

Before the session.

1. Make a list of the similarities and differences between course outlines 1.1 (pp.2-3) and 1.2 (pp.4-6).
2. Skim read ONE of the following sections, and think how it might be transferable to practice at Macau.
 2. The inverse or flipped classroom (pp.6-8)
 3. Inquiry Planner (pp.8-9)
 4. Value rubric for inquiry learning (pp.10-11)

Please bring this handout to the session

Engaging students in research and inquiry: Designing research and inquiry activities into the curriculum

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Healey HE Consultants and University of Gloucestershire, UK

Workshop at University Macau, China

Wednesday 31 August at 15.00-16.30

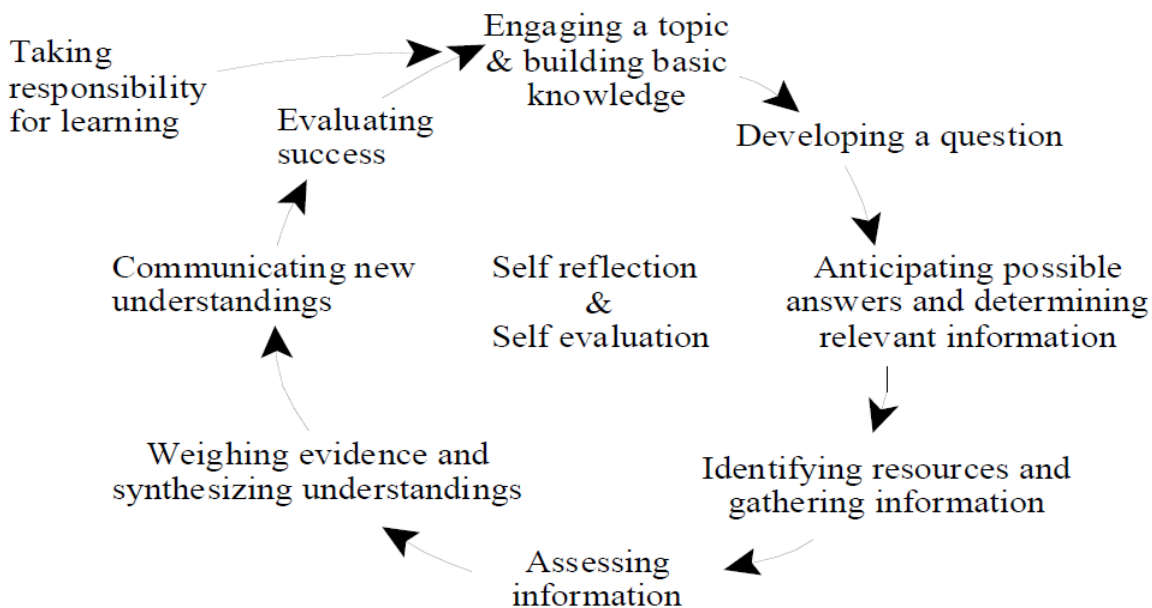
“All undergraduate students in all higher education institutions should experience learning through, and about, research and inquiry. ... such curricular experience should and can be mainstreamed for all or many students through a research-active curriculum. We argue that this can be achieved through structured interventions at course team, departmental, institutional and national levels.”

(Healey and Jenkins, 2009, 3)

“For the students who are the professionals of the future, developing the ability to investigate problems, make judgments on the basis of sound evidence, take decisions on a rational basis, and understand what they are doing and why is vital. Research and inquiry is not just for those who choose to pursue an academic career. It is central to professional life in the twenty-first century.”

(Brew 2007, 7)

Fig 1 The Inquiry Process (from Justice et al. 2007)



1. Examples of inquiry-based learning courses

1.1: McMaster University INQUIRY 1SS3 INQUIRY IN THE SOCIAL SCIENCES Wednesday 2:30 – 5:20 pm GSB 102 Sue Vajoczki

Course Description

Inquiry courses are designed to develop and to teach students how to learn and how to share knowledge. Thus, inquiry courses are skill-driven, rather than content-driven, focusing on the skills required to perform effectively in university. Students can take these personal transferable skills and approaches into other courses, throughout their university career, and beyond. Students will engage in a process to begin to learn how to formulate questions, gather and interpret evidence, and draw conclusions, using as content, topics central to research in the Social Sciences (e.g., social identity, globalization, health, gender).

Theme

The theme in this section is student success: social and cultural factors. Why do some students succeed at university whereas others do not? Why do students with similar grades in high school have widely different success at university? Can a student's likelihood for success at university be enhanced by addressing social and/or cultural influences? What is success? Do students own definition of success influence their outcome in higher education?

Course Objectives

Upon successful completion of this course a student should be able to:

- develop a researchable question and refine it;
- demonstrate the ability to obtain information relevant to answering the question;
- critically evaluate the validity and relevance of materials'
- communicate a coherent response to the researchable questions; and,
- critically reflect on the learning process.

Objectives of the Assignments

- 1) to consolidate and expand on the information students acquire in the readings and classes;
- 2) to increase student's self-awareness and self-evaluation skills;
- 3) to develop research skills that will assist the student in
 - a. critically assessing the information they are provided
 - b. finding additional information
 - c. synthesising the information into a coherent whole
 - d. developing their ability to communicate findings

Course Format and Evaluation

Inquiry 1SS3 is a multiple section course with individual section size not greater than 30 students. Students will be active participants in every class. The classes meet once per week in either the day or the evening in a three-hour block of time. Each section of this class is facilitated by a different instructor, so the exact classroom experience will vary. However, we have consistent expectations. You will be a member of a group and will have many opportunities for discussions with your instructor and other students. You will also have library sessions and other presentations or group activities related to the objectives of the course. The main emphasis, however, and what you will be assessed on, will be your activities in the process of following a research question through to its fruition, using scholarly (academic) methods. Learning these methods in your first year should prove highly valuable to you in your subsequent courses towards your degree, and thereafter in the pursuit of lifelong learning.

Required Textbooks

- Northey, M., Tepperman, L., and Albanese, P. (2009). *Making Sense: A Student's Guide to Research and Writing*. 4th Edition. Toronto, Canada: Oxford University Press. (available in the bookstore)
- Weston, A. (2007). *Creativity for Critical Thinkers*. Toronto, Canada: Oxford University Press. (available in the bookstore)

Elements of Evaluation

Assessment Activity	% Final Grade	Date Assigned	Date Due
Reflection #1 on Student Success	7.5	Jan 5	Jan 12
Reflection #2 on Student Success	7.5	Jan 5	Mar 9
Critical Incident Reports	20	Jan 5	Determined at first class
Group Work Contract	5	Jan 12	Jan 19
Class Participation	10	Jan 5	Mar 30
Library Assignment Summative	15		February 9
Capstone Assignment (presentation, electronic submission & abstract)	35	January 12	March 23 rd or 30 th depending on mode of presentation

Course Schedule

Date	Topic	Reading complete PRIOR to class
Jan 5	Introduction to the Course What is Inquiry? What is my approach to learning?	
Jan 12	How to work effectively in a group? Asking questions? Books & Article Searching – Wong Classroom 4:00-5:20	Weston chapters 1, 2 & 3
Jan 19	Cross-cultural simulation Exercise: Bafa Bafa	Weston chapters 4, 5 & 6 Northey et al. Chapter 1
Jan 26	Web/New Media – Lyons New Media Centre 2:30-4:20 Reading critically and asking questions	Northey et al. Chapter 2 & 3
Feb 2	Creating a proposal	Northey et al. Chapter 4
Feb 9	Oral communication strategies Library Assessment – KTH B123 4:30 pm	Northey et al. Chapter 5
Feb 16	Ethics and research	Northey et al. Chapter 6
Feb 23	READING WEEK	
Mar 2	Staying on track	Northey et al. Chapter 7
Mar 9	Workshop	Northey et al. Chapter 8 & 9
Mar 16	Peer review	Northey et al. Chapter 10
Mar 23	Poster Presentations	Northey et al., Chapters 11, 12 & 13
Mar 30	Video & Graphic Novel Presentations	

1.2: University of Gloucestershire EL325 Issues in Environmental Geography

Teaching Staff: Jane Roberts, Module Tutor (CL058; jroberts@glos.ac.uk)
Mick Healey (QU124; mhealey@glos.ac.uk)

Teaching Timetable: Semester 2, Monday, 14.15-17.15. ROOM: CE102

Programme: (L) = Lecture (P) = Practical (S) = Seminar/Workshop

1	12 Feb	JR	Course introduction Project examples Setting up project groups	(L&P)
2	19 Feb	MJH	Workshop: Teamwork issues Development of ideas for projects and their implementation	(S)
3	26 Feb	JR	Lecture: Should we believe Malthus or Brundtland?	(L)
4	5 March	JR/ MJH	Lecture: Grand narratives in post-modern times Group tutorials on outline project proposals	(L)(S)
5	12 March	JR	Environmental philosophies: why do they matter? Formative presentations	(P)
6	19 March	JR	Group tutorials	(S)
7	26 March	JR	Group tutorials	(S)
8	23 April	JR	Easter Vacation Group tutorials	(S)
9	30 April	JR/MJH	Workshop: Preparation for presentations and project report	(S)
10	7 May		May Day Holiday	
11	14 May	JR/ MJH	Presentations and module evaluations This session will run 2.15-6.15	(P)
12	21 May	NO SESSION	Preparation of group report and reflective essay	

Tutor	Jane Roberts
Brief Description	This module aims to enable students to apply the knowledge, skills and understanding which they have developed over their geography programme to a particular local or regional issue.
Status	Compulsory for GE Single Honours, Major and Joint Acceptable for HG, PG
Context	This module is a capstone course for the Geography Field. The integrative nature of the module follows from the philosophy of the Geography Field.

Content Summary	This module is concerned with analysing competing environmental philosophies and applying them to understanding a particular local or regional environmental issue. The nature of different environmental philosophies will be discussed at the beginning of the module. Most of the time will, however, be spent in working on defining and analysing a particular environmental issue, applying the philosophies to understanding the issue and coming up with policy recommendations. The work will be undertaken in groups, each of which will produce a consultancy project and will make a presentation of their findings to the 'clients'. Tutorial support will be given on researching the issue, working in teams and presenting the findings.
Learning Outcomes	<p>i. Knowledge and understanding On completion of this module students should be able to demonstrate that they:</p> <ul style="list-style-type: none"> a) can describe the development of environmental philosophies in geography; b) can conceptualise the principal features of a particular local or regional environmental issue; c) can recognise and analyse the interlinkages between the social, economic, political and natural environmental factors at work in their chosen environmental issue; d) are familiar with a range of primary and secondary data as appropriate to a particular local, regional or national environmental issue; e) have reflected on the processes involved in working in a group. <p>ii. Skills On completion of this module students should be able to demonstrate that they:</p> <ul style="list-style-type: none"> a) have further developed skills in presenting material orally and in report form; b) can work effectively as a member of a group.

Assessment

There are three elements to the assessment:

1. *Group report* (60%)
2. *Oral presentation of project* (30%)
3. *Individual Learning Journal and Reflective Essay* (together counting for 10%)

Peer and Self-Assessment of Group Project Preparation

One of the advantages of working as a member of a team is that you can all benefit from each other's strengths. The purpose of this exercise is to give recognition to the varied contributions that individuals make to the working of a group.

The tutor will use the completed form as a *guide* to distribute marks between team members. If very large differences occur in the perception of the contribution of particular individuals the tutor may ask the group to discuss these and come to an agreement.

Below is a list of some of the processes which you will be involved in completing a group project. You may modify this list and weightings if everyone in the group is agreed. This is best done near the beginning when you have devised a work plan. You may wish to revise the scheme at the end, but this may result in conflict.

Project processes

- 1 *Ideas and suggestions*
- 2 *Leadership, group organisation and support, minute taking*
- 3 *Data collection/collation/analysis*
- 4 *Report writing, production and editing*
- 5 *Preparing/giving verbal presentation*

Using the *Self and Peer Assessment Form* independently assess the relative contribution of each team member, including yourself. The following grading system should be applied:

- 1 *Minimal, or did not contribute in this way*
- 2 *Below average*
- 3 *Average*
- 4 *Above average*
- 5 *Outstanding*

In assessing the relative contributions of team members account should be taken of the **quality and effectiveness** of the contribution as well as the amount of effort expended.

Average refers to the average contribution of *your* group members to that particular process.

A discussion of how this scheme operates may be found in:

Healey M and Addis M (2004) Use of peer and self-assessment to distribute group marks among individual team members: Ten years experience, in Healey M and Roberts J (Eds) *Engaging students in active learning: case studies in geography, environment and related disciplines*, Cheltenham: University of Gloucestershire, Geography Discipline Network and School of Environment pp116-121

<http://www2.glos.ac.uk/gdn/active/student.htm>

Self and Peer Assessment Form

Your name:

- 1 List the names of your team in the table below.
- 2 Allocate points to each member of your team, including yourself, for each project process using the following grading scheme, where average refers to the average contribution of members of *your* group to that particular process:
 - 1 *Minimal, or did not contribute in this way*
 - 2 *Below average*
 - 3 *Average*
 - 4 *Above average*
 - 5 *Outstanding*
- 3 You are encouraged to be frank and honest in allocating scores.
- 4 Sum the number of points allocated to each person and calculate the overall number of points you have given to your team.

Group members in alphabetical order including yourself	Project process score					TOTAL
	1	2	3	4	5	
A.						
B.						
C.						
D.						
E.						
F.						
OVERALL TOTAL						

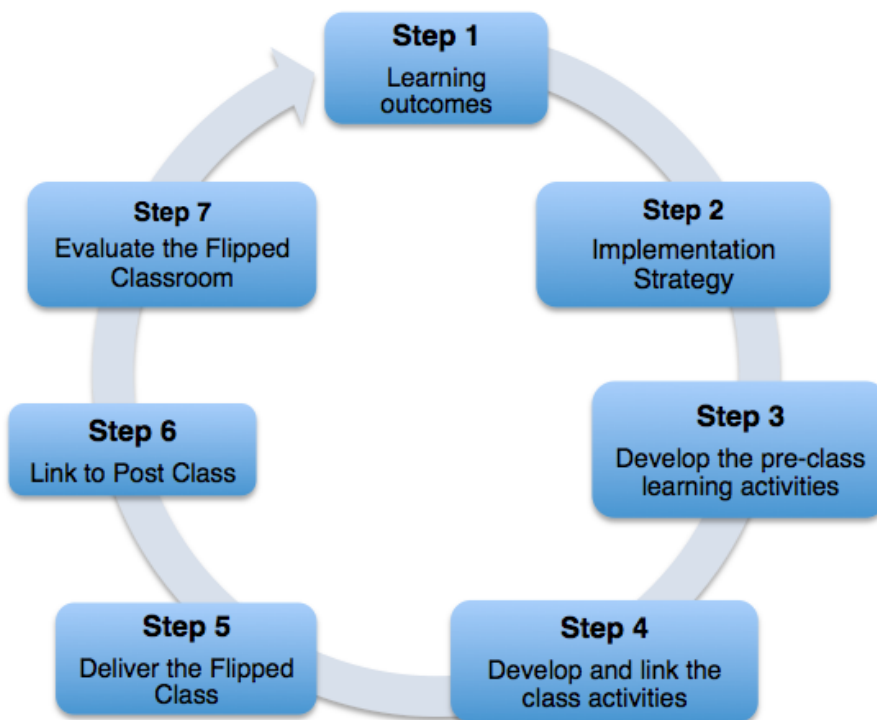
Comments: Use this space if you wish to draw to the attention of the tutor any particular points about either the way your group operated or the assessment procedures.

2. The inverse or flipped classroom

A further way in which active learning is becoming embedded in courses is through the development of inverse or flipped classrooms (Lage *et al.* 2000; Gerstein 2012), in which students obtain the material traditionally covered in lectures prior to the class through, for example, readings and videos and sometimes using open educational resources, such as MOOCs, and then spend the time in class in discussion, problem solving and other experiential activities. Ideally the students then undertake some follow-up activities.

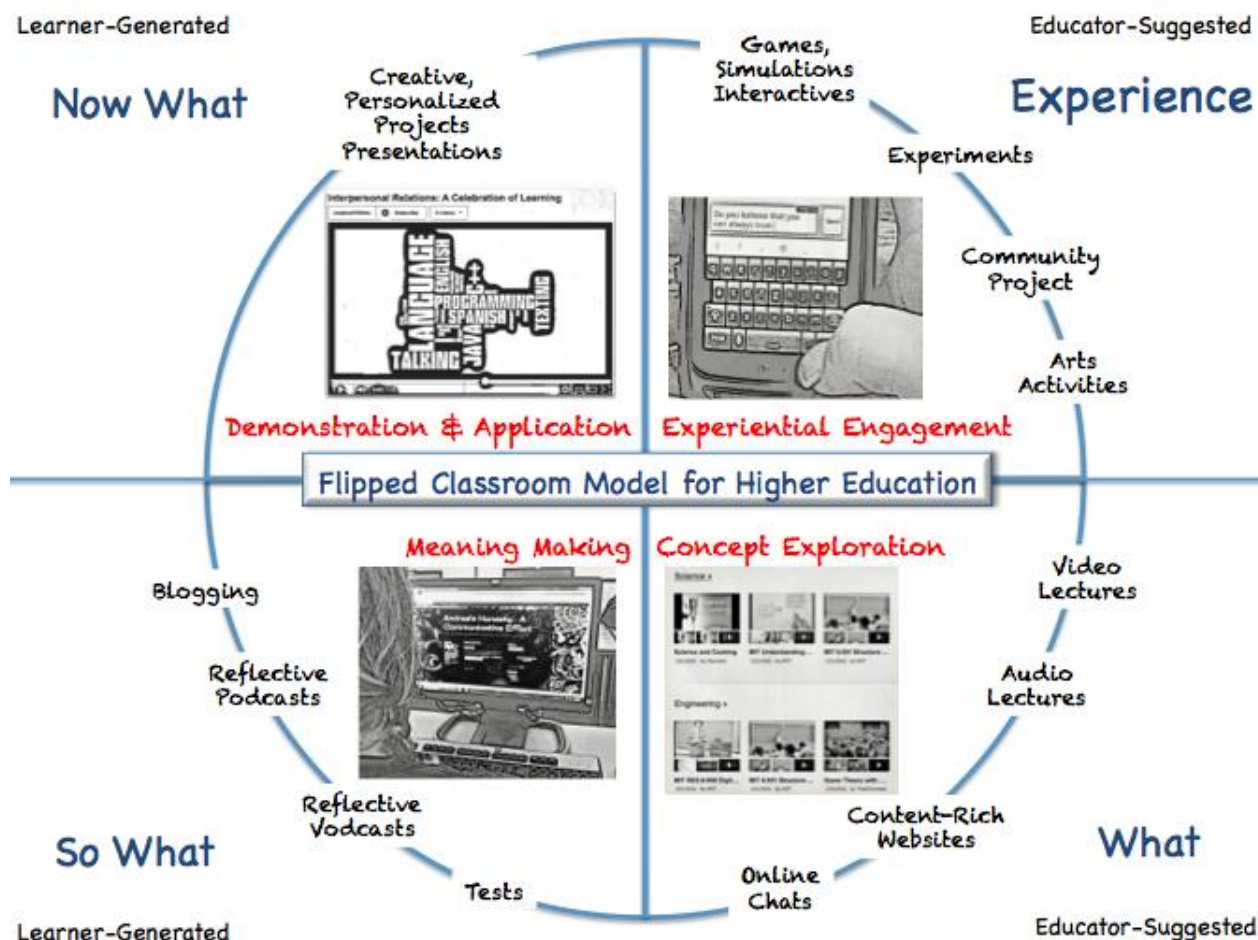
The key to the flipped classroom experience is the linkage between the out-of-class and in-class activities. Karanicolas et al. (2015) outline 7 steps to flipping (Fig 4).

Fig. 4 Seven Steps to Flipping with a Framework



Source: Karanicolas, Snelling and Winning., 2015; <http://www.adelaide.edu.au/flipped-classroom/about/>

Fig. 5 The experiential flipped classroom model



Source: Gerstein (2012)

Several institutions have developed flipped classroom strategic initiatives, including the Universities of Bath, British Columbia and Queensland (University of Bath 2013; McCabe 2013a, University of Queensland nd).

Gernstein (2012) adapted Kolb’s experiential learning model to provide an experiential flipped class model in which ‘the video lectures, screencasts, and vodcasts fall within a larger framework of learning activities’ (Fig. 5). The cycle often begins with an experiential exercise, before exploring the concepts touched upon in the experiential engagement using a variety of media. Learners then reflect on what they have learnt during the previous phases using a range of meaning making activities including tests. In the final phase the ‘learners get to demonstrate what they learned and apply the material in a way that makes sense to them’ through creating personalized projects and presentations.

An example of the application of the flipped classroom

“McLaughlin, Roth and Glatt (2014), with pharmaceutical students, adopted a version of the flipped classroom where they off-loaded content for students to learn on their own and devoted class time to engaging students in student-centred learning activities. Adopting a student-centred and flipped approach improved attendance and learning. Students perceived the value of the approach to their learning, with 85% (n=126) of students favouring the flipped learning experience over traditional lecture formats by the end of the course. Key elements in this approach include student responsibility to come to class with an understanding of the material in order to be able to fully participate in the learning and teaching experience and the use of appropriate assessment. The use of online videos prior to sessions, team work, formative assessment using clicker/audience response questions, and explicit instruction from the lecturer to focus learning using micro-lectures (one to three minutes in length); varied modes of summative assessment (student presentations, quizzes, examinations, projects; online reflective questions and answers) were all integral elements of their approach.” (King *et al.*, 2015, 27).

3. Inquiry based learning planner

http://www.shef.ac.uk/polopoly_fs/1.122759!/file/IBLPlanner.pdf

This Planner offers a point of departure for designing IBL, and discussing and sharing IBL designs, in any academic discipline. Already-produced designs – for example, in the form of case studies or activity-sequences – can be used in conjunction with the planner for inspiration and adaptation.

Designing for IBL

Students

Questions to ask

What relevant subject and process knowledge and skills will students bring to the inquiry?
How do they understand inquiry and research, and their own roles as student researchers?

How might IBL challenge them, e.g. in relation to their beliefs about their role in knowledge-creation, expectations about learning and teaching, self-confidence, skills?

What are their likely needs for support and guidance, in relation to the subject-matter and the inquiry process?

Intended learning outcomes

Will the main focus be on students acquiring existing knowledge (‘inquiry for learning’) or on building new knowledge (‘inquiry for knowledge-building’)?

What will the balance be between subject and process learning outcomes?

Inquiry theme

Will students play a role in determining learning outcomes?

What will students explore? How will their inquiries relate to the curriculum?

Who will establish the inquiry question – teacher, students, someone else?

Will there be a link between students’ inquiries and their academic tutors’ research interests?
If so, will this be made explicit?

Inquiry process

What is the appropriate scale and timescale of the inquiry?

Will the process be tightly or loosely structured by academic tutors? A step-by-step sequence of tasks, or a more flexible, emergent process? More strongly teacher- or student-designed?

Will students have choices in deciding how to approach the inquiry

Will an established framework or protocol be used to structure the process? Will it follow the pattern of research practice in the discipline?

Tasks

What will the stimulus for the inquiry be (an open question; a scenario; a problem; an image; an artefact; a performance; a discussion; something else)?

How will the tasks be sequenced? Will a digital design tool be used (e.g. LAMS)?

What tasks will there be to help students engage with relevant theory/subject-matter (e.g. reflection; discussion; peer-to-peer information-sharing; lectures; practical workshops; laboratory sessions)?

What tasks will there be to help students develop process awareness and skills (e.g. in areas such as research methods, information literacy, group-work, reflective writing)?

Assessments

What will be assessed (research product; aspects of the process; reflection on the process)? What form will assessed outcomes take (poster; wiki; essay; design; report; film; other?) Will assessment be individual or collective?

What will the assessment criteria be? Will students play a role in establishing assessment criteria?

Who will assess (academic tutors; student peers; self-assessment; other)? How will summative feedback be given?

Information

How will students access relevant information? What will the balance be between providing information to students, and requiring students to seek and select information themselves?

Will students be directed to information on process issues as well as discipline-based subject-matter?

Spaces

Is there a need for a particular type of learning/teaching space during and outside of 'contact' time?

Technologies

Which technologies will be needed and appropriate? Special equipment? Platforms for collaboration and content-creation; mobile technologies; the institutions' virtual learning environment; etc?

Will students play a role in deciding which technologies to use?

Tutoring

Who will be involved in guidance and tutoring (academic staff; learning support professionals, e.g. librarians; student mentors; external tutors; other)?

How and when will formative and summative feedback be provided?

Peer-to-peer

Will students work together? If so, in what way? Will there be an focus on 'inquiry community'?

Will students work in partnership with academic staff or other researchers?

Dissemination

Will students share the results of their inquiries with each other? More widely at department or Faculty level, or with a practitioner/research community beyond the university?

How will results be shared (on web, at an event, via presentations, posters, suitable peer-reviewed outlets; other)?

Source: Levy, P. (2010) *Inquiry-based Learning Planner*. Sheffield: Centre for Inquiry-based Learning in the Arts and Social Sciences, University of Sheffield.

4. Value rubric for inquiry based learning

INQUIRY AND ANALYSIS VALUE RUBRIC

for more information, please contact value@aacu.org



The VALUE rubrics were developed by teams of faculty experts representing colleges and universities across the United States through a process that examined many existing campus rubrics and related documents for each learning outcome and incorporated additional feedback from faculty. The rubrics articulate fundamental criteria for each learning outcome, with performance descriptors demonstrating progressively more sophisticated levels of attainment. The rubrics are intended for institutional-level use in evaluating and discussing student learning, not for grading. The core expectations articulated in all 15 of the VALUE rubrics can and should be translated into the language of individual campuses, disciplines, and even courses. The utility of the VALUE rubrics is to position learning at all undergraduate levels within a basic framework of expectations such that evidence of learning can be shared nationally through a common dialog and understanding of student success.

Definition

Inquiry is a systematic process of exploring issues, objects or works through the collection and analysis of evidence that results in informed conclusions or judgments. Analysis is the process of breaking complex topics or issues into parts to gain a better understanding of them.

Framing Language

This rubric is designed for use in a wide variety of disciplines. Since the terminology and process of inquiry are discipline-specific, an effort has been made to use broad language which reflects multiple approaches and assignments while addressing the fundamental elements of sound inquiry and analysis (including topic selection, existing knowledge, design, analysis, etc.) The rubric language assumes that the inquiry and analysis process carried out by the student is appropriate for the discipline required. For example, if analysis using statistical methods is appropriate for the discipline then a student would be expected to use an appropriate statistical methodology for that analysis. If a student does not use a discipline-appropriate process for any criterion, that work should receive a performance rating of "1" or "0" for that criterion.

In addition, this rubric addresses the **products** of analysis and inquiry, not the **processes** themselves. The complexity of inquiry and analysis tasks is determined in part by how much information or guidance is provided to a student and how much the student constructs. The more the student constructs, the more complex the inquiry process. For this reason, while the rubric can be used if the assignments or purposes for work are unknown, it will work most effectively when those are known. Finally, faculty are encouraged to adapt the essence and language of each rubric criterion to the disciplinary or interdisciplinary context to which it is applied.

Glossary

The definitions that follow were developed to clarify terms and concepts used in this rubric only.

- **Conclusions:** A synthesis of key findings drawn from research/evidence.
- **Limitations:** Critique of the process or evidence.
- **Implications:** How inquiry results apply to a larger context or the real world.

INQUIRY AND ANALYSIS VALUE RUBRIC

for more information, please contact value@aacu.org



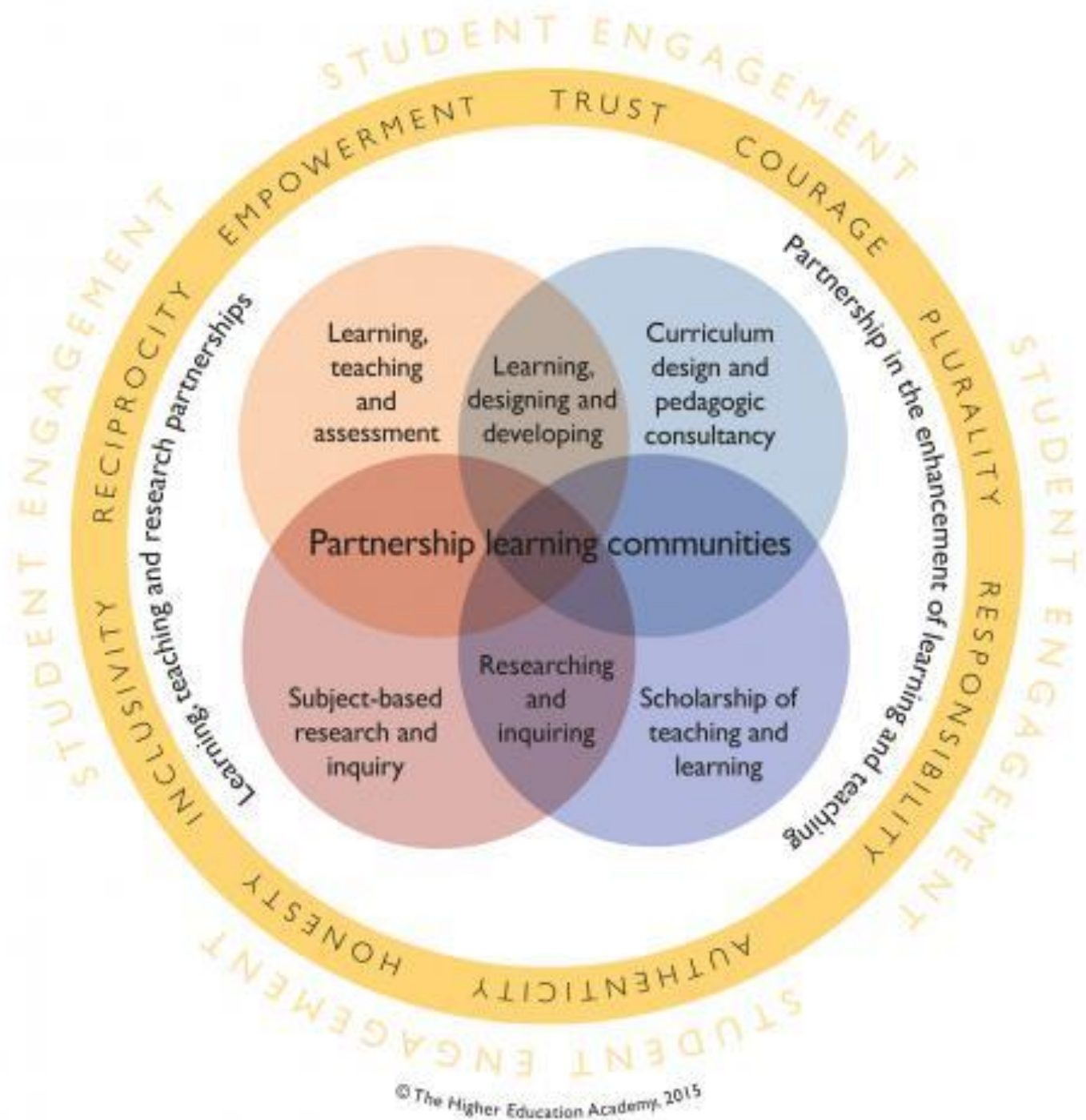
Definition

Inquiry is a systematic process of exploring issues/objects/works through the collection and analysis of evidence that result in informed conclusions/judgments. Analysis is the process of breaking complex topics or issues into parts to gain a better understanding of them.

Evaluators are encouraged to assign a zero to any work sample or collection of work that does not meet benchmark (cell one) level performance.

	Capstone 4	Milestones		Benchmark 1
		3	2	
Topic selection	Identifies a creative, focused, and manageable topic that addresses potentially significant yet previously less-explored aspects of the topic.	Identifies a focused and manageable/ doable topic that appropriately addresses relevant aspects of the topic.	Identifies a topic that while manageable/ doable, is too narrowly focused and leaves out relevant aspects of the topic.	Identifies a topic that is far too general and wide-ranging as to be manageable and doable.
Existing knowledge, research, and/or views	Synthesizes in depth information from relevant sources representing various points of view/approaches.	Presents in depth information from relevant sources representing various points of view/approaches.	Presents information from relevant sources representing limited points of view/approaches.	Presents information from irrelevant sources representing limited points of view/approaches.
Design process	All elements of the methodology or theoretical framework are skillfully developed. Appropriate methodology or theoretical frameworks may be synthesized from across disciplines or from relevant sub-disciplines.	Critical elements of the methodology or theoretical framework are appropriately developed however more subtle elements are ignored or unaccounted for.	Critical elements of the methodology or theoretical framework are missing, incorrectly developed or unfocused.	Inquiry design demonstrates a misunderstanding of the methodology or theoretical framework.
Analysis	Organizes and synthesizes evidence to reveal insightful patterns, differences, or similarities related to focus.	Organizes evidence to reveal important patterns, differences, or similarities related to focus.	Organizes evidence but the organization is not effective in revealing important patterns, differences or similarities.	Lists evidence but it is not organized and/or is unrelated to focus.
Conclusions	States a conclusion that is a logical extrapolation from the inquiry findings.	States a conclusion focused solely on the inquiry findings. The conclusion arises specifically from and responds specifically to the inquiry findings.	States a general conclusion that, because it is so general, also applies beyond the scope of the inquiry findings.	States an ambiguous, illogical or unsupported conclusion from inquiry findings.
Limitations and implications	Insightfully discusses in detail relevant and supported limitations and implications	Discusses relevant and supported limitations and implications	Presents relevant and supported limitations and implications	Presents limitations and implications, but they are possibly irrelevant and unsupported

Figure 5. Students as partners in learning and teaching in higher education: An overview model



Source: Higher Education Academy (2015) Based on: Healey, M., Flint, A. and Harrington, K. (2014) *Engagement through partnership: students as partners in learning and teaching in higher education*. York: Higher Education Academy p.25. <https://www.heacademy.ac.uk/engagement-through-partnership-students-partners-learning-and-teaching-higher-education>