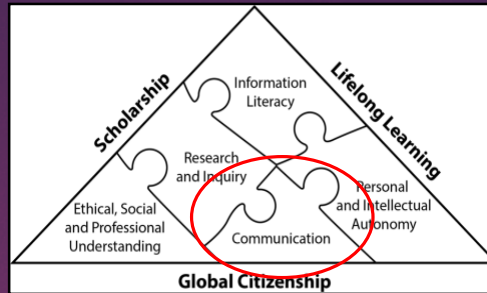
Discussion: [Discussion text]

Conclusion: [Conclusion text]

References: [References text]

- we adopted the conceptions of generic attributes model (Barrie 2004) to evidence engagement with GAs





1. *Communication*

- students mindful to convey their key messages clearly to a diverse audience and to keep audience engaged
- acutely aware of thinking critically, to **re-purpose** their research for a multi-disciplinary external context:
 - summarising content:

*‘after doing a dissertation, **condensing 16,000 words onto a side of A1 was quite challenging**, but also it **really makes you own your research**, because you can't abbreviate that much without really **having a firm understanding** of what you're talking about’ R18*

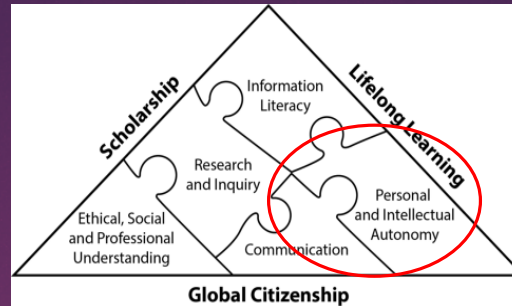
- organising a global structure

*‘It was a case of **going back** through my reading ... **breaking it down into kind of more bite-size chunks** and making what I’d written more **accessible for a wide audience**’ R6*

- Clarifying subject-specific terminology

*‘this was **presenting to people with a wider range of topics** and I think it was quite **important to make sure that I didn’t use jargon** and hide behind long words that people might not understand’ R22*





2. *Personal and intellectual autonomy*


- students evidenced self-regulation in BCUR preparations
- demonstrated a process of preparation, rehearsal, solicitation of feedback, and subsequent development of presentations

*'I did about **three or four trial runs in front of people and I also did them on my own in my head.** We had practise sessions with a couple of tutors, which gave feedback'* R20

- students who presented posters, or who received relevant questions about their oral presentations learnt to negotiate and verbally organize their thoughts in real time

'I understand something when people come and ask me lots of questions about it and I have to re-explain it. It really clarifies things in my own head - it's one of the ways I learn best' R21



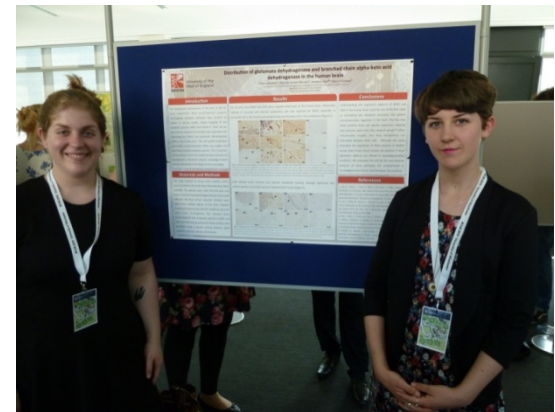
- 
- students noted the opportunity to present their work unconstrained from formal grading, judged by ‘genuinely interested’ peers
 - BCUR not constrained by high stakes assessment, allowing freer expression of identity and argument:

*‘Here you’re [presenting] for a completely different reason compared to university. **At university you’re doing it with the mindset that you’re going to be marked and you have to meet all these different criteria**, whereas **here** it’s more for the enjoyment and because you want to do it - **it’s your own piece of research, you feel proud of that and you want to express it ... I learnt a lot more about myself as a person**’ R1*

- BCUR students expressed uncertainty as to what they were letting themselves in for

but ...

- encountering unfamiliar contexts, diverse audiences and externally referenced benchmarks ...
- they reassessed their knowledge, understanding and conceptions of self to develop potential graduate professional identities





*'I never expected the sheer **enjoyment** and **affirmation** that I have taken from those two days in Nottingham: to be surrounded by peers with the same kind of **passion for ideas and discovery** that I have was very exciting'*

(Graig Evans via Lingo Blog April 2014)

*'It was a privilege and an **amazing opportunity to see other students' research**. This will certainly be **added to my CV**, but most importantly will be marked as **another great chance I have had by deciding to come to UWE** - which, to be fair, was the best I ever made'*

(Marcela Usmari Moraes via email to JH April 2015)

Break out activity 2

- In small groups, note on individual post-its what worries you most about engaging your undergraduate students in research (on their own/with you)



- What can you do individually, with colleagues, or with departmental/faculty/university support to overcome these issues?



5. Challenges of research engagement

1. Should universities adopt an **elite** model or should research be **mainstreamed** for all?
2. How do/will students cope with the personal vulnerability of independent research ... and publication?
3. To attain research partnership between staff and students how do we de-stabilize traditional power relationships?

4. How do universities sustain research initiatives e.g. BCUR, Posters in Parliament, internships, ug research journals? (Hattie & Marsh, 1996)



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Establishing Depositional Coastal Landform Development through Particle Characteristics: A Case Study of the Marshland at Budleigh Salterton, Devon

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Contact email: harrywest@googlemail.com


October 2015

Abstract

Understanding the physical processes of the past is fundamental to our current understanding and management of the coastline. Depositional landforms, such as back-barrier marsh, are at particular

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For further details please contact:
Dr. Helen Walkington (hwalkington@brookes.ac.uk)

Undergraduate researchers presenting at Posters in Parliament

5. What are the ethics of co-research and co-publication?

6. Implications of research engagement

- we must encourage students to situate themselves in unknown, 'other', challenging spaces within/beyond curricula throughout their learning journey
- we define such spaces as **borderland**, prompting the fashioning of new identities (Hill et al., 2016)
- responsibility for staff to encourage inclusivity, particularly for those lacking cultural capital (Felten et al., 2013)
- enhanced through UG research conferences in universities, faculties or depts

7. Conclusions

- synergies between T&R must be reflected at grass roots level, in course design and teaching commitment / delivery
- requires co-ordinated evolution of institutional policies and appropriate recognition and reward for staff and students

‘TEF should reward teaching practices that provide an appropriate level of contact and stimulation ... effective in developing their knowledge, skills and career readiness’

‘mutual benefits between teaching, scholarship and research’

(BIS, 2015: p. 32)

Including student 'research portfolios' in the UWE Bristol Futures Award

For any academic staff able to offer/ interested in developing similar activities:

- 1. Contact your Senior Faculty Careers Consultant to arrange a meeting to talk through where your activity might be included and the verification process**



2. Activities should meet the following criteria:

- Have a clear link to the development of employability skills and attributes
- Require a minimum of 25 hours to be spent on undertaking the activity, including training where necessary
- Be verifiable – due to the inclusion on the HEAR all activities must be verifiable and this process will be agreed for each activity before inclusion in the list
- Where possible a link is provided to a relevant webpage for students to find further information

Thank You For Listening



Questions?

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