

# UCL Connected Curriculum: How to make an impact on education in your department

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Connected  
Curriculum



# **Make an impact on your education**

## **Connecting research and education**

- Vincent's experience
- Your experience?

## **UCL Connected Curriculum**

- UCL's commitment to research-based education
- Ways to make an impact on education in your department

# Connected with people in my department?

90 SESSION VII (1/3)  
 c) Operating the vacuum system

1) Close all valves  
 2) Start pump  
 3) open valve V2 carefully so that air movement doesn't disturb the etalon.  
 4) when system evacuated close V2, switch off pump & open V1 so that the pump sees atm. pressure.  
 5) Allow pressure to  $\uparrow$  using V2 or V3 while readings are taken.

Results:  
 Three diameter readings were made for each order.  
 Notice that we could only measure radii as the grat. rule is not long enough to cover the full field of view.

Error =  $\frac{\sigma}{(n-1)^{1/2}}$ ,  $n=3$   
 Error in  $D^2 = 2 \times \text{Error in } D$

Order $m$	Diameter (3 readings) / mm	mean $\pm$ standard dev / mm	$D^2 \pm \text{err}$
1	7.1, 7.3, 7.1	$7.2 \pm 0.1$	51.8
2	9.7, 9.6, 9.7	$9.67 \pm 0.03$	93.5
3	11.8, 11.9, 11.8	$11.83 \pm 0.03$	139.9
4	13.5, 13.4, 13.5	$13.47 \pm 0.03$	181.4
5	15.1, 15.0, 15.2	$15.10 \pm 0.1$	228.0
6	16.5, 16.4, 16.5	$16.47 \pm 0.03$	271.1
7	17.8, 17.7, 17.7	$17.73 \pm 0.03$	314.5
8	18.9, 18.9, 18.9	$18.9 \pm 0.0$	357.2

The plot is on p 92, and the calculation of  $\lambda$  is as follows (from computer analysis)  
 Upper gradient = 44.3      Upper intercept = 7.5  
 Lower gradient = 43.7      Lower intercept = 6.0

Mean gradient =  $44.0 \pm 0.3$  mm<sup>2</sup> per order  
 Mean intercept =  $6.75 \pm 0.25$  mm

Gradient =  $4\lambda f^2 / nt \rightarrow \lambda = \text{gradient} \times \dots$

$\lambda = 44 \text{ mm}^2 \times \frac{1.0 \times 2.38125 \times 10^{-3} \text{ m}}{4 \times 200 \text{ mm}}$

$\lambda = 655 \pm 18 \text{ nm}$  (NB The correct  $\lambda = 643$ )

Estimate of the intercept on x-axis:  
 $\rightarrow$  when  $D^2 = 0$ ,  $m = -0.17 \pm 0.03$   
 For using the formula  $m = 2t/\lambda$ , we have  $n$

The ratio is no point for comparing the two values of  $\lambda$ .



# Connected with people in my department?

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5) Allow pressure to  $\uparrow$  using V2 or V3 when taken.

Results:

Three diameter readings were made for...  
Notice that we could only measure radii as the tube is not long enough to cover the full field of view.

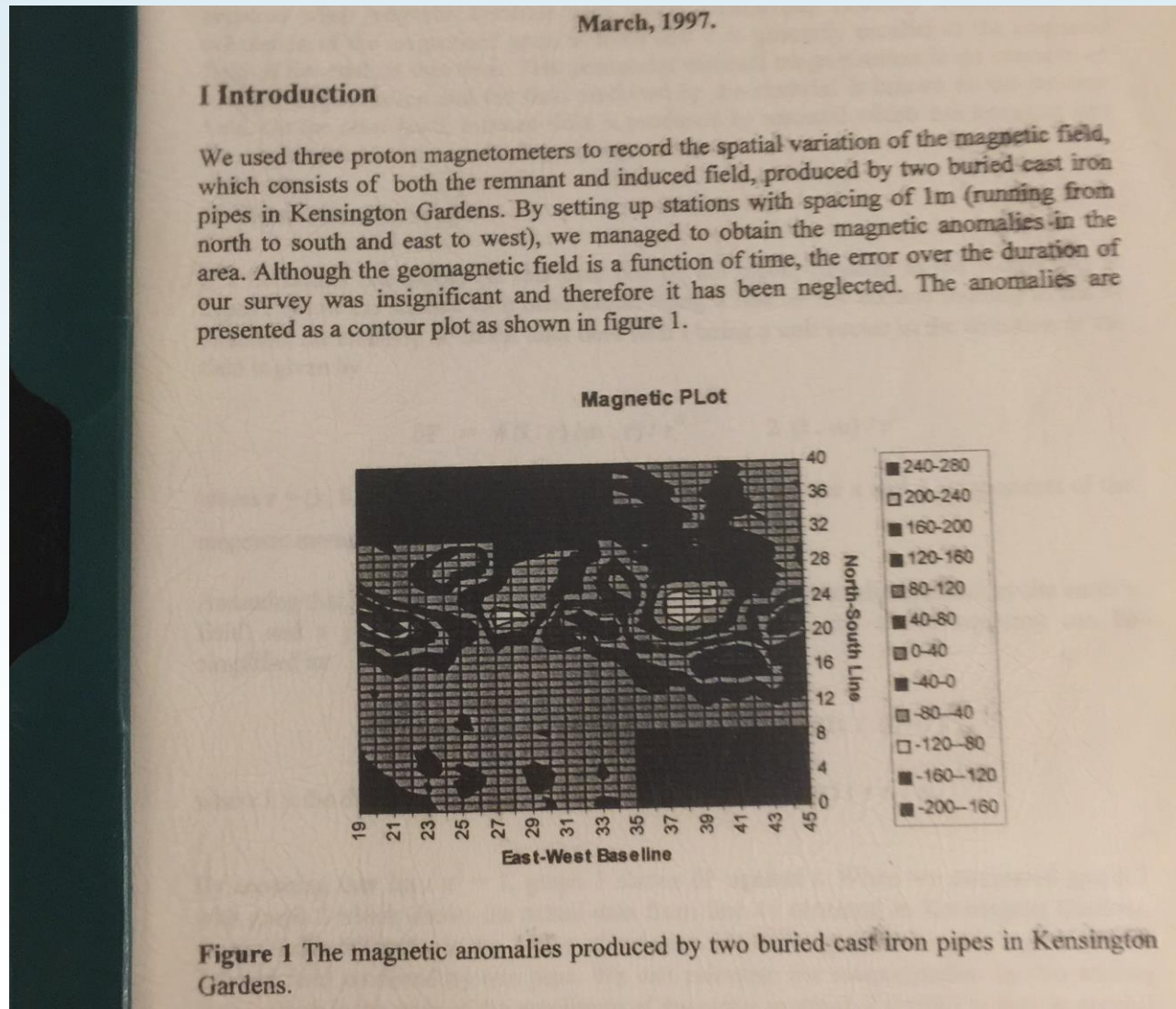
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• Error in  $D^2 = 2 \times \text{Error in } D$

Order m	Diameter (3 readings) /mm	mean $\pm$ standard dev/mm	$\bar{D} \pm \sigma$
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Estimate of the intercept on x-axis:  
 $\rightarrow$  when  $D^2=0$ ,  $m = -0.17$   
For using the formula  $m = 2t \sqrt{\frac{2}{\lambda}}$  we have  
There is no point in comparing...

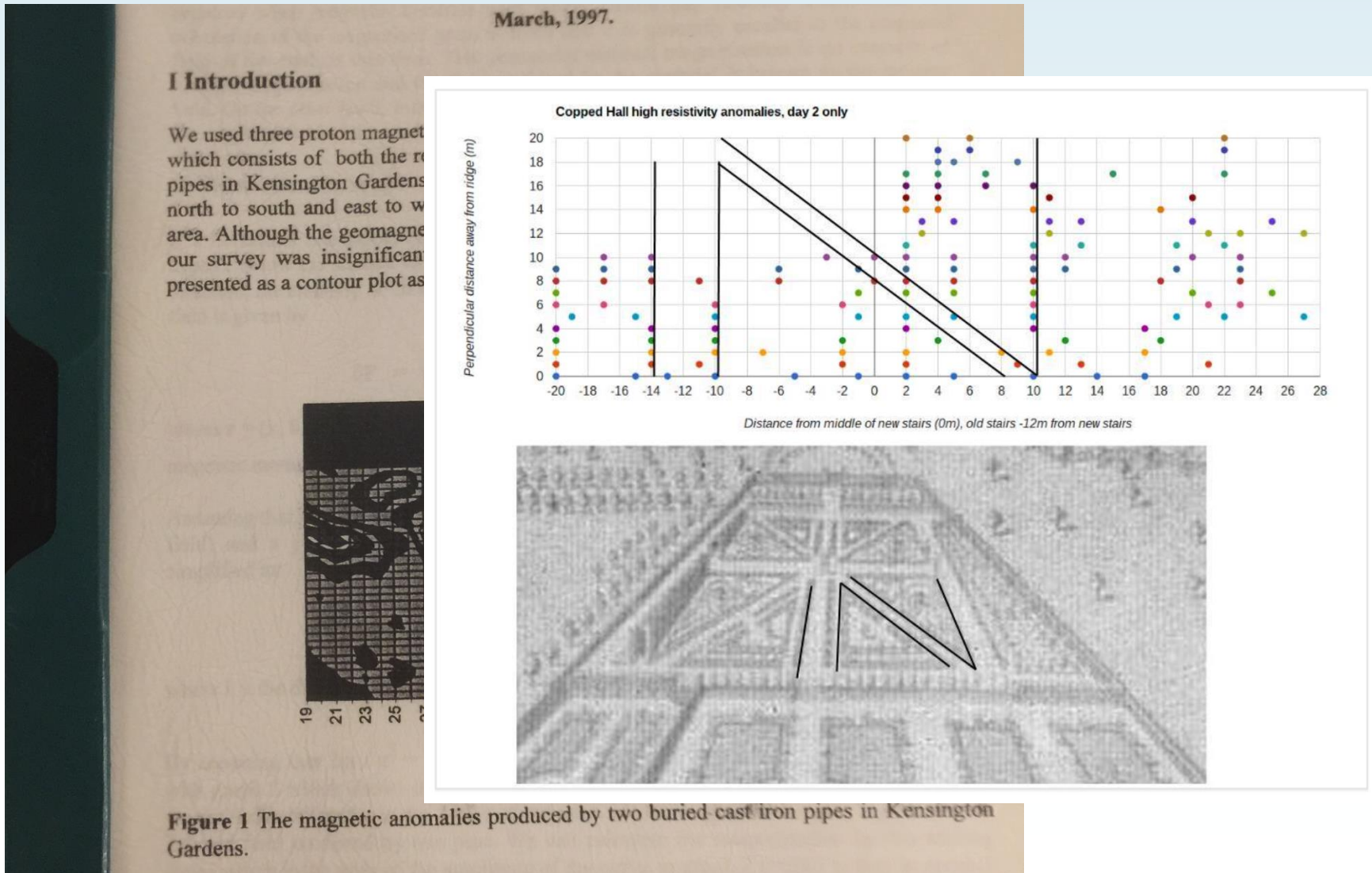
Photo credit:  
Max-Planck-Institut  
für Quantenoptik

# Learning with people from outside the uni?





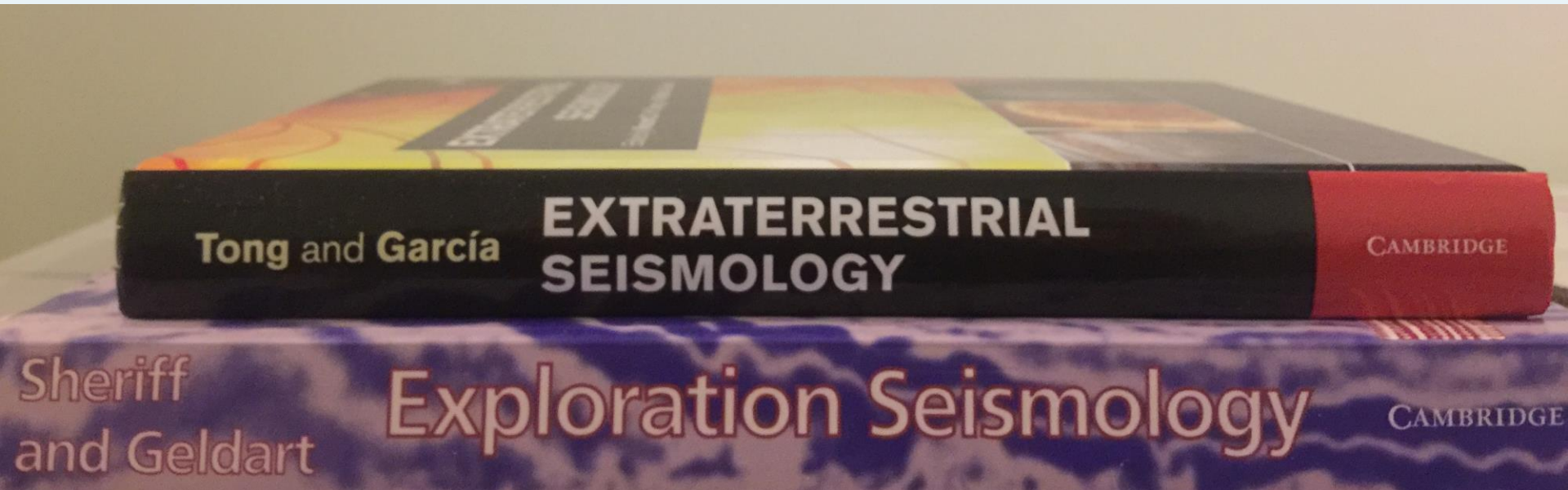
# Learning with people from outside the uni?



# Going beyond my subject?



# Going beyond my subject?





# Building on what I have learnt before?

90 SESSION III (1/3)  
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- 2) Start pump
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- 4) When system evacuated close V2, switch off pump & open V1 so that the pump sees atm. pressure.
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d) Results:

Three diameter readings were made for each order.  
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Gradient =  $4\lambda^2 f^2 / nt \rightarrow \lambda = \text{gradient} \times \dots$

$$\lambda = 44 \text{ mm}^2 \times \frac{1.0 \times 2.38125 \times 10^{-3} \text{ m}}{4 \times 200 \text{ mm}}$$

$\lambda = 655 \pm 18 \text{ nm}$  (NB The correct  $\lambda = 643 \text{ nm}$ )

Estimate of the intercept on x-axis:  
 → when  $D^2 = 0$ ,  $m = -0.17 \pm 0.03$   
 For using the formula  $m = 2t/\lambda$ , we have  $n$

There is no point in comparing the two values of fractional part of  $m$  obtained from the graph & the one from formula is not

# Building on what I have learnt before?

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- 4) when system evacuated close V2, switch off pump & open V1 so that the pump sees atm. pressure.
- 5) Allow pressure to ↑ using V2 or V3 while readings are taken.

2) Results:

Three diameter readings were made for each order.  
 Notice that we could only measure radii as the gratrude is not long enough to cover the full field of view.

• Error =  $\frac{\sigma}{(n-1)^{1/2}}$ ,  $n=3$

• Error in  $D^2 = 2 \times \text{Error in } D$

Order m	Diameter (3 readings) /mm	mean ± standard dev/mm	$\bar{D} \pm \sigma$
1			
2			
3			
4			
5			
6			
7			
8			

The plot is a contour plot (from con...)  
 Upper g...  
 Lower g...  
 Mean g...  
 Mean n...  
 Grad...  
 $\lambda =$   
 $\lambda =$   
 Estim...  
 → w...  
 For u...  
 There is no point measuring fractional part of m obtained from the graph...  
 this one from formula is 0.66

March, 1997.

## I Introduction

We used three proton magnetometers to record the spatial variation of the magnetic field, which consists of both the remnant and induced field, produced by two buried cast iron pipes in Kensington Gardens. By setting up stations with spacing of 1m (running from north to south and east to west), we managed to obtain the magnetic anomalies in the area. Although the geomagnetic field is a function of time, the error over the duration of our survey was insignificant and therefore it has been neglected. The anomalies are presented as a contour plot as shown in figure 1.

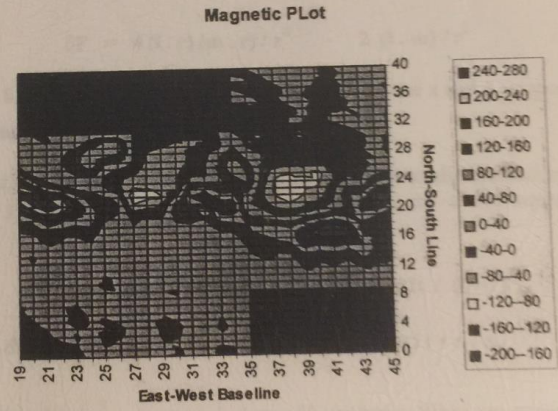


Figure 1 The magnetic anomalies produced by two buried cast iron pipes in Kensington Gardens.

## Your experience at UCL?

Do you feel you have generally good/ not-so-good learning experience at UCL with regard to

- Learning with researchers and students in your department;
- Learning with people from outside UCL;
- Going beyond my subject(s);
- Well-connected modules?

Let us know now anonymously at <http://etc.ch/iZqh>

Any examples to share?



<https://dp1.directpoll.com/r?XDbzPBd3ixYqg8UDKDFrMlugT5vKAWlrGb1a0dqW5PB>

## Institutional commitment


At University College London, our top strategic priority for the next 20 years is to close the divide between teaching and research. We want to integrate research into every stage of an undergraduate degree, moving from research-led to research-based teaching.”

(Michael Arthur, President and Provost,  
UCL, 30 April 2014)



# A core part of 20 year strategy (UCL 2034)

Principal themes:

- 
1. **Academic leadership** grounded in intellectual excellence
  2. A global leader in the **integration of research and education**, underpinning an inspirational student experience
  3. Addressing **global challenges** through our disciplinary excellence and distinctive cross-disciplinary approach
  4. An **accessible, publicly-engaged organisation** that fosters a lifelong community
  5. **London's Global University:** in London, of London and for London
  6. **Delivering global impact** through a network of innovative international activities, collaborations and partnerships





# Research equals education

There is no contradiction between the imperative of good teaching and the imperative of research which critiques, refines, discards and advances human knowledge and understanding.

(McAleese 2013,13)



# A values-based approach

Education is  
'for the global common  
good', embodying a  
'shared responsibility  
for a sustainable future'

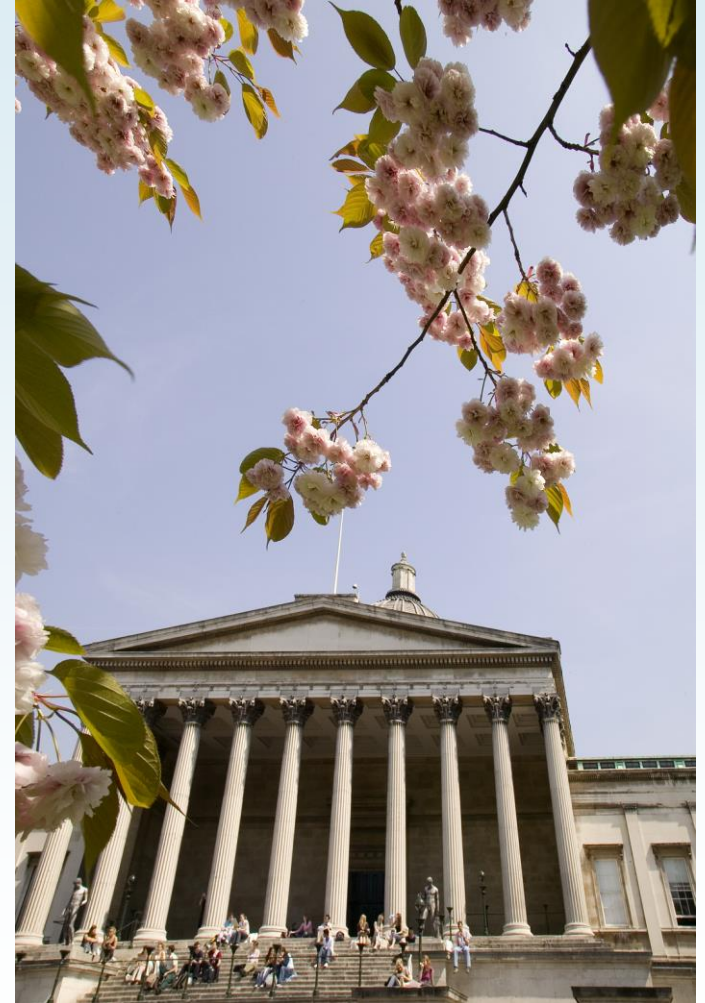
(UNESCO 2011, 9)



# The Connected Curriculum initiative at UCL

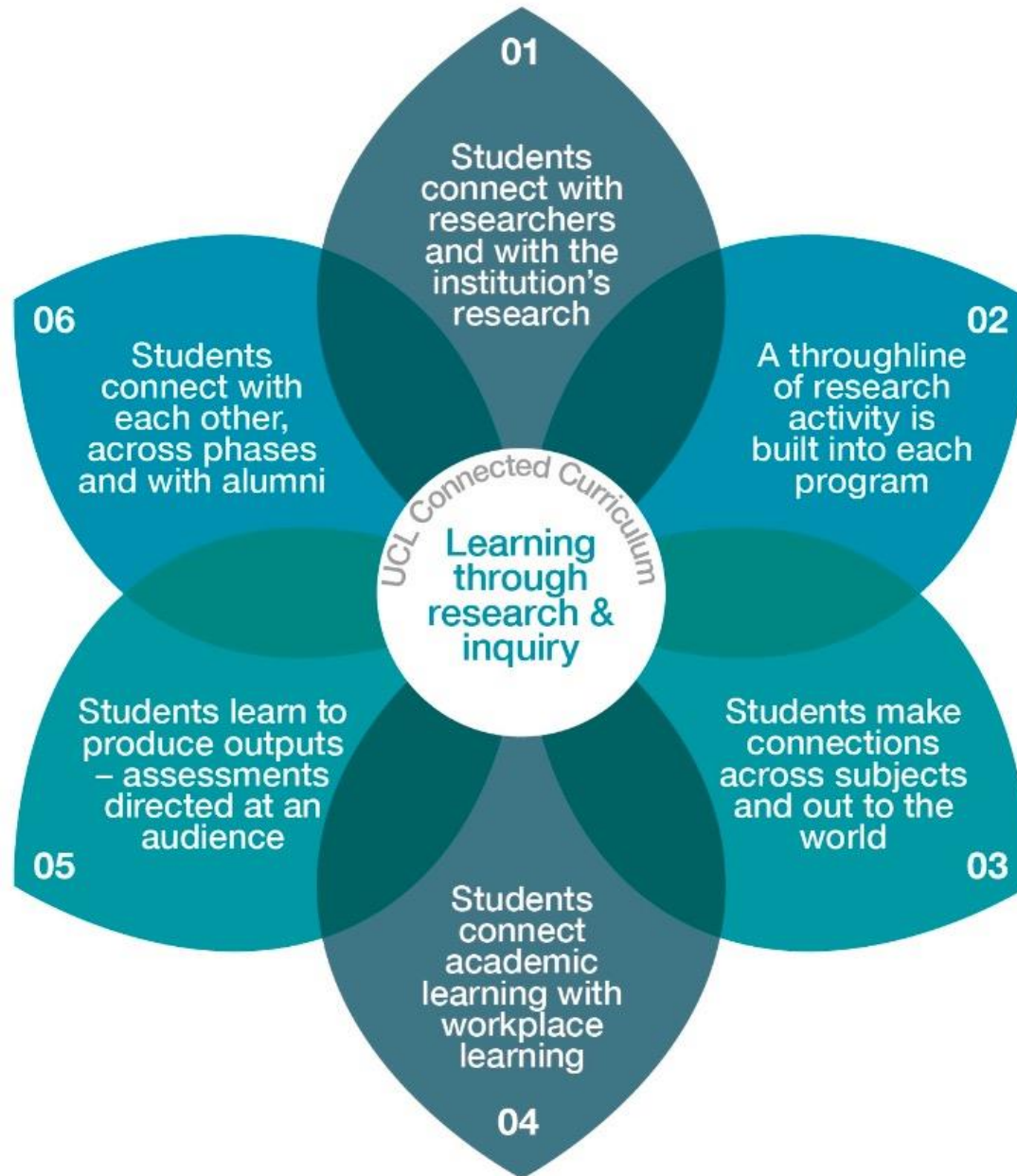


Connected  
Curriculum





## Connected Curriculum



1. Students connect with researchers and with the institution's research

2. A throughline of research activity is built into each programme

3. Students make connections across subjects and out to the world

4. Students connect academic learning with workplace learning

5. Students learn to produce outputs – assessments directed at an audience

6. Students connect with each other, across phases and with alumni

Beginning	Developing	c. Developed	d. Outstanding
Students are introduced to research topics, methods and different conceptual approaches in their discipline. They are made aware of some of the complex global challenges addressed by UCL's researchers. Students have the opportunity to encounter research staff through talks, tours and/or demonstrations.	Students become familiar with research topics, methods and different conceptual approaches in their discipline. They have formal and informal opportunities to engage with research staff (e.g. through the group activity 'meet your researcher') and discuss how their research fits into a global context. Where appropriate, they engage with enquiry into their own professional practice and that of others.	Students and staff have many opportunities both to learn about and to challenge the origins, nature and findings of academic research in their discipline, including its implicit values. Students regularly engage in dialogue with staff about their research and methods, including (where appropriate) enquiry into professional practice.	Students are integral to a research community in the institution, and are inspired by the practices and possibilities of research. Drawing on dialogue with researchers, students are able to present their own analytical reflections on the latest research in their field, wherever it is produced. Where appropriate, they engage with enquiry into their own professional practice and that of others. Both students and staff are able to challenge research that excludes perspectives from marginalised groups.
Students have opportunities across the year(s) of study to engage in research and enquiry-based activities. They identify and recognise different perspectives. Students are assessed on their own research as an integral part of the programme.	Research and enquiry-based activities, with related student assessments, are embedded across the year(s) of study. There is a clear progression of concepts, understood by students (e.g. designed into a connected sequence of core modules). Tutors support students to use knowledge from diverse communities and engage critically with a range of different perspectives.	Research and enquiry-based activities, with related student assessments, are embedded across the year(s) of study. There is a clear progression of concepts, understood by students (e.g. via a connected sequence of core modules and/ or a longitudinal, cumulative portfolio). Students play a key role in the development of this learning narrative and are supported to challenge received ideas. Personal tutors provide support and guidance by taking a broad overview of students' progress and may have an advisory role with research-based activities.	Research and enquiry-based activities, with related student assessments, are embedded across the year(s) of study. There is a clear narrative of conceptual development, which students are able to articulate, developed through a connected sequence of enquiry-based activities. Students are critically aware and attuned to alternative perspectives, including those from marginalised groups. They take a leadership role in the development of their own learning narrative and are able to demonstrate creativity in presenting their learning to an audience in a final capstone module and final dissertation.
Students make conceptual connections within modules and begin to apply these to other modules across the programme. Students become aware of how an academic discipline is framed and shaped by culture and language.	Students make conceptual connections between their own discipline and other disciplines (e.g. by taking a module in another subject area, and/or undertaking an interdisciplinary project). Students begin to recognise the implicit values underpinning the discipline(s) and how disciplines have been shaped historically.	Students explore the implications of multidisciplinary perspectives for addressing global issues and challenges. They develop a 'joined up' learning narrative, making connections across apparently disparate themes; this may be assessed, for example, via a special assignment, a cumulative portfolio or a student research conference. Students engage with contrasting perspectives, including those from marginalised groups.	Students are empowered to explore and to study with a range of disciplines (e.g. through a broadening programme or an interdisciplinary dissertation).
Students develop abilities and dispositions for problem-solving and communication skills, relevant to the world of work, within modules (e.g. through group work, project management, enterprise and leadership).	Students become increasingly aware that they are developing a rich range of understandings, skills, values and attributes to take into their professional lives. They engage critically and reflectively in activities and approaches useful for life and employment, acknowledging the diversity of worldviews.	Students are able to articulate conceptual connections between academic learning, workplace learning and their own professional practice. They have regular opportunities to engage with new learning and their skills of enquiry are applied within scenarios or settings with diverse workplace cultures. Students demonstrate an appreciation of the value of inclusive practices in the workplace.	Students are able to articulate conceptual connections between academic learning, workplace learning and their own professional practice. They have regular opportunities to engage with new learning and their skills of enquiry are applied within scenarios or settings with diverse workplace cultures. Students demonstrate an appreciation of the value of inclusive practices in the workplace.
Students have an opportunity to produce at least one assessment directed at a particular audience. Output modes are selected to be appropriate to the audience (e.g. videos, group presentations, articles, blogs, essays).	Students, working in groups and/or independently, have a number of opportunities to engage with diverse audiences through a variety of assessment modes. Students demonstrate knowledge of the complexity of their audiences.	Students are able to articulate conceptual connections between academic learning, workplace learning and their own professional practice. They have regular opportunities to engage with new learning and their skills of enquiry are applied within scenarios or settings with diverse workplace cultures. Students demonstrate an appreciation of the value of inclusive practices in the workplace.	Students are able to articulate conceptual connections between academic learning, workplace learning and their own professional practice. They have regular opportunities to engage with new learning and their skills of enquiry are applied within scenarios or settings with diverse workplace cultures. Students demonstrate an appreciation of the value of inclusive practices in the workplace.
Students work in diverse groups and have some opportunity to connect with students in other years. They have the opportunity to interact with alumni.	Students have a number of opportunities to engage with diverse audiences through a variety of assessment modes. Students demonstrate knowledge of the complexity of their audiences.	Students are able to articulate conceptual connections between academic learning, workplace learning and their own professional practice. They have regular opportunities to engage with new learning and their skills of enquiry are applied within scenarios or settings with diverse workplace cultures. Students demonstrate an appreciation of the value of inclusive practices in the workplace.	Students are able to articulate conceptual connections between academic learning, workplace learning and their own professional practice. They have regular opportunities to engage with new learning and their skills of enquiry are applied within scenarios or settings with diverse workplace cultures. Students demonstrate an appreciation of the value of inclusive practices in the workplace.

Connected Curriculum 'benchmarking grid' at [https://www.ucl.ac.uk/teaching-learning/connected-curriculum/Enhancing\\_Programmes\\_of\\_Study\\_Sept\\_2016](https://www.ucl.ac.uk/teaching-learning/connected-curriculum/Enhancing_Programmes_of_Study_Sept_2016)

- Encouragement for **staff and students to work collaboratively**
- **All departments in 2016-2017 are asked to evaluate their programmes in discussion with students** (Annual Student Experience Review – ASER)
- **Grants available** for students and staff engagement, including through UCL ChangeMakers
- Join the group to design strategies of using **social media** to link StARs with other students for advancing UCL Connected Curriculum:

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[connectedcurriculum@ucl.ac.uk](mailto:connectedcurriculum@ucl.ac.uk)

