Teaching in Geography, Earth and Environmental Science (GEES)

The Geological Society

The institution of environmental sciences

Royal Geographical Society with IBG

Advancing geography and geographical learning

BSG British Society for Geomorphology

Workshop overview

Programme

Day one

Day/time	Pathway 1	Pathway 2	Pathway 3
10:30 to 11:00	Registration, tea & coffee - *Main Hall*		
11:00 to 11:30	Welcome, ice-breaker, housekeeping - *Education Centre*		
11:30 to 12:30	**Scene-setter – teaching in GEES** – *Education Centre* Professor Jo Bullard • A strategic overview that sets GEES teaching in context: signature pedagogies, how and where GEES students learn, and • What will be covered in the two days (overview from workshop contributors) This session will set the structure for the workshop and situate strategic issues in teaching within GEES contexts.		
12:30 to 13:15	Lunch, *Main Hall*		
13:15 to 14:30 *Choose from:*	Session 1: **Large group teaching / teaching across GEES subjects –** *Education Centre* Dr Rob Francis • Managing large groups and accounting for diversity of student knowledge and backgrounds • Considerations for teaching preparation and delivery to large groups • Managing (student and your own) expectations and getting the balance of breadth and depth right	Session 2: **Curriculum co-design and student/ research-led teaching –** *Drayson Room* Dr Gordon Curry • Effectiveness and advantages of staff-student partnerships in curriculum design • Engagement of students in active research projects as a learning experience	Session 3: **Explore your teaching** – *Sunley Room* Dr Sarah Dyer 1:1 and small group conversations between participants and with leaders to • find advice on specific issues or challenges you are facing • find ideas and resources for writing or revising modules/courses and teaching materials • tips on preparing applications for professional recognition
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Day two

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14:15 to 14:45	**Career paths: pathways, evidence and priorities –** *Education Centre* Dr Sarah Dyer		
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15:00	Departure		

As you think of them use the post-it notes to write down:

What is worrying you about your teaching?
What excites you about your teaching?
What do you want to know more about?

Other questions
Any comments

GEES Teaching - Overview

- Signature pedagogies
- How and where GEES students learn
- GEES in HE – the bigger picture

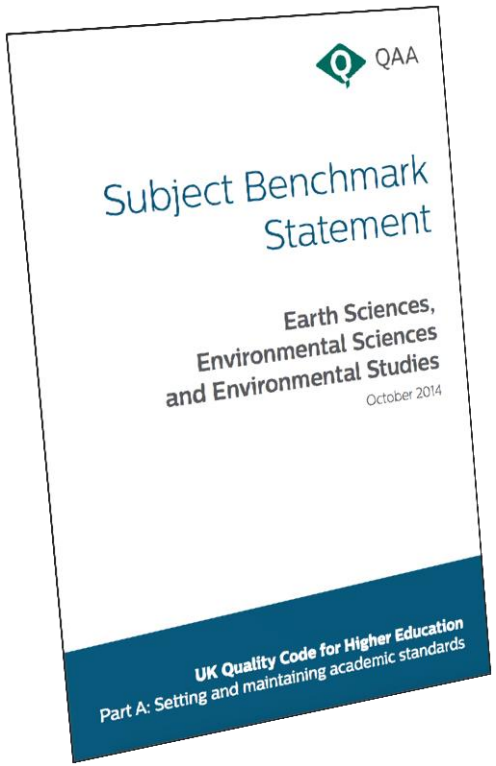
- Overview from workshop contributors

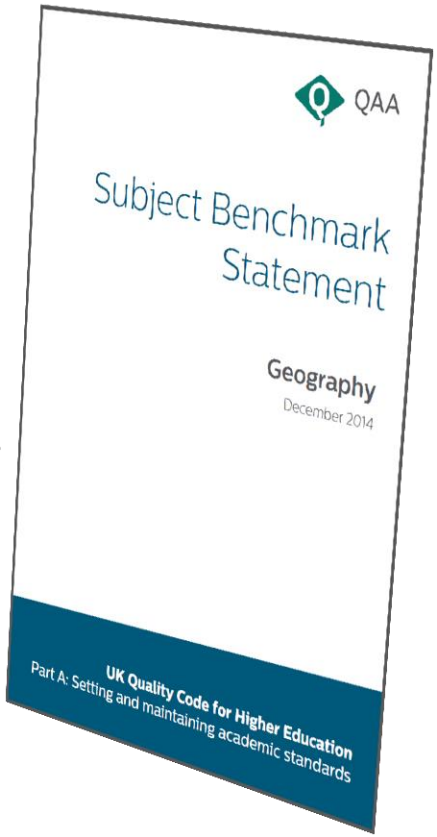
What are the GEES subjects?

- Geography – the study of the Earth's landscapes, people, places and environments
- Geology – scientific study focusing on the composition of solid earth and how its make-up changes over time
- Environmental Sciences – application of fundamental scientific knowledge to provide advanced and quantitative understanding of contemporary environmental challenges
- Environmental Studies – integrated study of scientific, social, political and historical facts of environmental challenges with a focus on policy, law & social aspects of these challenges

What's in a GEES degree?

- **Subject Benchmark Statements**
  Written by teams of experts in universities and industry
  - Defines the knowledge, understanding, skills and approaches, and the professional attributes/transferable skills graduates within particular disciplines should acquire
  - The SBSs acknowledge the **breadth and plurality of GEES subjects**.
  - Each course explores GEES through staff/ department's (research) specialisms





www.qaa.ac.uk

Geography graduates should have:

- Proven practical experience, from the field and other experiential learning opportunities
- Skills in, and knowledge of, a range of methodological approaches
- The capacity for independent study and research
- Substantive depth of knowledge in a sub-field of the discipline, including appropriate skills to support that knowledge
- Effective communication skills for a range of audiences
- A range of academic and transferable skills
- Personal attributes and qualities relevant to the world beyond higher education.

ES3 graduates should have ?

- An emphasis on practical (especially field-based) investigation
- Multidisciplinary and interdisciplinary approaches
- Capacity to work across a range of spatial and temporal scales
- Skills in observation and analysis to support decision making in the light of uncertainty
- An appreciation of societal contribution and context
- Professional skills for employability

Signature Pedagogies

'types of teaching that organise fundamental ways in which future practitioners are educated for their new professions'

(Shulman 2005: 52)

- forms or styles of teaching and instruction that are common to specific disciplines
- deliver the knowledge, skills and standards of practice that GEES students should be familiar with

Characteristics of signature pedagogies:

- Surface structure which entails concrete acts of teaching & learning
- Deep structure of assumptions about how best to impact a certain canon of knowledge
- Implicit structure related to the moral values and beliefs about professional attitudes and dispositions.

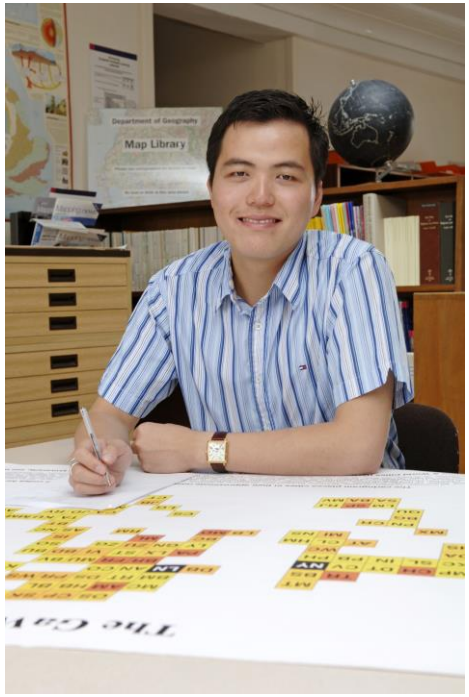
… involve making choices to select certain approaches to T&L while (usually unintentionally) disregarding others.

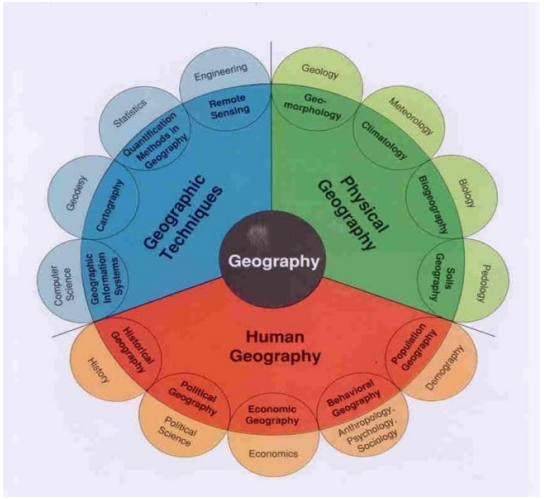
Lüdert, 2016

In groups …

- Compile a list of what you consider to be the signature pedagogies of GEES subjects

- Compile a second list of those approaches to T&L typically disregarded by GEES educators


Department of Geography
Map Library


Geography
Geographic Techniques
Physical Geography
Human Geography
Engineering
Geology
Statistics
Remote Sensing
Geo-morphology
Meteorology
Quantification Methods in Geography
Climatology
Geodesy
Cartography
Biology
Biogeography
Computer Science
Geographic Information Systems
Soils Geography
Pedology
Historical Geography
History
Population Geography
Demography
Political Geography
Economic Geography
Behavioral Geography
Political Science
Economics
Anthropology
Psychology
Sociology

Signature Pedagogies - relevance

- Help you to understand how your teaching is guided by the discipline
- Make you realise that you will use certain approaches to teaching and disregard others
- Help you to guide your students to think and behave like disciplinary experts

Signature Pedagogies – more info

- Journal of Geography in Higher Education
- Journal of Environmental Education
- Environmental Education Research
- Journal of Geoscience Education

Generic Pedagogies

- Transmissive lecturing
- Active and problem-based learning
- Learning through enquiry/research
- Case studies
- Role-play/debate/discussion/group work
- Technology-enhanced learning
- Service and community learning

Graduate Attributes

“skills, knowledge, attributes and values that are distinguished from the disciplinary expertise associated more traditionally with higher education, but which made a contribution to the profession”

Hill et al. 2016 p.155

More than ‘employability’

Table 1. The top five geographical skills (top half of table) and top five generic skills (bottom half of table) sought by employers across a range of organizations in the USA.

Higher education	Government	For-profit company	Nonprofit company
Human–environment interaction	GIS cartography	GIS	Interdisciplinary perspective
GIS	Spatial thinking	Cartography	GIS
Global perspective	Spatial statistics	Spatial thinking	Cartography
Cartography	Field methods	Spatial statistics	Spatial thinking
Spatial thinking		Economic geography	Diversity perspective
Critical thinking	Writing	Adaptability	
Computer technology	Visual presentation	Self-awareness	
Creative thinking	Ethical practice	Ethical practice	
Quantitative skills	Computer technology	Project management	
Problem solving	Teamwork	Teamwork	

Note: For the nonprofit company, there was not agreement on the top five generic skills ratings (Solem et al., 2008, p. 369). Reprinted with permission from Taylor & Francis Ltd, http://www.tandf.co.uk/journals.

Spronken-Smith (2013)

SCIENCE

PHYSICAL AND GEOGRAPHICAL SCIENCES GRADUATES FROM 2015

SURVEY RESPONSE: 82.2% | FEMALE: 1,295 | MALE: 1,425 | TOTAL RESPONSES: 2,720 | ALL GRADUATES: 3,310

OUTCOMES SIX MONTHS AFTER GRADUATION

Working full time in the UK	48.9%
In further study, training or research	17.1%
Working part time in the UK	14.0%
Other	6.1%
Unemployed, including those due to start work	5.8%
Working and studying	5.6%
Working overseas	2.6%

TYPE OF COURSE FOR THOSE IN FURTHER STUDY

Masters (e.g. MA, MSc) 61.0%
Postgraduate qualification in education 21.4%
Doctorate (e.g. PhD, DPhil, MPhil) 6.9%
Other study, training or research 5.3%
Other postgraduate diplomas 4.0%
Professional qualification 1.5%
Total number of graduates in further study 465

EXAMPLES OF COURSES STUDIED

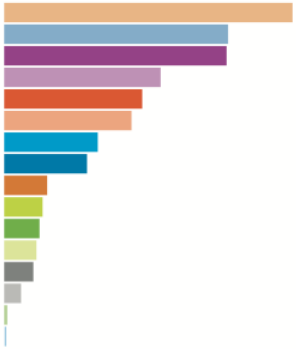
MSc River Basin Dynamics
MSc Energy and the Environment
MSc Meteorology
MSc Global Urban Justice
MSc Property
MSc Micropaleontology
MA Music and Sonic Media
PhD Environmental Engineering
PGCE Teach First
PGDE Secondary
HNC Music

TYPE OF WORK FOR THOSE IN EMPLOYMENT

Graduates who were in employment either full time, part time or working and studying in the UK

FEMALE: 870 | MALE: 985 | TOTAL IN EMPLOYMENT IN THE UK: 1,855

Retail, catering, waiting and bar staff	18.8%
Other professionals, associate professionals and technicians	14.6%
Business, HR and finance professionals	14.5%
Clerical, secretarial and numerical occupations	10.2%
Other occupations	9.0%
Marketing, PR and sales professionals	8.3%
Managers	6.1%
Engineering and building professionals	5.4%
Childcare, health and education occupations	2.8%
Education professionals	2.5%
Information technology professionals	2.3%
Legal, social and welfare professionals	2.1%
Science professionals	1.9%
Arts, design and media professionals	1.1%
Health professionals	0.2%
Unknown occupations	0.1%



EXAMPLES OF 2015 PHYSICAL AND GEOGRAPHICAL GRADUATE JOB TITLES AND EMPLOYERS (SIX MONTHS AFTER GRADUATION)

Recycling manager - council
Ecologist - JCA
Hydrometry assistant - environmental agency
Hydraulic modeller - Mott McDonald
Software support - investment company
Commercial analyst - Morrisons
Graduate trainee - Lloyds Bank
Investment manager - Smith and Williamson
Marketing graduate - Fujitsu
Choir director - university
Events producer - events company
Outdoor instructor - field centre
Countryside warden - council
Church intern - independent church
Barista - Starbucks
Sales assistant - Cotswolds

SOCIAL SCIENCE

GEOGRAPHY GRADUATES FROM 2015

SURVEY RESPONSE: 81.8% | FEMALE: 1,175 | MALE: 855 | TOTAL RESPONSES: 2,030 | ALL GRADUATES: 2,480

OUTCOMES SIX MONTHS AFTER GRADUATION

Working full time in the UK	48.0%
In further study, training or research	19.4%
Working part time in the UK	9.5%
Other	8.5%
Working and studying	6.6%
Unemployed, including those due to start work	4.9%
Working overseas	3.1%

TYPE OF COURSE FOR THOSE IN FURTHER STUDY

Masters (e.g. MA, MSc) 64.7%
Postgraduate qualification in education 19.9%
Other postgraduate diplomas 7.7%
Doctorate (e.g. PhD, DPhil, MPhil) 3.0%
Other study, training or research 2.7%
Professional qualification 1.9%
Total number of graduates in further study 395

EXAMPLES OF COURSES STUDIED

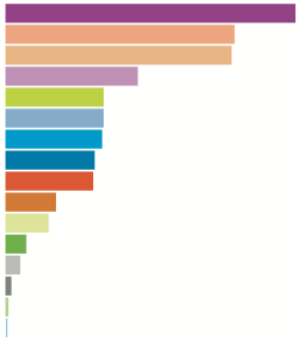
MSc Meteorology
MSc Applied Ecology
MSc Real Estate Management
MSc Cartography
MSc Anthropology
MA Environment Policy and Development
PhD Geography and Political Science
PGCE Secondary

TYPE OF WORK FOR THOSE IN EMPLOYMENT

Graduates who were in employment either full time, part time or working and studying in the UK

FEMALE: 765 | MALE: 530 | TOTAL IN EMPLOYMENT IN THE UK: 1,295

Business, HR and finance professionals	19.5%
Marketing, PR and sales professionals	15.4%
Retail, catering, waiting and bar staff	15.2%
Clerical, secretarial and numerical clerk occupations	8.9%
Education professionals	6.6%
Other professionals, associate professionals and technicians	6.6%
Managers	6.5%
Engineering and building professionals	6.0%
Other occupations	5.9%
Childcare, health and education occupations	3.4%
Legal, social and welfare professionals	2.9%
Information technology (IT) professionals	1.4%
Arts, design and media professionals	1.0%
Science professionals	0.4%
Health professionals	0.2%
Unknown occupations	0.1%



EXAMPLES OF 2015 GEOGRAPHY GRADUATE JOB TITLES AND EMPLOYERS (SIX MONTHS AFTER GRADUATION)

General manager - Network Rail
Management trainee - L'Oréal
Teacher - secondary school
Campaign coordinator - climate change charity
Hydrometry and telemetry officer - Environment Agency
Transport planner - transport planning association
Web developer - charity
Recruitment consultant - recruitment agency
Trainee accountant - accountancy firm
Human resources analyst - JP Morgan
Odds compiler - online gambling company
Trainee catastrophe modeller - insurance underwriter
Buyer - cleaning products manufacturer
Hockey coach - private school
Trainee pilot - Qatar Airways
Social researcher - HM Government
Logistics coordinator - accommodation provider

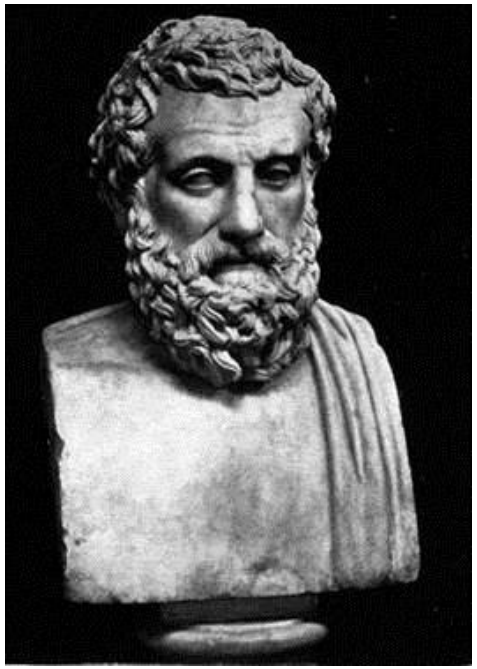
http://www.hecsu.ac.uk/current_projects_what_do_graduates_do.htm


How we teach …
… How we learn

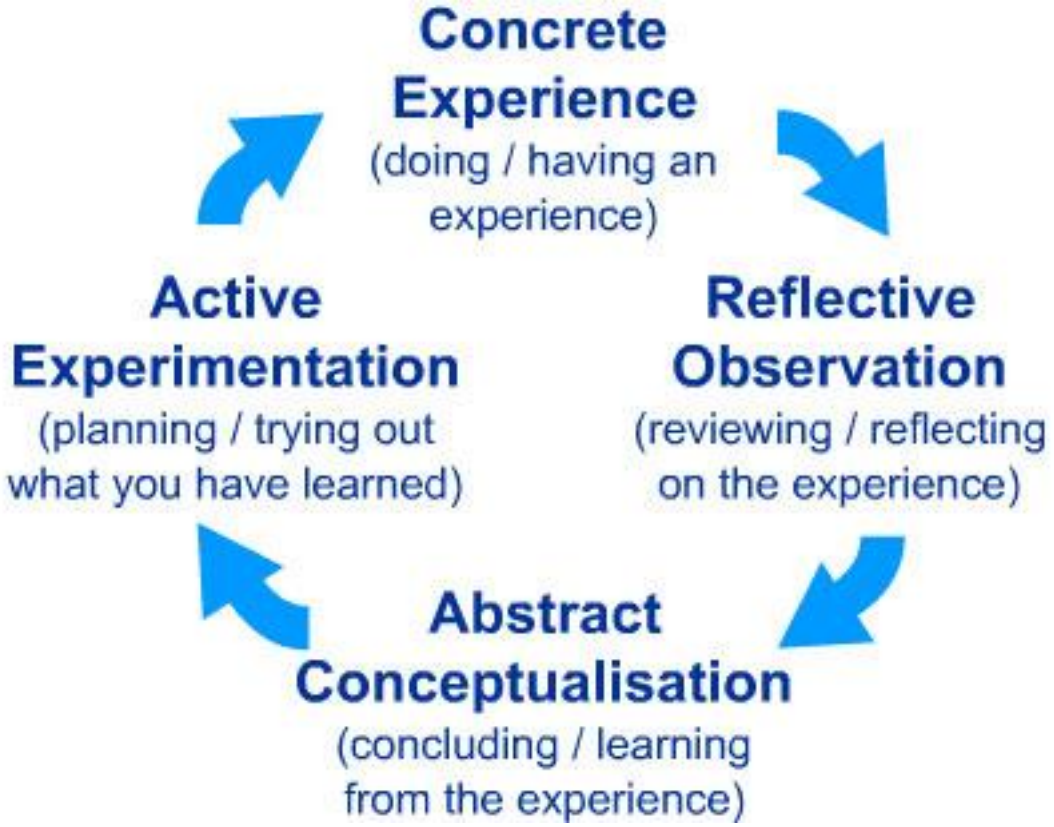
The first quote on experiential learning?

"One must learn by doing the thing; though you think you know it, you have no certainty until you try".

(Sophocles, 495-406 BC)



Kolb's Experiential Learning Cycle



Kolb 1984

Learning Styles – accounting for differences in individual's learning

Kolb (1984)
accommodator
converger
diverger
assimilator

Learning Styles – accounting for differences in individual's learning

Kolb (1984)	Honey & Mumford (1986)
accommodator	reflector
converger	activist
diverger	pragmatist
assimilator	theorist

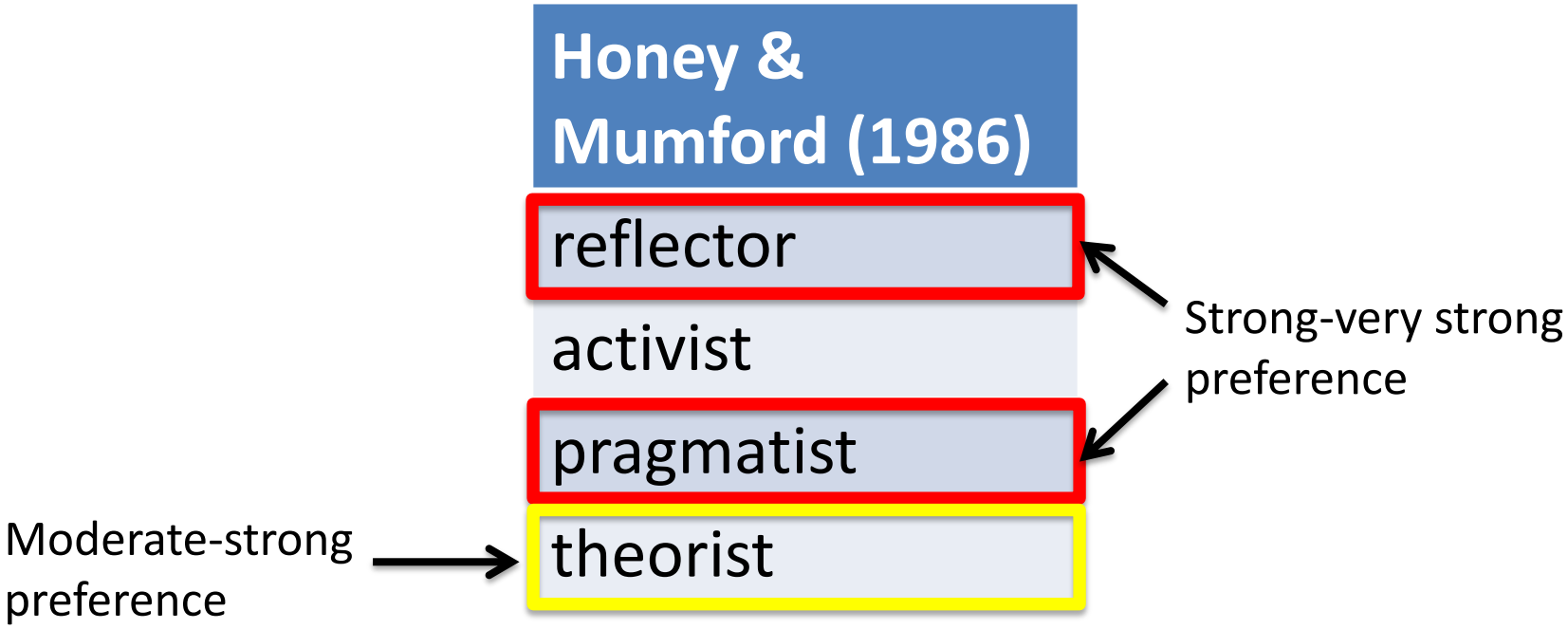
Learning Styles – accounting for differences in individual's learning

Kolb (1984)	Honey & Mumford (1986)	Fleming (1995)
accommodator	reflector	visual
converger	activist	auditory
diverger	pragmatist	read/write
assimilator	theorist	kinesthetic

Learning Styles

- Useful to recognise that different people learn in different ways
- One person can have attributes of more than type of learner

My Learning Styles …



Learning Styles

- Useful to recognise that different people learn in different ways
- One person can have attributes of more than type of learner
- Understanding learning style preferences may help educator to identify where problems or challenges are arising as a result of the educator's approach
- Learning styles have been heavily critiqued (e.g. Pashler et al. 2008, Lillienfeld et al. 2010)

Higher Education …

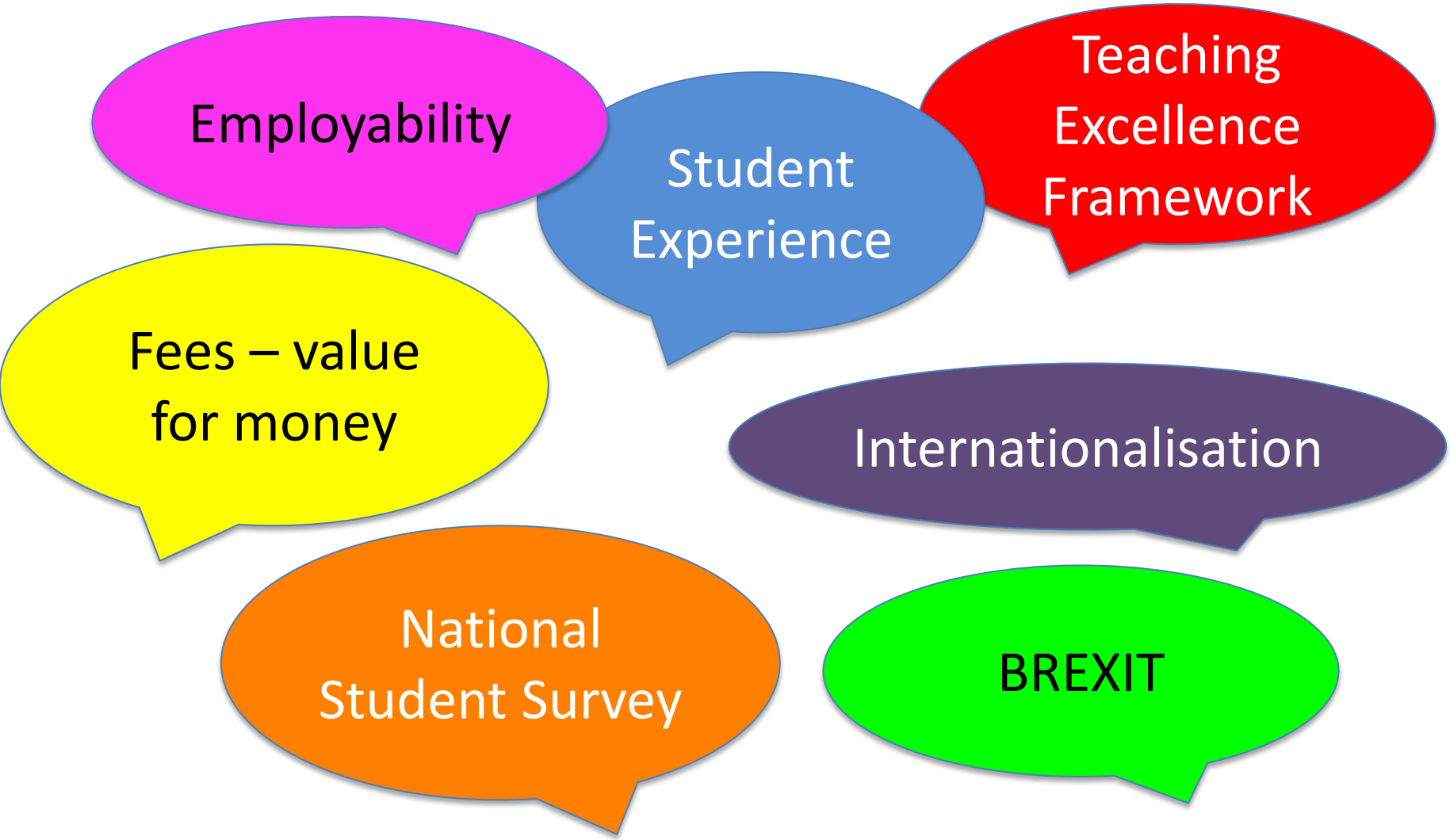
What makes a good teaching experience?

What makes a good student experience?

Context for Teaching in UK HE

What are the current drivers shaping the context within which Higher Education is operating?

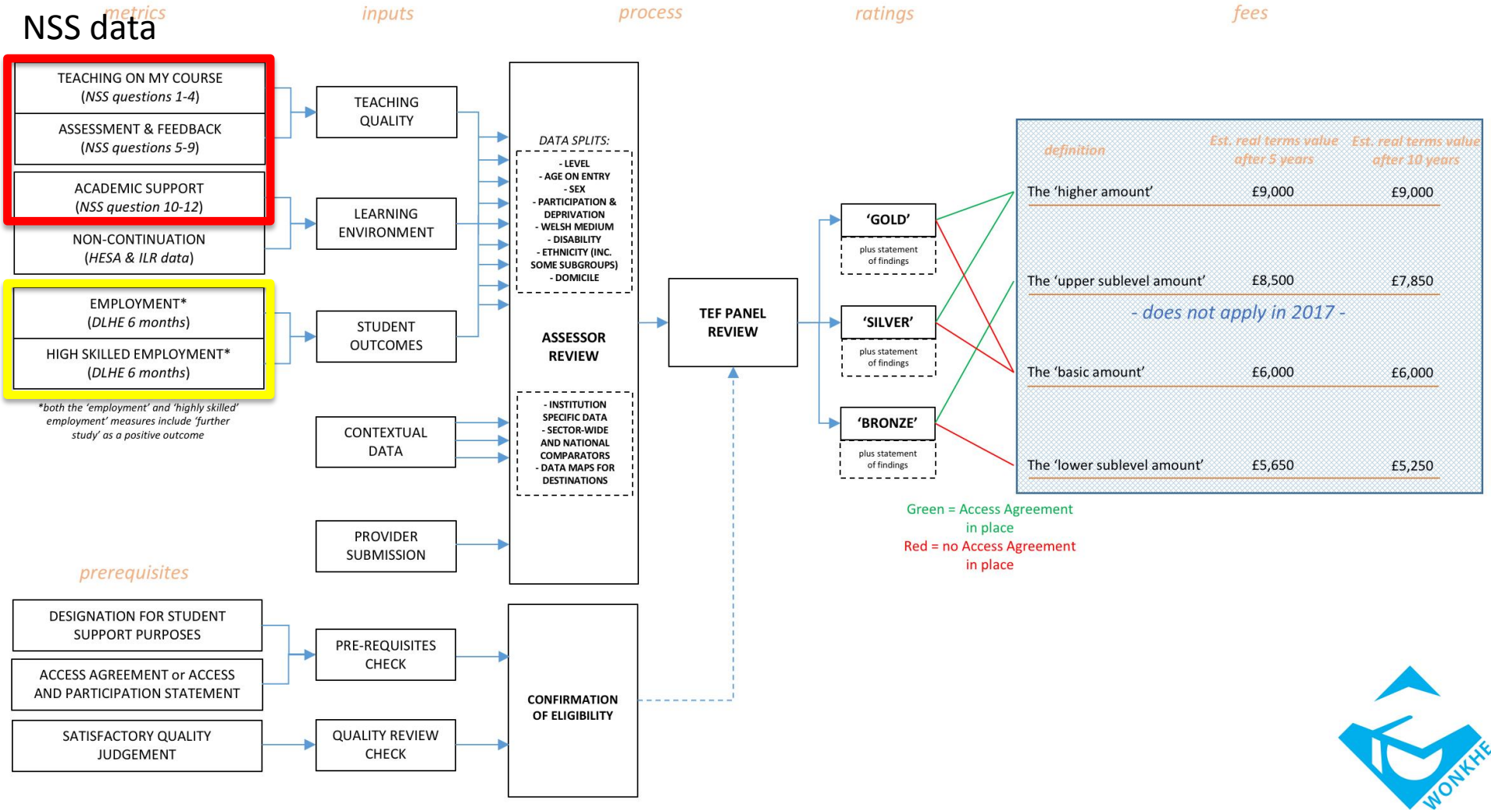
Context for Teaching in UK HE



Teaching Excellence Framework

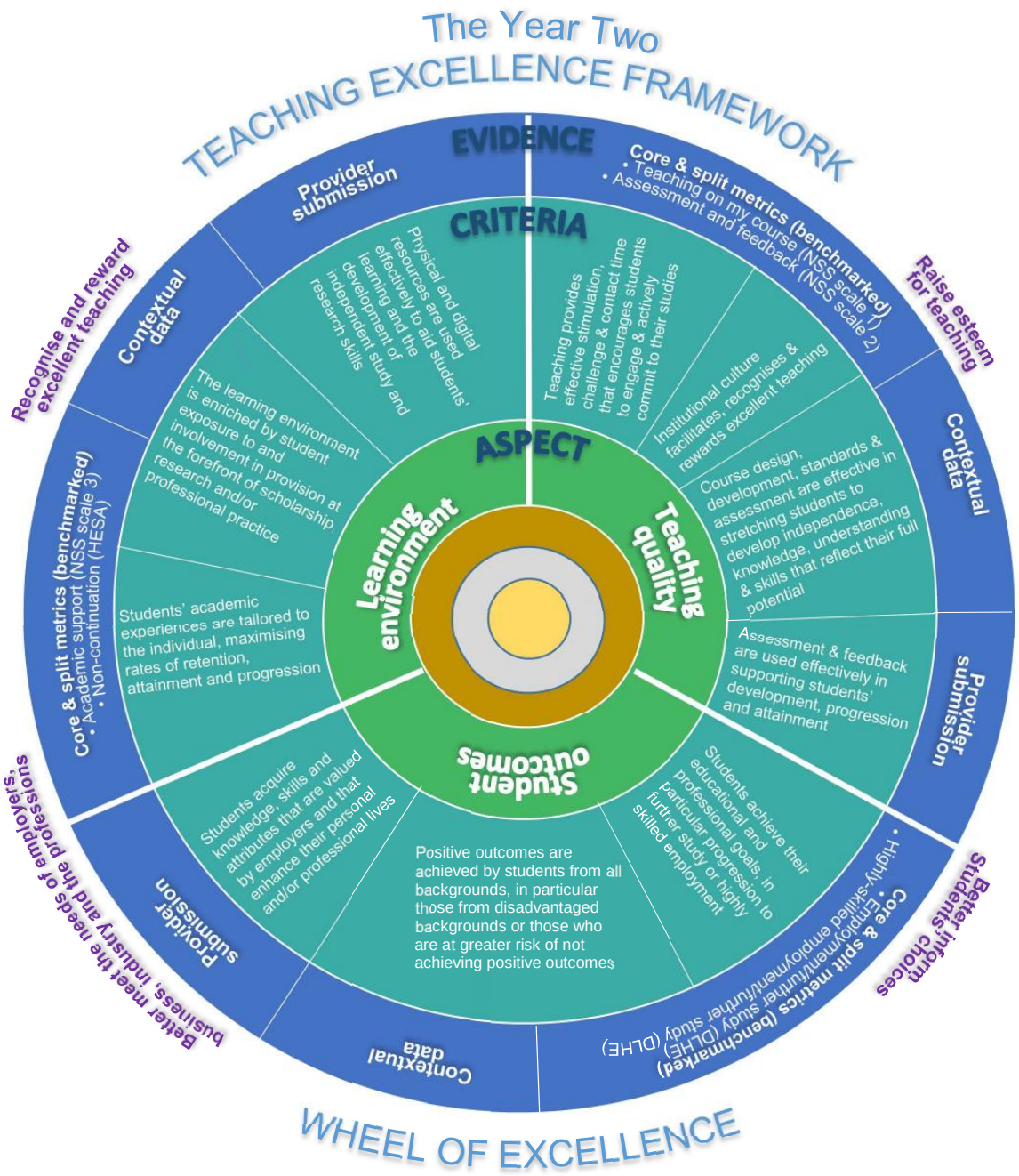
- The TEF is an exercise to assess the quality of teaching in HEI/Ps
- TEF1 = satisfactory outcome to the last major institutional review by the QAA (2016/17)
- TEF2 = institution-level assessment (2017/18)
- TEF3 = subject/discipline level assessments
- TEF2 & 3 submissions are combination of metrics and commentary

Overview of the TEF process



NSS2016 Q numbers

http://wonkhe.com/blogs/the-incredible-machine-mark-iii-our-visual-guide-to-the-tef/



A model of the assessment framework

Example criteria:

TQ1 Teaching provides effective stimulation and challenge and encourages students to engage and actively commit to their studies

LE2 The learning environment is enriched by student exposure to and involvement in provision at the forefront of scholarship, research and/or professional practice

SO2 Students acquire knowledge, skills and attributes that are valued by employers and that enhance their personal and/or professional lives

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