# Authentic Assessment and Feedback

## 13-14th Feb 2018, Cape Town, South Africa

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UCL ENGINEERING
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IPAC
Individual Peer Assessed Contribution

Biomedical Engineering Education Research

UCL Centre for Engineering Education

# Agenda for today

| Time | What? |
|---|---|
| | **Tuesday 13th February** |
| 09:00 (30 min) | Registration, tea and coffee, networking |
| 09:30 (15 min) | Introductions – getting to know each other |
| 09:45 (15 min) | **Setting the scene** – timetable and plan PGS/JG |
| 10:00 (90 min) | **Session 1 – Authenticity in assessment: why do it?**<br>(i) Creating your ideal graduate (activity: 30 min discussion + 20 min plenary) PGS<br>(ii) What does authentic mean in the UK, and how does UCL interpret authentic (presentation: 20 min) JG<br>(iii) Discuss – what does authentic mean in SA, and Q&A so far (20 min) |
| 11:30 (15 min) | Coffee |
| 11:45 (90 min) | **Session 2 – Types of assessment and programme wide approaches**<br>(i) Types of assessments and links between them across a module/year/programme (activity: 30 min discussion + 10 min personal log) PGS<br>(ii) Overview of IEP BME programme (presentation: 25 min) PGS<br>(iii) Connected Curriculum – building assessment throughlines in a programme (presentation: 10 min) JG<br>(iv) Delegates thoughts, and Q&A (15 min) |
| 13:15 (45 min) | Lunch |

# Agenda for today

| | |
|---|---|
| 13:15<br>(45 min) | Lunch |
| 14:00<br>(75 min) | **Session 3 – Linking Learning Objectives with assessment**<br>(i) What LOs will create the graduate qualities from session 1? (Discussion: 15 min + plenary 15 min) PGS<br>(ii) Case study of UCL IEP Biomedical Engineering second year scenario module (presentation: 15 min) JG<br>(iii) Mapping module or activity LOs to assessment & the Constructive Alignment principle (activity: mapping, discussion, plenary: 30 min) JG |
| 15:15<br>(15 min) | Tea |
| 15:30<br>(75 min) | **Session 4 – Assessment Tools**<br>(i) Making assessment more time efficient without compromising authenticity – when, how, limitations, pros and cons (discussion 30 min + plenary 15 min) JG/PGS<br>(ii) UCL examples of online tools (presentation, 15 min) PGS<br>(iii) Q & A (15 min) |
| 16:45<br>(15 min) | Closing session – what have we learnt today? PGS/JG |
| 17:00 | END |
| 19:00 | Dinner |

# S1: Authenticity in assessment: why do it?

- Creating your ideal graduate
  - Discussion (30 mins)
    - What qualities should a graduate have?
    - How do we assess these qualities?

- Feedback from the room:
  - What qualities should a graduate have?
    - Confidence and competence in the sciences/technical knowledge and concepts
    - Think, and write, mathematically
    - Can do, proactive attitude, able to learn, independent but dependable, meet deadlines and have good standards and habits
    - Communication with EVERYONE and team work across disciplines
    - Apply knowledge to unseen, open-ended problems - strategists
    - Solve South African problems
    - Reflective and ethical (including issues around plagiarism)
    - Innovative – finding problems, and knowing how/where to find solutions
  - How do we assess these qualities?
    - tests
    - labs
    - Design - aesthetics
    - Case studies to show problem finding and solving
    - Give practical challenges
    - Group work and peer assessment

# What does authentic mean in the UK?

Definition of *authentic* in English:

# authentic

**ADJECTIVE**

1 Of undisputed origin and not a copy; genuine.

*'the letter is now accepted as an authentic document'*

+ More example sentences + Synonyms

1.1 Made or done in the traditional or original way, or in a way that faithfully resembles an original.

*'the restaurant serves authentic Italian meals'*

*'every detail of the film was totally authentic'*

+ More example sentences + Synonyms

1.2 Based on facts; accurate or reliable.

*'an authentic depiction of the situation'*

+ More example sentences + Synonyms

1.3 (in existentialist philosophy) relating to or denoting an emotionally appropriate, significant, purposive, and responsible mode of human life.

+ Example sentences

Oxford English Dictionary website.

# ➢ The UK engineering profession

We gratefully acknowledge contributions and support from:

CBI

Education Employers

eef The manufacturers' organisation

Engineering Council

IOP Institute of Physics

NetworkRail

PEARSON

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Chief Executive, Semta

- Engineering contributes 26% of UK GDP
  - More than retail and wholesale, and financial and insurance sectors combined
- Wider employment multiplier of 1.74
- Sectors:
  - Manufacturing
  - Civil, Construction and Transport Engineering
  - ICT
- Increasing number of engineering apprenticeships
  - 20000 annual shortfall of engineers
  - Only 25% of engineering PGT are UK
  - 1 in 8 of the workforce is female

- Engineering Council Standard for Professional Engineering Competencies (UK SPEC)
  A. Knowledge and understanding
  B. Design and development of processes, systems, services and products
  C. Responsibility, management or leadership
  D. Communication and inter-personal skills
  E. Professional commitment
- Informed by government reviews, industry, educators
  - Jenkins and Wakeham reviews.

- Monitoring our education
- NSS
  - National Student Survey – undergraduate
  - Student ‘experience’ and ‘satisfaction’
  - Covers education and all aspects of support
- DLHE
  - Destination of Leavers of HE survey
  - Employment 6 months after graduation

- UCL Engineering Integrated Engineering Programme
  - To change the world, you have to be taught differently
  - Evolved out of industrial interactions to create:
    - Industry oriented curriculum
    - Discipline specific (8 departments)
    - Interdisciplinary projects
    - Development of transferable skills

IEP Integrated Engineering Programme

## ➢ UCL Engineering Integrated Engineering Programme

- Day 1 – interdisciplinary challenges
- First and second year ‘scenarios’
- End of second year ‘How to Change the World’

https://www.youtube.com/watch?time_continue=179&v=94ODlO-nedA

## What does authentic mean in SA? – Feedback from the room:

- Solving local, relevant problems NOT big multinationals (local economics are important)
- Working with local people
- Framing local problems appropriately
- Knowledge of local context
  - e.g. public transport
- Authenticity is difficult for large groups and busy curricula
- And it doesn't always fit into disciplinary boxes
- Need to develop people who will work on their country's challenges
- Authenticity is different, depending on university
- Reliable, valid and transparent
- Peer reviewed

# S2: Types of assessment and programme wide approaches

- (i) Types of assessments and links between them across a module/year/programme
  - Discussion (20 mins)
    - What types of assessment do you use?
    - Are these assessments somehow linked? How?
    - How do get links across modules and even entire programmes?
  - Personal logs (10 mins)

## ➢ (ii) Overview of IEP BME programme

# Motivation for assessment

- What can be assessed?
  - Technical knowledge
  - Professional skills
- Why to do it?
  - *(summative mark)*
  - Foster development of the above
- How?
  - Use and expose students to various assessment options:

    Enriches the experience

    Different students would be naturally better at different assessment types

# Some examples of assessment options

## *Reports*

- Traditional assessment
- Versatile
- Covers various learning objectives
- Final year projects
- Staff/student time consuming
- No benefits for overuse!

## *Presentation*

## *Interviews*

- Speak in public
- Present concise information
- Reflect on work and prepare for possible questions
- Demonstrates students' level of understanding

- Think on your feet
- Allows discussion and quick feedback
- Staff/student time needs to be timetabled
- Versatile

## *Collaborative websites*


## *User manual*


User Instructions

**What you need:**
- Shoe Clamp
- Support for balance

**What to do:**

Step 1

Clamp the heel of the shoe with the shoe horn inside the heel.

Step 2

Support yourself by holding onto, for example a wall or chair.

Step 3

Hold shoe just behind the appropriate foot.

Step 4

Lift foot slightly backwards and slide into shoe toe first.

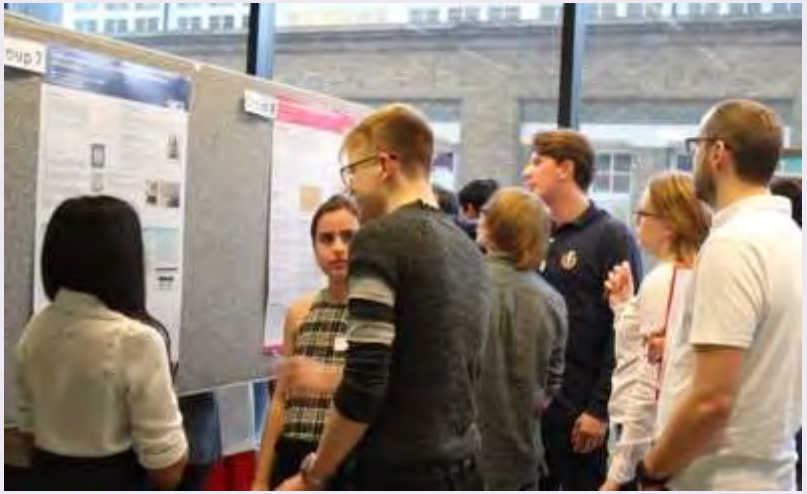
Step 5

Once comfortable remove clamp and repeat with other shoe.

- Address a different type of audience (outfacing assessment)
- Use adapted writing (furthering writing and structuring skills)
- Present concise information
- Assessed similarly to a short report
- Can be also used for non-academic purposes
- Build up student's portfolio.

## *Dragons' den*

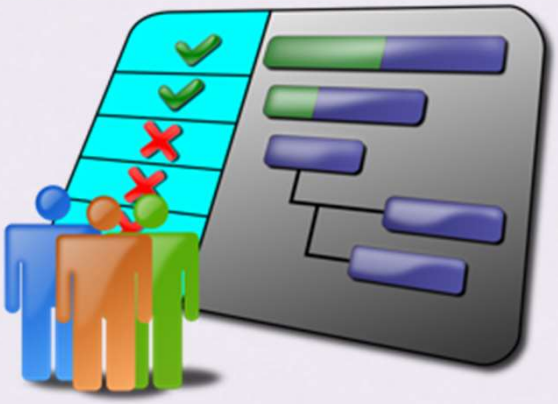

## *Posters*



- Specialized audience
- In-depth discussions with staff (feedback)
- Challenge students
- Students particularly engage and prepare for these activities

- Students acquire in-depth knowledge of a given topic
- Experience typical research / industry activity (research conference or pitching for funding)
- Staff/student timetabled

## *Project deliverables*



- Work using industry procedures
- Organize and deliver work progressively – use feedback
- Cover a range of aspects in the same project, e.g. from product brief to commercialization

## *Prototypes*

- Product oriented
- Use a range of technical skills (as when needed)
- Hands-on work
- Show resourcefulness
- Student satisfaction and sense of achievement

## *Peer assessment* → *360 degrees PA*


- Critical thinking and deeper understanding
- Writing for an audience - students give feedback to peers in a constructive and useful way.
- Benchmarking own (students') work
- Quick feedback even in large classes

- Students are assessed on: product + quality of feedback
- Increase engagement → increase quality of the feedback
- Students read feedback
- Moderation process is embedded → better student perception of mark fairness

# Comparative table

| | Report / deliverables | Websites / user manual | Presentation / interview | Posters / pitch | Prototype | 360 peer assessment |
|---|---|---|---|---|---|---|
| |   |   |   |    |  |  |
| Organization | £ | £ | ££ | ££ | ££ | £ |
| Staff time | ££ | £ | ££ | ££ | £ | £ |
| Feedback | - | | | | | |
| Students' experience | | | | | | |

£ = low, ££ = medium, £££ = high

# *Comparative table: Assignments vs. developed skills*

- Graduating students' feedback

*Table 1.* Third year students' responses to questionnaire (N=9, 90% of the class). Scale: 1- not at all, 2- not very, 3- fairly, 4- significantly, 5-very. Mean (SD)

| | **S1** | **S2** | **S3** | **S4** |
|---|---|---|---|---|
| Current confidence in your ability? | 3.9 (0.7) | 3.9 (0.7) | 3.7 (0.5) | 3.9 (0.6) |
| Has it developed during your degree? | **4.4 (0.7)** | **4.1 (1.0)** | **4.2 (0.7)** | **4.1 (0.8)** |
| Has this type of activity helped you to develop it?<br>(A) Open-ended group activities | **4.1 (1.1)** | **4.7 (0.5)** | 3.7 (1.1) | **4.0 (0.7)** |
| (B) Discussion with experts or as experts | **4.4 (0.5)** | **4.3 (0.9)** | 3.2 (1.3) | 3.7 (0.9) |
| (C) Peer dialog and peer assessment | 3.1 (1.3) | 3.0 (1.1) | **4.0 (0.7)** | **4.0 (0.7)** |

S1: Critical thinking
S2: Outfacing communication
S3: Critical analysis of someone else's work
S4: Constructing feedback

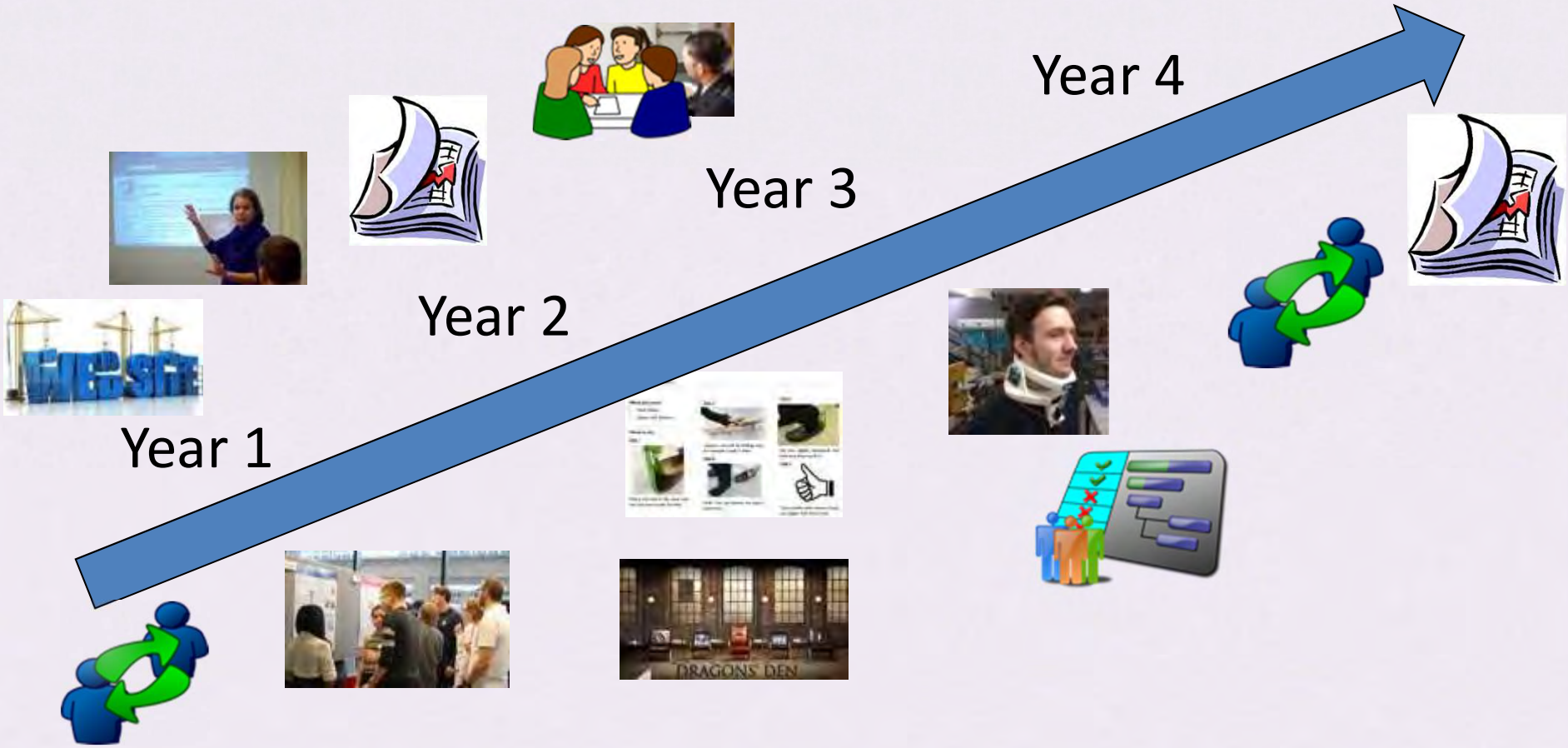
# Results

*Table 4.* Comparison of the proposed types of activities

| Activity type | Students | Staff | Resources |
|---|---|---|---|
| (A) Open-ended group activities | High engaging, significantly develops skills S1, S2 and S4. | Develops S1 & S2, might help S3-S4 but no evidence. Very useful as training for engineering. | Highly demanding: space, equipment, staff-time for preparation and support |
| (B) Discussion with experts or as experts | Very useful for S1 and S2 | Can be more easily incorporated in different parts of a module. Useful. Students might engage differently. | Staff time: medium<br>No cost or lab requirements. |
| (C) Peer dialog and peer assessment | Significantly useful for S3 and S4. Not all students like it. | S3 and S4 can be assessed. Prompt and good quality feedback, more detailed than staff can provide. | Staff time: low<br>No cost or lab requirements. Easily scalable with class size. |

# Use a variety of assessments across the programme

- Makes each assessment more meaningful
- Train students in different techniques



# Linking learning and assessment across the programme

## *Example*


***Research based education in 1st year***

## Before

- Maths
- Basic Matlab

- Writing
- Researching literature
- Presenting graphs and figures
- Presentation
- Team work

- Taking notes in lab work

## Year 1, 2nd half

## After

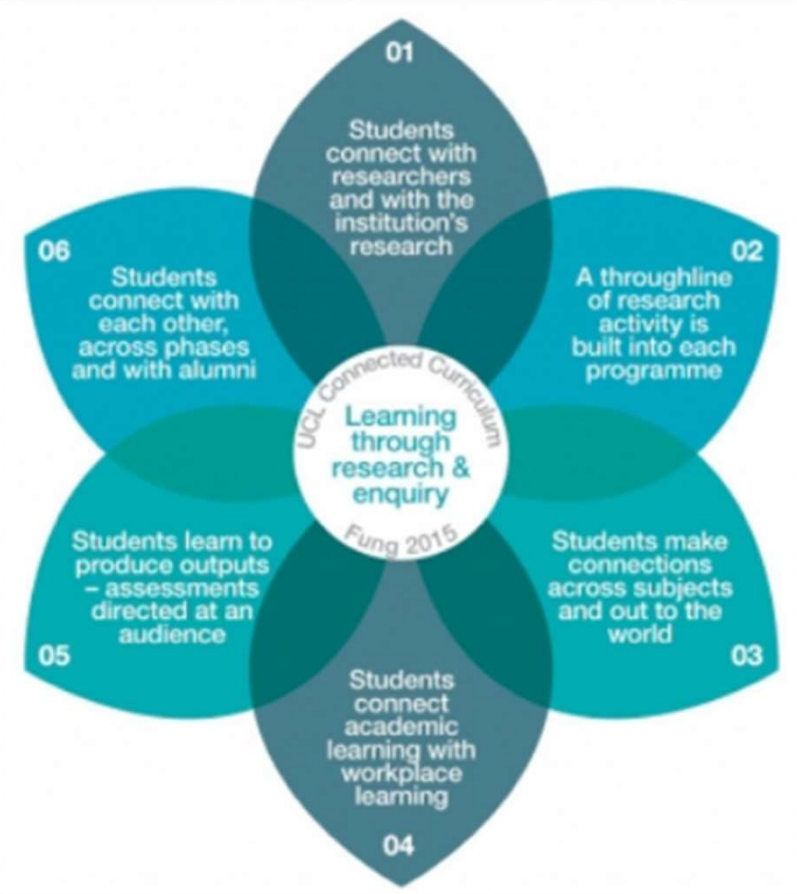
- Statics and materials knowledge

- Data analysis
- Poster, concise and structured information.
- Preparing for questions and presenting
- Relevant and good quality graphs and diagrams

- Use mechanical testing machine (self-identified)
- Design of experimental protocols
- Experience of real research – and associated challenges

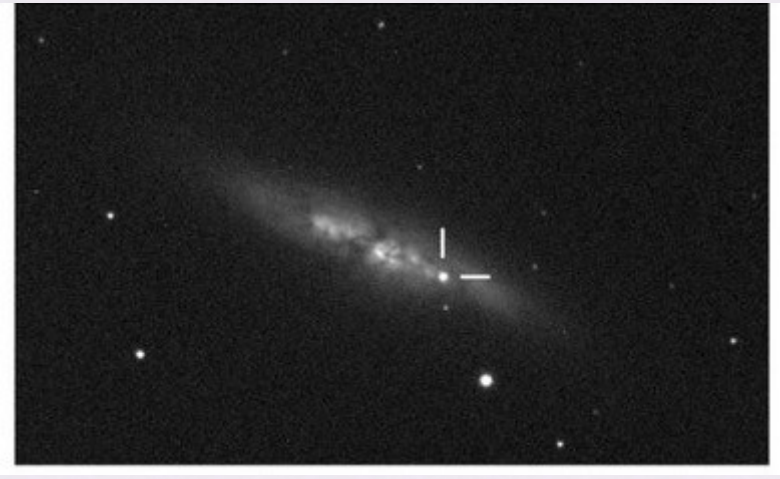
- Research-based education

1. Connect with research
2. Through-lines
3. Interdisciplinary
4. Workplace learning
5. Outward facing
6. Connect with each other




Book available as free pdf download at:
http://www.ucl.ac.uk/ucl-press/browse-books/a-connected-curriculum-for-higher-education

A career in fine-art



Finding a supernova

PALS: things you didn't want to ask


Building a text book

- (iv) Delegates thoughts on types of assessment and programme-wide approaches, and Q&A

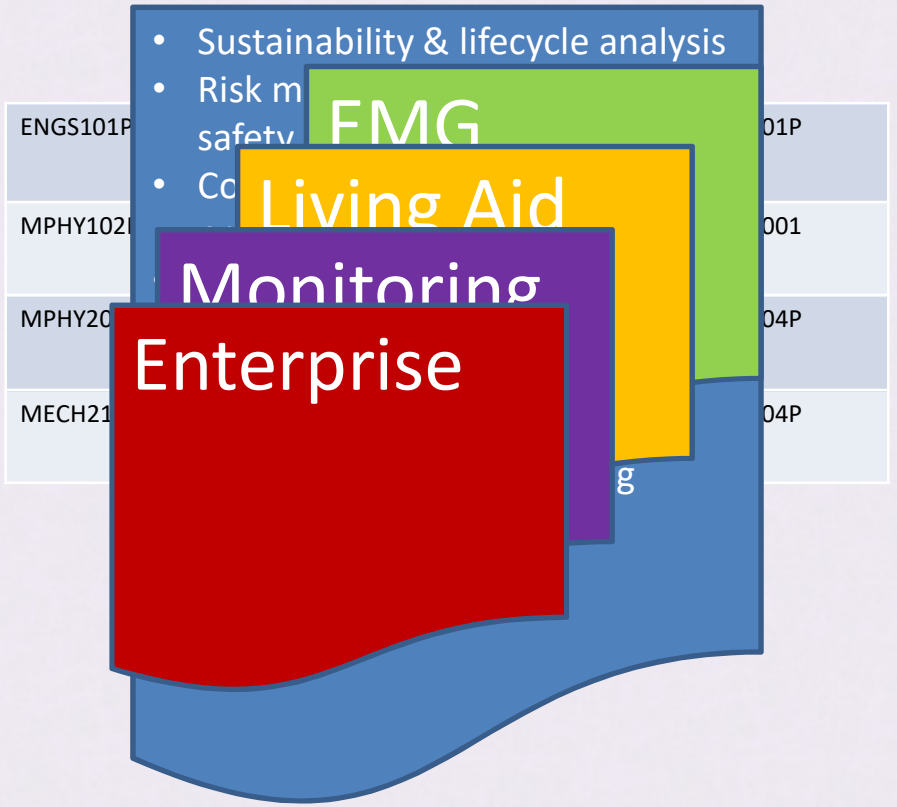
# S3: Linking Learning Objectives with assessment

- (i) What LOs will create the graduate qualities from session 1?
  - Discussion (15 mins)

- Learning outcomes and objectives
  - Finding and formulating problems
  - Communication – able to write professional reports, and presenting results
  - Able to use and understand mathematics
  - Able to assess solutions to find out if they are correct
  - Able to manage their time
  - Able to work in a diverse team

## ➢ (ii) Case study: linking Learning Objectives with assessment across a module

- **Aims**
- Reinforce core knowledge
- Integrate skills
- Show real-world context
- Integrate assessments
  - Workplace relevance



- Smart Clothing
  - Technical Knowledge
  - Sustainability and lifecycle analysis
  - Costing and manufacturing
  - Self-evaluation

## Dragons' Den

- Technical Knowledge
- Entrepreneurship
- Contract law
- Intellectual Property

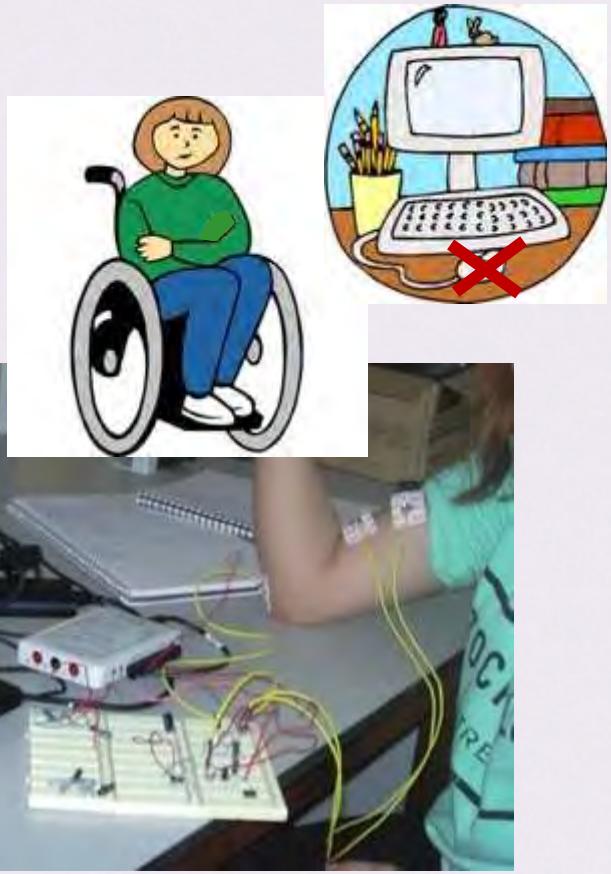
## Regaining Control

- Technical Knowledge
- Medical device regulations
- Risk management
- Executive summaries

## Remap

- Technical Knowledge
- Engineering drawing
- Ethics
- Patient confidentiality
- Communicating with patients

- Relevant story:
  - make a mouse replacement, so client can use computer
- Technical skills:
  - Analogue electronics
  - Signal processing
  - Anatomy and physiology
- Professional skills:
  - Risk management & liability
  - Quality/industrial standards
  - Executive summary writing



# Students said:

"… learnt much more than just electronics and programming skills"

..understand importance and relevance of the generic skills taught this year

"first time that ever had to work as a proper team to get something done"

"helpful in placing me in real life situations"

# Staff said:

impressed with the student's engagement

Groups needed a lot less support by last scenario

Client interactions worked well

scored well in tests of generic skills

# Final thoughts

- Module was developed to meet a pedagogic need, rather than as a vehicle for pedagogic research
  - BUT was underpinned by literature
  - Student feedback on previous work also considered
- Strong anecdotal evidence that the approach works when successfully implemented
  - Careful planning
  - Cohesive and communicative teaching team
  - Being prepared to iterate and develop

## ➢ (iii) Mapping module or activity LOs to assessment & the Constructive Alignment principle

- **S**pecific
- **M**easurable
- **A**chievable
- **R**ealistic and relevant
- **T**ime limited

'specific enough for students to know exactly what they need to do,

so that staff can measure whether students have done it,

so that the outcomes are achievable within the time they have … and

so that they are relevant to the aims of the course.' (22)

- (iii) Mapping module or activity LOs to assessment & the Constructive Alignment principle

- How can you assess multiple learning outcomes simultaneously?
- Can you combine approaches to assess your graduate learning outcomes?

- **S**pecific
- **M**easurable
- **A**chievable
- **R**ealistic and relevant
- **T**ime limited

- Learning outcomes and objectives from the room earlier:
  - Finding and formulating problems
  - Communication – able to write professional reports, and presenting results
  - Able to use and understand mathematics
  - Able to assess solutions to find out if they are correct
  - Able to manage their time
  - Able to work in a diverse team

- Assessing learning outcomes/objectives: ideas from the room
  - Interdisciplinary design project for South Africa
    - Design brief
    - Business plan
    - prototype
  - Videos to teach maths and thermodynamics to younger students
    - Could iteratively improve over several year-groups
  - Find a new application for an artefact from your discipline
    - Test whether it works!
  - Final thought from the floor: What would our assessment look like if we didn't have a big examination?

# S4: Assessment Tools

- (i) Making assessment more time efficient without compromising authenticity
  - Discussion (15 mins)
    - When can we do this?
    - How can we do this?
    - Pros and cons?
    - Limitations

## ➢ (ii) UCL examples of online tools

### 1. MCQs / polls

- Basic? Fast. Can be used in class to gauge students

For the following expression find the order of magnitude ($10^n$), given $a = 10^{-1}$, $d = 10^{-4}$,

$a + ad$

Select one:

- a. $3$
- b. $-1$
- c. $-3$
- d. $1$
- e. $6$

What are the primary units of density?

Given the primary dimensions

$L$ = length, $M$ = mass, $T$ = time, $\theta$ = temperature and $I$ = electric current

Select one:

- a. $\frac{M^2}{L^3}$
- b. $\frac{M}{L^3}$
- c. $\frac{M}{L^2}$
- d. $\frac{M\theta}{L^3}$
- e. $\frac{MT}{L^3}$

## 2. Complex quizzes

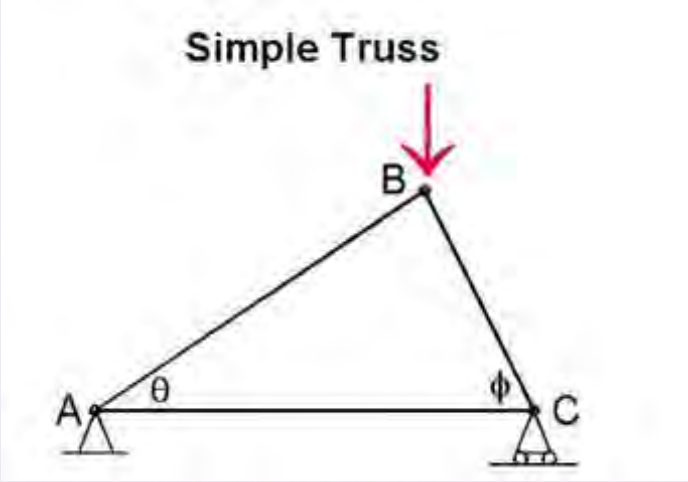
- Test more complex technical knowledge
- Quite versatile
- No language barriers
- No unintended clues
- Immediate feedback

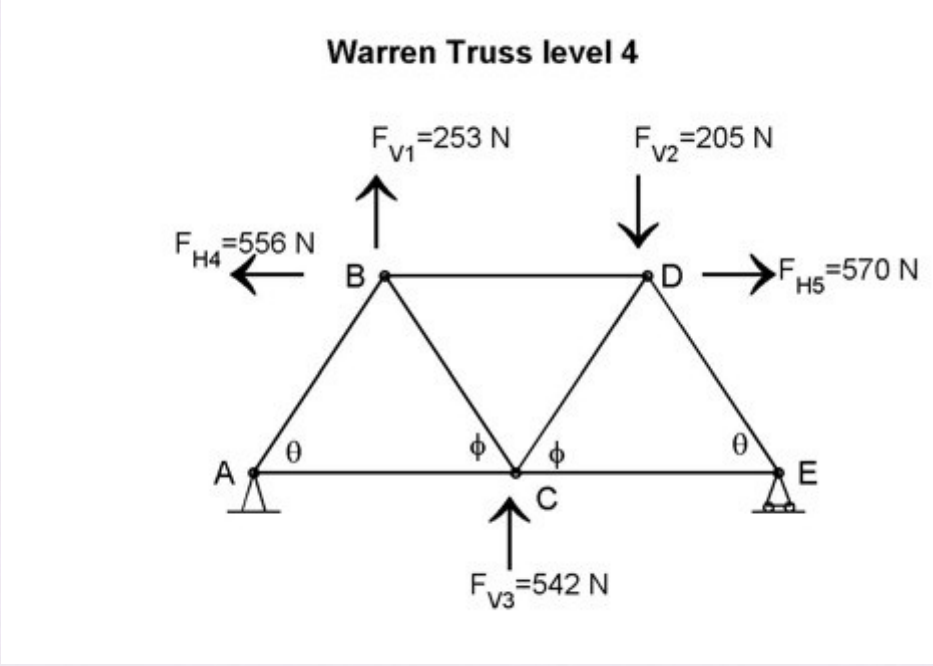
- Upfront time investment but reusable

- Can be used for training
  - Different difficulty levels allow for self-paced students' learning

# 2. Complex quizzes

## Warren Truss levels 1 and 4




Consider the right angle triangle in the Truss problem as shown above,where &theta = 28° and &phi = 62°, and the force applied on the truss system is 160 N.

Using the method of joints, calculate a) The reaction forces and b) the forces on each member.

(Give your answer to the nearest whole number.)

$R_A$ = N

$R_C$ = N

$F_{AB}$ = N

$F_{BC}$ = N

$F_{AC}$ = N

c)from the drop down list below indicate for each member if it is in tension or compression

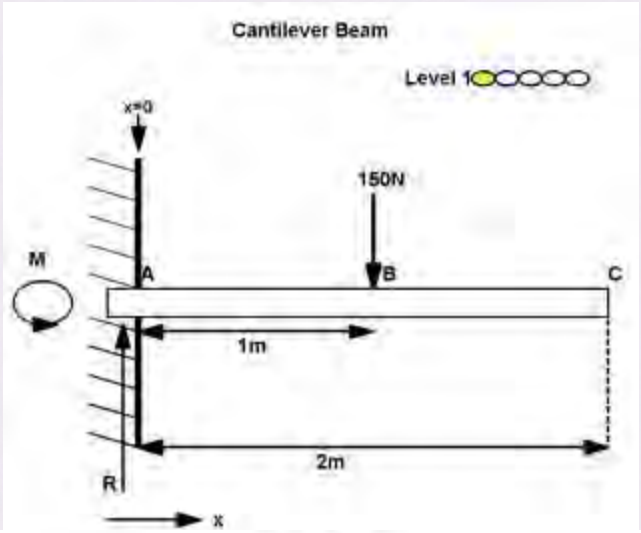
$F_{AB}$

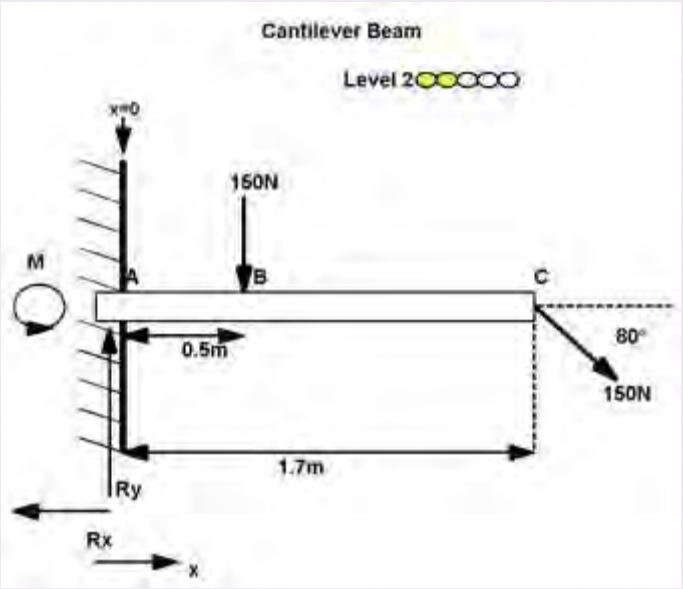
$F_{BC}$

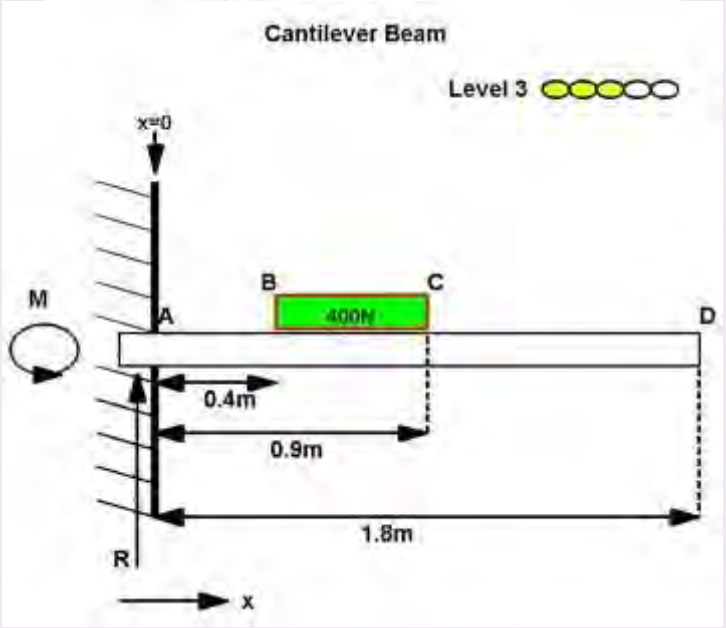
$F_{AC}$

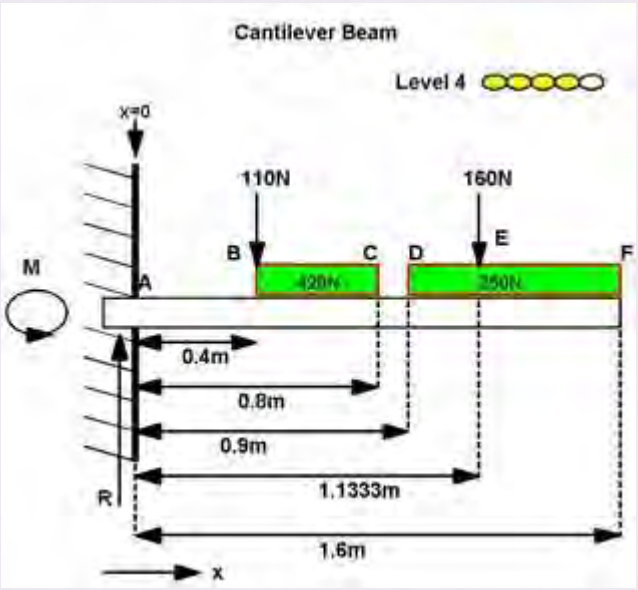
Check

# Cantilever beam: Levels 1 to 5



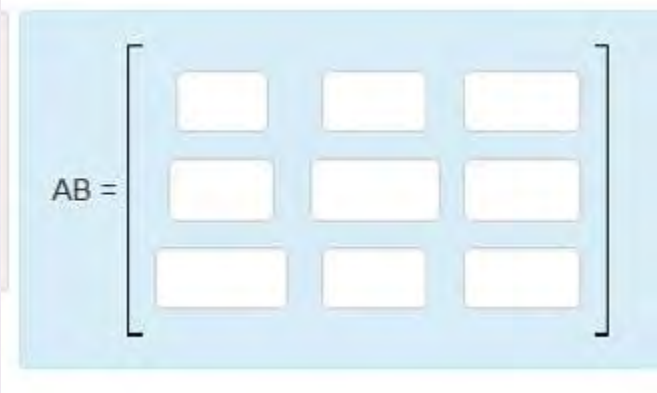




Level 5 = level 4 + beam weight

## Matrices




## Laplace Transforms

Level 2

Use Laplace transforms to solve the following differential equation given that y = 1 at t = 0

$$5\frac{dy}{dt}+8y=9e^{(-5t)}$$

Laplace Transforms table can be found here

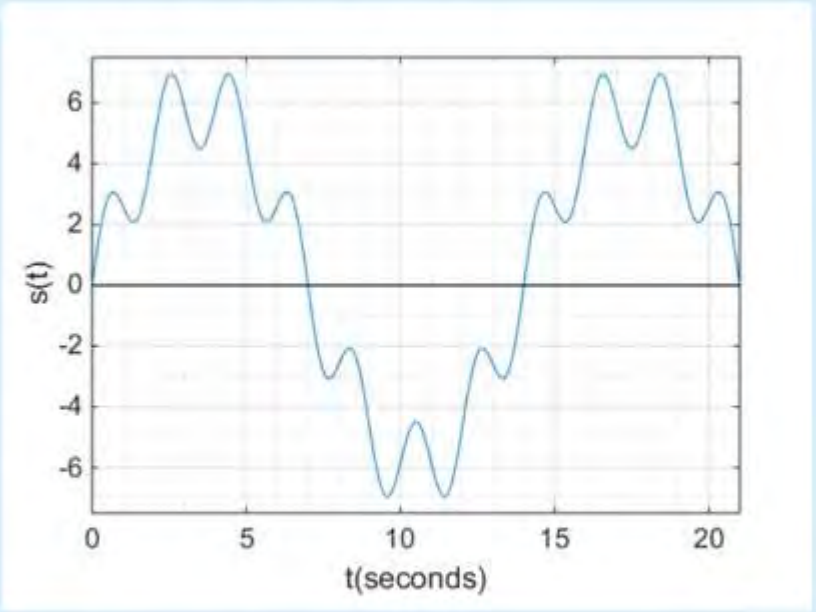
Help on how to insert mathmetical expressions in your answer can be found here

y(t) =

Display response

## Fourier

A graphical representation of the Fourier transform of the signal s(t) below will exhibit two peaks. Estimate the positions of these peaks on the frequency axis.




Give your answer to 2 d.p.

Higher Frequency:

Lower Frequency:

UCL

# Eigen Values and Eigen Vectors

## Series

Evaluate the sum of the infinite series :

$\sum_{n=0}^{\infty} [-3(\frac{1}{3})^n - 3(\frac{1}{9})^n]$

[Calculate upto 3 significant figures]

Answer :

Evaluate the sum of the infinite series :

$\sum_{n=1}^{\infty} [5(16)^{-\frac{n}{2}} - 3(64)^{-\frac{n}{2}}]$

[Calculate upto 3 significant figures]

Answer :

Find the eigenvalues and the associated eigenvectors of the following matrix:

$A = \begin{pmatrix} -3 & -10 \\ -10 & -2 \end{pmatrix}$

Calculate upto 3 significant figures and answer in increasing order $\lambda_1 \leq \lambda_2$

EigenValues:

$\lambda_1 =$ $\lambda_2 =$

Associated EigenVectors:

$V_1 = k_1 \begin{pmatrix} v_{1,1} \\ v_{1,2} \end{pmatrix}$ $V_2 = k_2 \begin{pmatrix} v_{2,1} \\ v_{2,2} \end{pmatrix}$

Specify the answer as a unitory vector where $v_{1,1}$ and $v_{2,1}$ are positive. In case $v_{1,1}$ or $v_{2,1}$ are negative, you can multiply all the elements of the matrix by -1 to make them positive. If $v_{1,1} = 0$ or $v_{2,1} = 0$ then check and make sure that $v_{1,2}$ or $v_{2,2}$ is given as positive respectively.

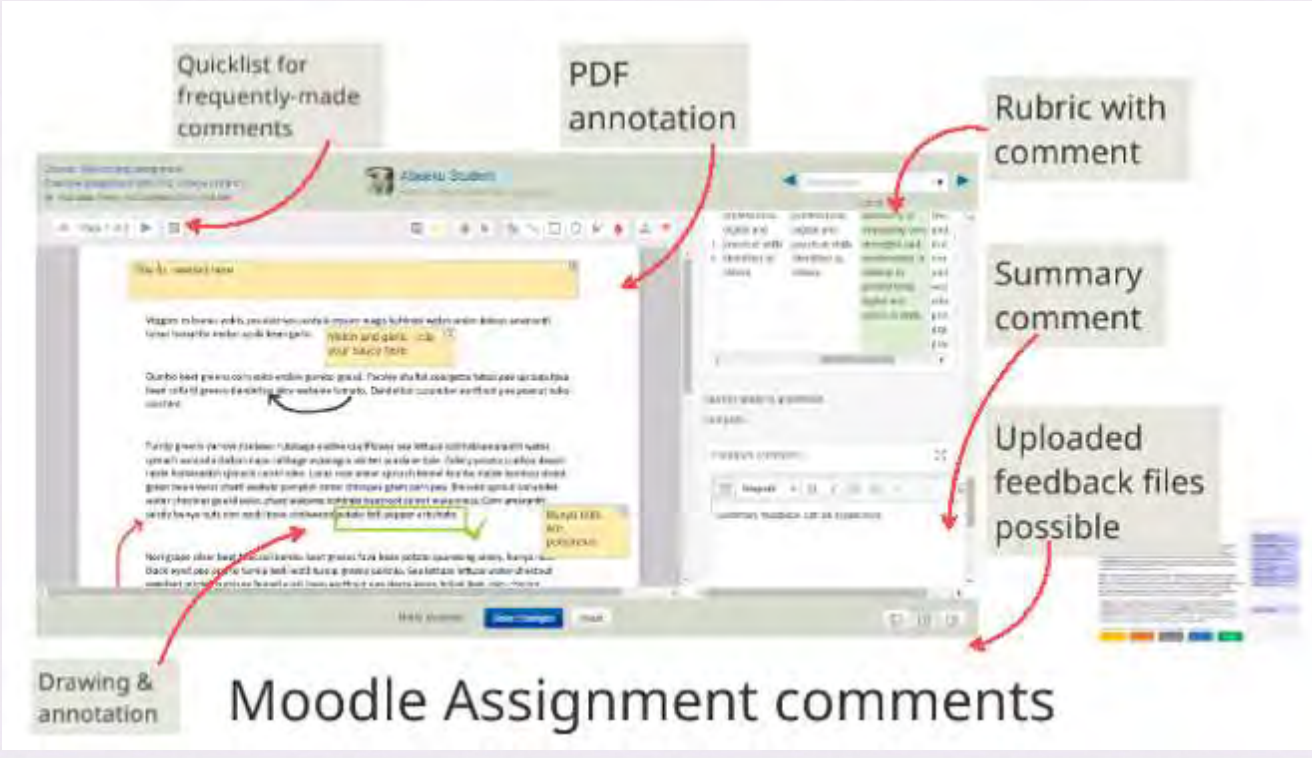
$V_1 = k_1 \begin{bmatrix} \\ \end{bmatrix}$

$V_2 = k_2 \begin{bmatrix} \\ \end{bmatrix}$

## 3. Marking on digital form/platform

- Reduces administration time
  - Collecting and sorting assignments, inputting marks into system, returning assignments and feedback, preparing examples for external examiners and/or accreditation panels, etc.
- Reduces risk
  - No missing assignments
- Platforms are fast improving, e.g. text and equations recognition
- Multiple assessors in parallel
- Reduces marking time? Perhaps increase opportunities?


Turnitin comments

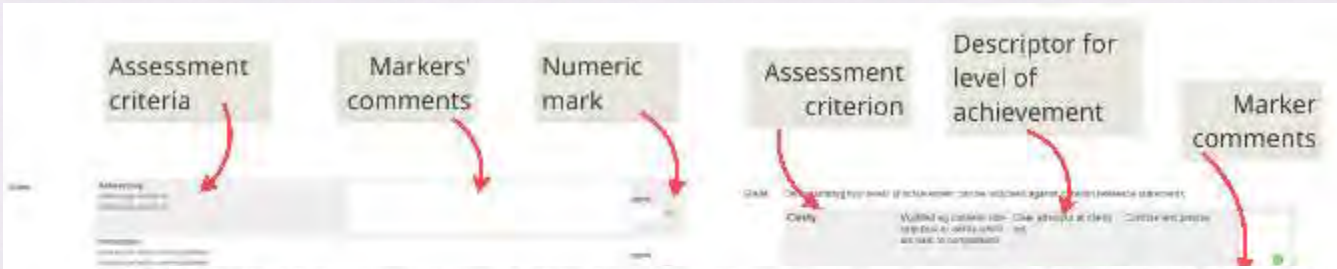



Moodle Assignment comments

## 4. Marking criteria

- Improves inter and intra-marker consistency
- Staff and students know what is expected of the assignment
  - Students identify and address weak areas - happier
  - Students need less personal reassurance from staff – save staff time
- Can be used to give quick feedback

- Versatile
  - Almost any assignment: reports of any length /level, presentations, technical drawing, prototype, etc…
- Popular/required by external examiners and accreditation




## Medical Physics and Biomedical Engineering – Research Project Assessment Criteria 2015/16 – Quick Guide

| Structure, writing & presentation | 100-80<br>1st (A) | 79-70<br>1st (A) | 69-60<br>Pass 2.1 (B) | 59-50<br>Pass 2.2 (C) | 49-40<br>Pass 3rd (D) | 39-0<br>Fail (E & F) |
|---|---|---|---|---|---|---|
| **Macrostructure:**<br>• Organization of information with a coherent structure; use of paragraphs and sections to present ideas. | • Excellent. | • Good. | • Coherent structure, but some ideas/arguments are not concise or are redundant and disrupt the flow. | • Some coherent structure but many ideas/arguments are not concise or are redundant and disrupt the flow. | • No coherent structure.<br>• Ideas/arguments are superficial and redundant. | • No apparent structure. |
| • Statement of aims and outcomes of the project. | • Clear. | • Clear. | • Are stated within the report. | • Evidence of reflection but not clearly presented. | • Weak evidence of understanding. | • No evidence of understanding. |
| • The materials are coherently linked and follow a logical flow, guiding the reader easily through the report. | • All linked. Excellent flow. | • Most linked. Excellent flow. | • Most linked, but some logical connection is unclear. | • Logical connection between sections is unclear. | • No logical connection. | • No apparent connection of ideas. |
| • Use of sections such as table of contents, abstract, introduction, aims/objectives, method, results, discussion, conclusions, references, acknowledgements. (Other structures are acceptable if they enhance presentation). | • Properly used. | • Properly used. | • Used. | • Section headers used, but some content missing or inappropriate. | • Some section headers are used appropriately. | • Poor or incomplete use of sections. |
| **Microstructure:**<br>• Writing style is clear, succinct, easy to follow, and engaging. | • Extremely good style throughout report. | • Mostly extremely good style. | • Generally good style for most paragraphs. | • Generally average, with some paragraphs superfluous or difficult to follow. | • Quite poor style and occasionally paragraphs lack structure. | • Poor style throughout report. |
| • The information provided is relevant, concise, and non-repetitive. | • Excellent throughout. | • Excellent for most text. | • Generally good for most paragraphs. | • Average. Little or no summarized information. | • Does not convey main ideas/arguments. | • No attempt to convey ideas in a structured manner. |
| • Formal and scientific language, expressions are varied, and complicated sentences are avoided. | • Correctly used. | • Correctly used in most text. | • Mostly formal but some occasional jargon. | • Alternates between formal and colloquial. | • Colloquial language. | • Colloquial language. |
| • Technical terms are clearly defined at appropriate points, and correctly used throughout the essay. | • Clearly defined and correctly used throughout report. | • Clearly defined and correctly used in most text. | • Contains too few or too many technical terms. | • Some term definitions are lacking or are inconsistently used. | • Many incorrect or inconsistent definitions of key terms. | • Incorrect or absent definitions of key terms. |
| • Grammar, punctuation, and spelling. | • Excellent. | • Excellent in most of the text. | • Mainly correct. | • Significantly number of errors. | • High number of error. Lack of proofreading. | • Many poorly constructed sentences. |
| **Presentation:**<br>• Presentation quality. | • Publishable quality. | • Near publishable quality. | • Satisfactory quality. | • Average quality. | • Poor quality. | • No consideration of presentation. |
| • Use of tables, figures, graphs, diagrams, etc. to enhance the content and aid the reader's understanding. | • Well selected and presented figures etc., which enhance content. | • Well selected and presented figures etc., which enhance content. | • A sufficient number of figures etc. which are mostly relevant, and which generally enhance content. | • Some figures etc. lacking, and some are irrelevant or include only partial information. | • Insufficient number of relevant figures etc. | • Few or no relevant tables and figures. |
| **Literature review & referencing** | | | | | | |
| **Scope:**<br>• Evidence of a wide-ranging research-based literature review, and appropriate reference to the leading and most relevant work in the area. | • Excellent wide-ranging and relevant literature review. | • Excellent wide-ranging and relevant literature review. | • Knowledge, analysis and evaluation of a range of mainly relevant literature. | • Some relevant literature, but limited and not always relevant. | • Little or no logical relevant literature apart from recommended sources. | • Little or no appropriate references, even to recommended sources. |
| • Use of a variety of reliable sources. | • Excellent variety. | • Excellent variety. | • Good variety. | • Use of some questionable resources. | • Use of many questionable resources. | • Use of mostly questionable resources. |
| **Insight:**<br>• Evaluation of the literature and exploration of the research question(s) in a balanced and comprehensive manner. Major (and potentially conflicting) ideas/perspectives presented, and recognition of inconsistencies in the literature. | • Excellent insight. All major ideas and conflicts presented. | • Good insight. Most major ideas and conflicts presented. | • Fair evaluation for parts of the research question, and recognition of some conflicts. | • A fair synthesis but poor critical discussion. | • Evaluation contains inaccuracies, and lacks critical analysis/discussion of literature. | • Many inaccuracies and no critical discussion of literature. |
| **Referencing:**<br>• Use of references to enhance the content appropriately and when needed. Standard and consistent format used. | • Excellent. | • Good. | • Correct. | • Some non-standard or inconsistent formatting. | • Much non-standard or inconsistent formatting. | • No apparent formatting convention followed. |

DR PILAR GARCIA SOUTO AND PROF JEM HEBDEN.

## 5. Peer assessment tools

- Facilitate administration work (otherwise time consuming)
  - Document submission
  - Distribution of assignments among peer markers
  - Anonymity
  - Handle marks and feedback communication with students
  - Allow tutor moderation
  - Marking criteria is customizable
- One of the PA benefits: Marking time does not depend of class size

# Methods

**Grade for Aspect 2**

2 / 4

**Comment for Aspect 2**

very good repetition of measurements but the descriptions of the steps were missing such as how to measure deflection .

## Aspect 3

# Results

**Grade for Aspect 3**

6 / 8

**Comment for Aspect 3**

All parameters present, clear data presentation. no reason given to why only 4 wires were tested

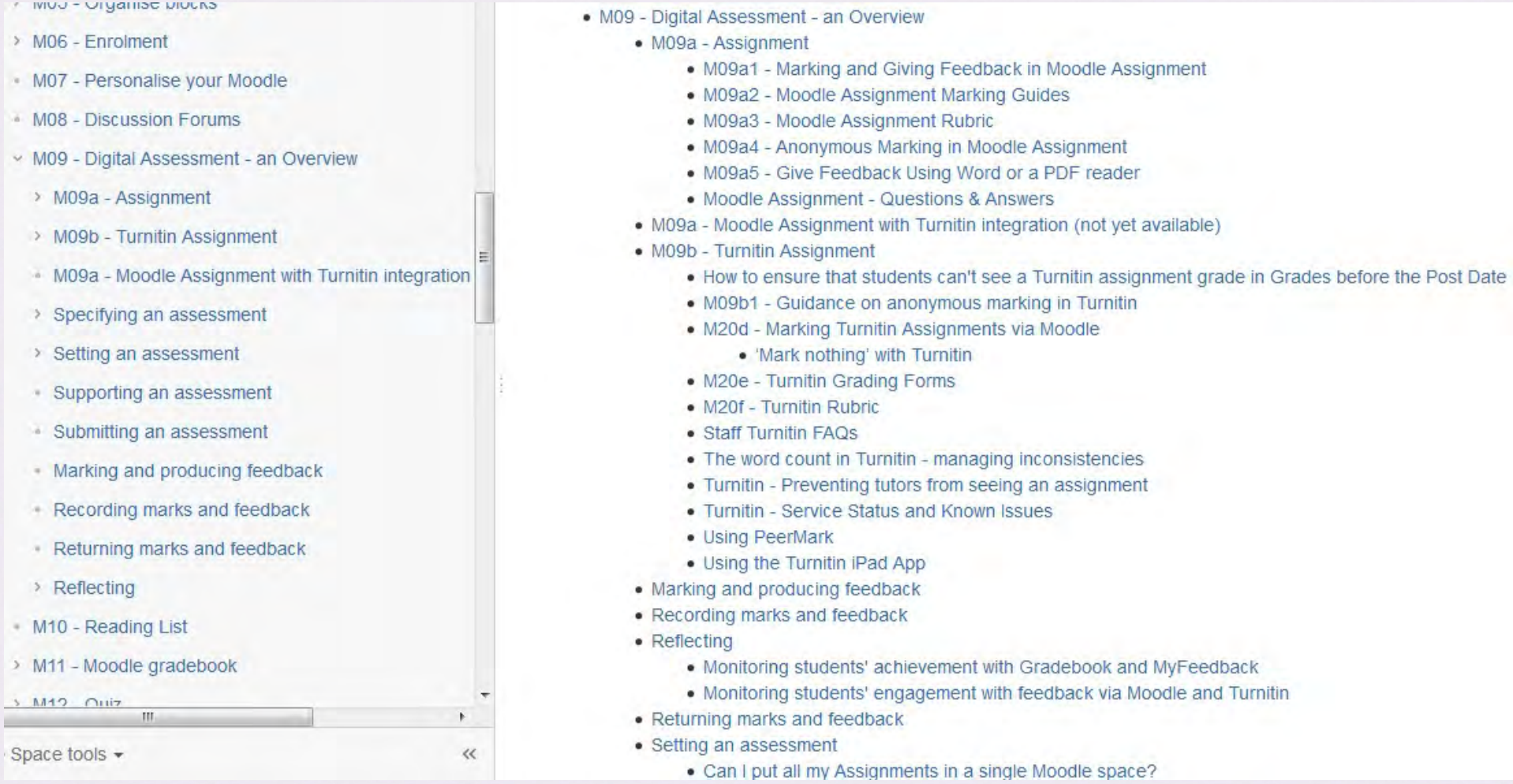
## Aspect 4

## Workshop grades report

| First name / Surname | Submission / Last modified | Grades received | Grade for submission (of 70.00) | Grades given | Grade for assessment (of 30.00) |
|---|---|---|---|---|---|
| [redacted] | Pacemaker assignment modified on Friday, 13 October 2017, 11:26 AM | 37.50 (~~27.79~~ / 21.00)<br>32.50 (~~20.37~~ / 21.00)<br>50.00 (~~30.00~~ / 27.00) | 40.00 | 60.00 (~~30.00~~ / 30.00)<br>50.00 (~~30.00~~ / 29.00)<br>35.00 (~~28.94~~ / 27.00) | 28.67 |
| [redacted] | Pacemaker modified on Friday, 13 October 2017, 11:29 AM | 37.50 (~~28.26~~ / 23.00)<br>37.50 (~~30.00~~ / 23.00)<br>52.50 (~~24.67~~ / 23.00) | ~~42.50~~<br>**38.00** | 37.50 (~~27.79~~ / 21.00)<br>47.50 (~~30.00~~ / 26.00)<br>50.00 (~~30.00~~ / 27.00) | 24.67 |
| [redacted] | Pacemaker Assignment modified on Friday, 13 October 2017, 11:25 AM | 37.50 (~~29.86~~ / 24.00)<br>47.50 (~~24.08~~ / 29.00)<br>40.00 (~~30.00~~ / 27.00) | ~~41.67~~<br>**40.00** | 65.00 (~~28.63~~ / 21.00)<br>62.50 (~~22.19~~ / 21.00)<br>52.50 (~~29.87~~ / 27.00) | 23.00 |
| [redacted] | Pacemaker Assignment modified on Friday, 13 October 2017, 11:29 AM | 52.50 (~~30.00~~ / 26.00)<br>62.50 (~~26.14~~ / 28.00)<br>52.50 (~~28.07~~ / 29.00) | 55.83 | 40.00 (~~30.00~~ / 21.00)<br>35.00 (~~30.00~~ / 20.00)<br>50.00 (~~26.14~~ / 27.00) | 22.67 |

# 6. UCL Mini guides

- Best practice recommendations and support for staff



## 7. Forum / Hot questions

- Students indicate main points where they want support/feedback
- During activities → Students read and act on feedback
- Effective:
  - Reply questions once
  - Students' priorities identified
  - Students might reply each other.

# Agenda for today

| | |
|---|---|
| 08:30<br>(120 min) | **Session 5 – Giving Good Quality Feedback JG**<br>(i) Brief presentation on why feedback is important (15 min)<br>(ii) Common feedback problems – group discussions and plenary (45 min)<br>(iii) What makes good feedback? (30 min)<br>(iv) Case study from a UCL department on implementing feedback improvements (30 min) |
| 10:30<br>(15 min) | Coffee |
| 10:45<br>(150 min) | **Session 6 - Peer Assessment PGS**<br>(i) Traditional peer assessment – benefits, limitations and ways to improve it (discussion 35 min)<br>(ii) 360 degrees peer assessment (presentation, PGS, 20 min)<br>(iii) Q&A (15 min)<br>(iv) IPAC methodology and IPAC Consortium (presentation, PGS, 20 min)<br>(v) Running IPAC effectively – developed software (demonstration, 10 min)<br>(vi) Opportunities for IPAC in your degree (discussion 35 min)<br>(vii) Q&A (15 min) |
| 13:15<br>(45 min) | Lunch |
| 14:00<br>(90 min) | **Session 7 – Connecting your activity, assessment and feedback JG/PGS**<br>(i) Presentation: brief overview of what we've covered so far (5-10 min)<br>(ii) Activity: individual thoughts (5 minutes), group discussions of thoughts (10 min)<br>(iii) Activity: Designing an activity using the activity planner (groups or individual) (30 min)<br>(iv) Plenary (30 min) |
| 15:30<br>(15 min) | **Closing session – what will you take away from this? PGS/JG** |
| 15:45 | END |

# S6: Giving Good Quality Authentic Feedback

# Outline

- Feedback issues
- Good quality feedback
- Case study
- Questions and comments

# Why a workshop on feedback?

There is often student dissatisfaction with assessment, especially feedback practices

Key issues around feedback:

- Lack of formative feedback opportunities and over reliance on exams.
- Lack of student understanding of feedback, what it means and how to use it to improve.
- Variation in the amount of feedback given on assignments (some teachers give more than others) and variation in quality and usefulness of feedback.
- Lack of opportunities for dialogue on feedback.

# Intended Learning Outcomes

This session aims to help you:

- explore and resolve common feedback issues
- describe the characteristics of good/poor quality feedback
- develop ways of helping students to understand and use feedback
- devise actions to improve your feedback

# Feedback issues

- You have 10 minutes to read through the scenarios and propose solutions. Share any practices that you and your colleagues have found effective.

Scenario 1 - Giving feedback to a large group

Your colleague teaches on a module that had around 50 students. S/he found it easy to give students feedback on formative tasks. The module got high student satisfaction scores and has become very popular; student numbers have grown steadily and she/he is struggling to keep up with the marking. Next year, she/he anticipates there will be around 180 students on the module. S/he is worried s/he won't be able to give feedback to such a large group and asks you for suggestions.

Scenario 2 - Students don't collect/use feedback

You mark student assignments online and provide detailed inline comments as well as generic comments, summarising feedback. One of your colleagues mentioned that many of his students don't open their online feedback. This prompted you to check whether any of your students accessed their feedback. You checked in My Feedback and were surprised to find 40 % of students had not accessed their feedback. How can you ensure that students access their feedback?

Scenario 3 - Students don't like peer review

You have heard that students benefit from peer review so decided to try it in your module. You put students into small groups and asked them to read drafts of their peers' work and give feedback. In the end of module feedback, many students criticised the peer review activity, saying they got poor quality comments from their peers and that they only wanted feedback from the teacher. You think you should stop using peer review.

Scenario 4 - Students don't understand feedback

You recently asked students to submit a draft of their assignments. You gave feedback on these in time for students to use the feedback to improve the final assignment, pointing out key errors. When marking the submitted assignments you were disappointed to see that many had not understood your feedback and were still making the same errors. How can you ensure students understand and make better use of feedback?

# Break

- Read the feedback profiling tool during the break

| Category of feedback | Code | Sub-category | Examples | Score |
|---|---|---|---|---|
| Giving praise | P1 | | 'A well constructed argument…'. | |
| Recognising progress (ipsative) | P2 | | 'This represents a significant improvement…' 'You have taken on board critique…' | |
| Critical feedback | C1 | Correction of errors | Spelling, grammar, referencing etc. | |
| | C2 | Factual critiques (of content) | 'I do not think you can say X.' 'this is not in enough depth' | |
| | C3 | Critique of approach (structure and argument) | 'It would have been better to conclude with Y…' | |
| Giving advice | A1 | Specific ( to current assignment) | 'You might want to consider X…' | |
| | A2 | General points (specific to current assignment) | e.g. on depth, argument and structure: 'There is scope to tease out further detail on X…' | |
| | A3 | For future assignments | 'In your next essay you should consider Y…' | |
| Clarification requests | Q | | 'What do you mean by Z?' | |
| Unclassified statements | O | | Statements which do not make a judgement e.g. descriptions of the work | |

More information on this tool can be found at:
https://assessmentcareers.jiscinvolve.org/wp/files/2013/02/Guidelines-for-using-the-feedback-profiling-tool.pdf

# Good quality feedback

In groups, review the examples of feedback using the feedback profiling tool.

After your analysis consider:

- What makes good quality feedback?
- What conclusions did you come to?

# Developing feedback guidelines case study

- This video case study explains how a group of staff peer reviewed their feedback and developed feedback guidelines for their programme.

- https://mediacentral.ucl.ac.uk/Play/8046

# Less is more (difficult)


YOU'RE DOING GREAT!
FEEDBACK

# Dialogic feedback (Carless et al 2011 )

- Guided Marking
- Pedagogic literacy about assessment standards and processes (Price 2010)
- Peer review and assessment

# 7 Principles of Good Feedback

Good feedback practice (by teachers to learners on their work):

- helps clarify what good performance is (goals, criteria, expected standards);
- facilitates the development of self-assessment (reflection) in learning;
- delivers high quality information to students about their learning;
- encourages teacher and peer dialogue around learning;
- encourages positive motivational beliefs and self-esteem;
- provides opportunities to close the gap between current and desired performance;
- provides information to teachers that can be used to help shape the teaching

- David Nicol & Debra Macfarlane-Dick (2004) "Rethinking Formative Assessment in HE: a theoretical model and seven principles of good feedback practice" http://www.heacademy.ac.uk/assessment/ASS051D_SENLEF_model.doc

# Practicalities of giving feedback

- Look across a programme
  - Do you have a centralised system? (VLE)
  - Tutorials – focus on feedback
- Keep it simple
  - You don’t need to focus on everything
  - Set expectations
- Have a dialogue

# References


- Carless, D., Salter, D., Yang, M. and Lam, J., 2011. Developing sustainable feedback practices. *Studies in Higher Education*, *36*(4), pp.395-407.
- Nicol, D.J. and Macfarlane-Dick, D., 2006. Formative assessment and self-regulated learning: A model and seven principles of good feedback practice. *Studies in higher education*, *31*(2), pp.199-218.
- Price, M., Handley, K., Millar, J. and O'Donovan, B., 2010. Feedback: all that effort, but what is the effect?. *Assessment & Evaluation in Higher Education*, *35*(3), pp.277-289.
- Sadler, D. Royce, 2010 'Beyond feedback: developing student capability in complex appraisal', Assessment & Evaluation in Higher Education, 35: 5, 535 — 550.

# S6: Peer Assessment

## Types of peer assessment

- ‘Product’ or piece of work produced by another student


- Peers’ level of contribution and/or professional behaviour during group work

- (i) Traditional peer assessment of a PRODUCT
  - Discussion (20 mins)
    - Benefits
    - Limitations
    - Ways to improve it

- Feedback from the room on peer assessments of products (15 min)
  - Benefits?
    - Saves time
    - Can assess students' level of understanding
    - Can improve the output of the entire class through formative feedback
    - Encourages collaboration, and can build peer-to-peer trust
    - Provides examples for students to model and critique their own work
    - Students learn to critique and communicate
    - Shortens timeframe for providing feedback
    - Students can engage with peers in a language they are comfortable with
    - Encourages reflection and moving from lower to higher order skills
    - Students learn from participating in teaching
  - Limitations?
    - Students might not like listening to their peers, and may not see the value of the activity
    - Can restrict students to interacting with those from their own discipline to ensure appropriate knowledge to give peer review
    - Feedback is limited by level of understanding and language skills of student giving it
    - Might need to work to engage students in order to ensure quality
    - Ensuring anonymity can be challenging
    - Need to train students and explain what is expected of them
    - Variability of feedback
    - Doesn't save time?

## ➢ (i) Traditional peer assessment of a PRODUCT

# What does HE aim to provide?

- ➢ Theoretical and practical technical knowledge …
- ➢ … but also important skills such as
  - Ability to critically analyse someone else's work
  - Students' skills and confidence in constructing quality feedback
- ➢ and these require practice and long term approaches


# How can we help their development?

- Peer Assessment
  - Review and constructively criticize
  - Deeper understanding
  - Benchmarking and self-reflection
  - Versatile
  - Quick feedback even in large classes
  - Lifelong skills and preparing for CPD


# … but traditional PA has problems

- Student disengagement
- Students feel unprepared to judge technical work
- Students lack confidence in their peers' marking skills

→ poor feedback to peers

→highlights the need to provide training

→ students do not trust marks obtained.

# 360° peer assessment method

Activity

Critical thinking

Feedback assessment

Tutor's moderation and feedback

Activity presentation (lecture)

Student

Work (Moodle)

Marking criteria released

Assign 3 pieces to mark to each student (Moodle)

Student 1 is assessed by 2-3 other students, and student 1 assesses 2-3 other students (Moodle)

Summative and formative feedback released (Moodle)

Quality of the received feedback assessed by students. Flag any relevant mistake/lack on assessment (Online)

Moderator assessment and mark adjustment

Final mark

Possible general activity feedback

Student led

Academic led

# Method

- 360PA was implemented in a variety of assignments within an engineering programme (y1-y3)
  - Lab reports
  - Mathematical coursework
  - Short section of a dissertation
  - Final project presentation

- Research questions
  - Are students capable of providing good quality feedback to their peers?
  - Does the 360PA in particular engage students into providing good quality peer feedback?

# Results

- Graduate students' feedback (via questionnaires)

*Table 1.* Students' responses to questionnaire (N=9 final BME students). Scale: 1- not at all, 2- not very, 3- fairly, 4- significantly, 5-very.

| Question | Vote /5 Mean (SD) |
|---|---|
| How confident are you on your ability to construct feedback for peers and junior students? | 3.9 (0.6) |
| Since you started your degree, have you developed or improved your ability to construct feedback for peers and junior students? | *4.2 (0.8)* |
| Has peer assessment helped you to develop your ability to construct feedback? | *4.0 (0.7)* |

# Results

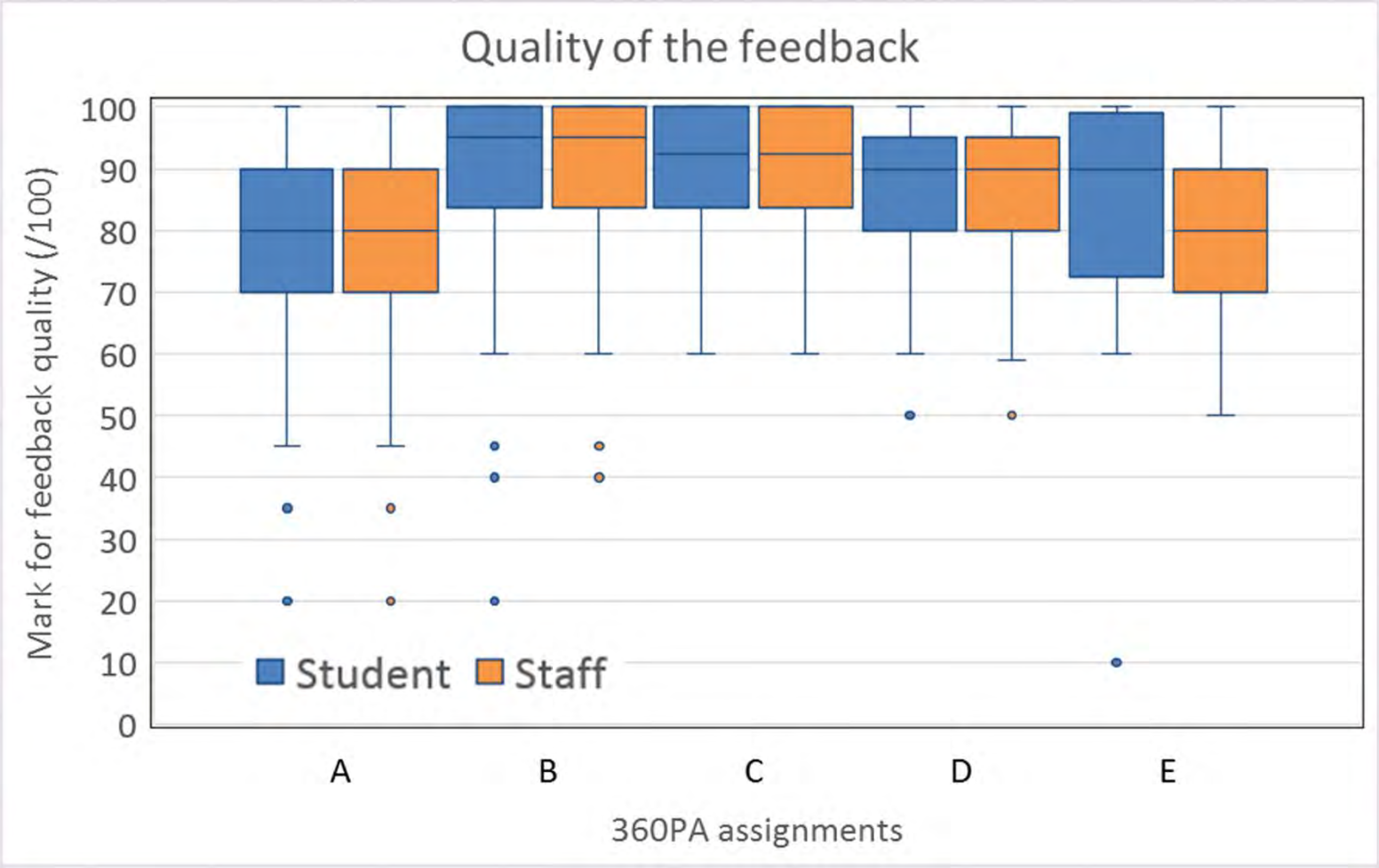
- Graduating students' feedback

*Table 1.* Third year students' responses to questionnaire (N=9, 90% of the class). Scale: 1- not at all, 2- not very, 3- fairly, 4- significantly, 5-very. Mean (SD)

| | **S1** | **S2** | **S3** | **S4** |
|---|---|---|---|---|
| Current confidence in your ability? | 3.9 (0.7) | 3.9 (0.7) | 3.7 (0.5) | 3.9 (0.6) |
| Has it developed during your degree? | **4.4 (0.7)** | **4.1 (1.0)** | **4.2 (0.7)** | **4.1 (0.8)** |
| Has this type of activity helped you to develop it?<br>(A) Open-ended group activities | **4.1 (1.1)** | **4.7 (0.5)** | 3.7 (1.1) | **4.0 (0.7)** |
| (B) Discussion with experts or as experts | **4.4 (0.5)** | **4.3 (0.9)** | 3.2 (1.3) | 3.7 (0.9) |
| (C) Peer dialog and peer assessment | 3.1 (1.3) | 3.0 (1.1) | **4.0 (0.7)** | **4.0 (0.7)** |

S1: Critical thinking
S2: Outfacing communication
S3: Critical analysis of someone else's work
S4: Constructing feedback

- Students' perception – quality of the feedback as assessed within the 360PA assignments (before and after partial moderation)




$N_{A-C}$ = 23 students, $N_{D-E}$ = 33 students

# 360PA – student perception

- Like tutor moderation
- Useful feedback
- Time consuming

- *"Peer assessment helped me learn how to critically analyse someone else's work and ensure I give good feedback, as well at utilising the feedback I was given."*

- *"PA activities have improved my ability to construct feedback […]"*

# 360PA – student perception

- Negative student perception but academically positive

- *"Did not always find it easy to mark peers as everybody does it differently so there was some difficulty understanding how the student got their answer."*

- *"Would prefer own freedom of choice to look at feedback, rather than being made to for their coursework mark."*

# 360PA – staff perception

- *"I think the 360PA was a good incentive for students to focus on trying to provide good quality feedback."*

- *"The effort expended by the majority of students on the feedback was impressive, and quality of the written feedback itself was generally very good".*

# Main findings

- The students are able to provide good quality feedback
- 360PA increases engagement and feedback quality
- 360PA works in a variety of typical engineering assignments
- Opportunity for students to develop the necessary skills to critically analyse a piece of work

# Recommendations

- Integrate assignments assessed using PA, if possible with improvements
  - Select those with less prescriptive solutions
- Compensate for the added workload by reducing it elsewhere
- Use mainly for the students' training aspect rather than the summative assessment aspect only.
- Provide training to students
  - Benefits of PA in general
  - Assessment method and tutor involvement
  - How to write the feedback: clear, critical but constructive


+

360PA

- (iii) Q & A

## ➢ (iv) IPAC methodology and IPAC Consortium

### Why?

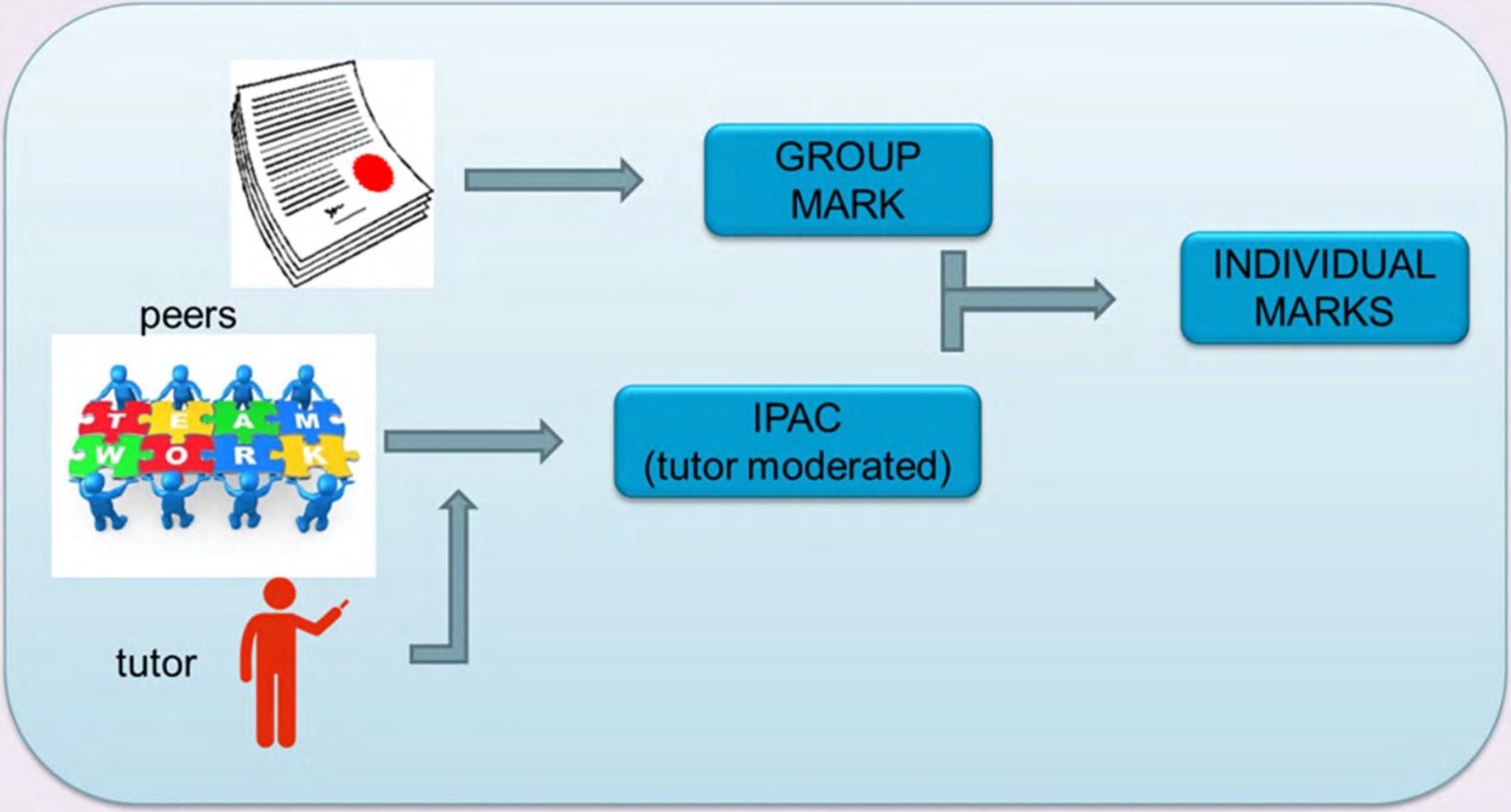
- Staff and students across UCL are concerned about the fairness of group assessment as this can greatly damage the student experience.

- Several staff / literature include **IPAC** to get *individual marks* and mitigate problems.

### IPAC Consortium

- >40 staff members from 20 departments who are either contributing to the consortium or interested in using the outcomes.
- Various students

# IPAC – how does it work?



# IPAC in practice – potential examples

- If all 4 students contributed the same:
  - IPAC student A = B = C = D = 1
  - Group mark 60% → All individual marks = 60%
  - Group mark 70% → All individual marks = 70%

- If the group was imbalanced

| Student | IPAC | Individual mark if group mark = 60% | Individual mark if group mark = 70% |
|---|---|---|---|
| A | 1 | 60 | 70 |
| B | 1.2 | 72 | 84 |
| C | 0.95 | 57 | 66.5 |
| D | 0.85 | 51 | 59.5 |
| total | | | |

## Benefits

- Promotes student engagement and tackles associated problems.
- Peer and self assessment (includes self reflection)
- Practice to give meaningful and tactful feedback.
- Students understand how their personal contribution is perceived?
- Fairer mark.
- Better understanding of group dynamics by tutor.

## Limitations

- Additional deadline and assessment for students.
- Big amount of data/information for tutor (system needed or very staff time consuming)
- Requires students' training.
- Might require case by case moderation in extreme situations of dysfunctional group.
- (Student gamming?)
- (Student alliances?)

# IPAC – our work: enquiring

staff

students

institution

Literature review

Commercial systems

# IPAC – our work: defining, developing and testing

Key elements of the methodology and options

Guidelines and recommendations

Support to practitioners

# IPAC - Staff perception

- Staff who implement IPAC see advantages:
  - Fewer complaints about group dynamics.
  - Higher student satisfaction from giving students control over their marks.
  - Tutor moderation keeps the system robust.

- Only major drawback: current e-learning tools are inadequate.
  - (this issue has been addressed)

# IPAC – student perception

- From student's anonymous questionnaires (N=64)

  Students welcome the opportunity to get individual marks for the group work in which they participate.

  - Mark would be fairer (78%)
  - Individual performance is better known to students (92%)
  - Would write the comments in a professional and constructive manner (91%)
  - Valuable to know how own contribution is perceived (94%).
  - Use feedback to improve performance and teamwork skills in future (87%).
  - This type of assessment would motivate or encourage them to:
    - contribute more to the group project (72%)
    - behave in a more professional and respectful way within the team (73%).
  - Justification is required (92%), feedback should be anonymous (76%), and given back to the students (79%).

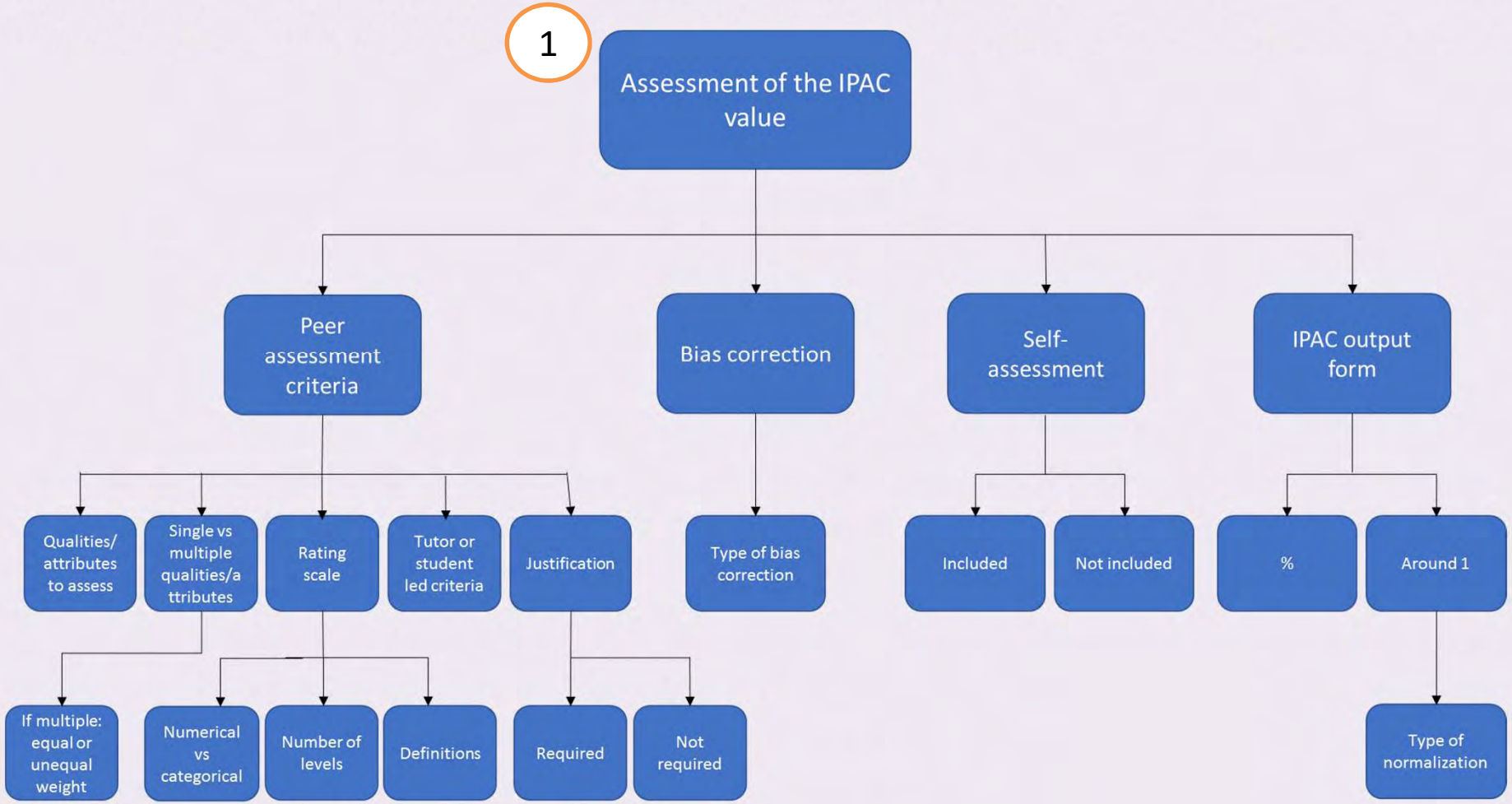
# Key elements of IPAC methodology

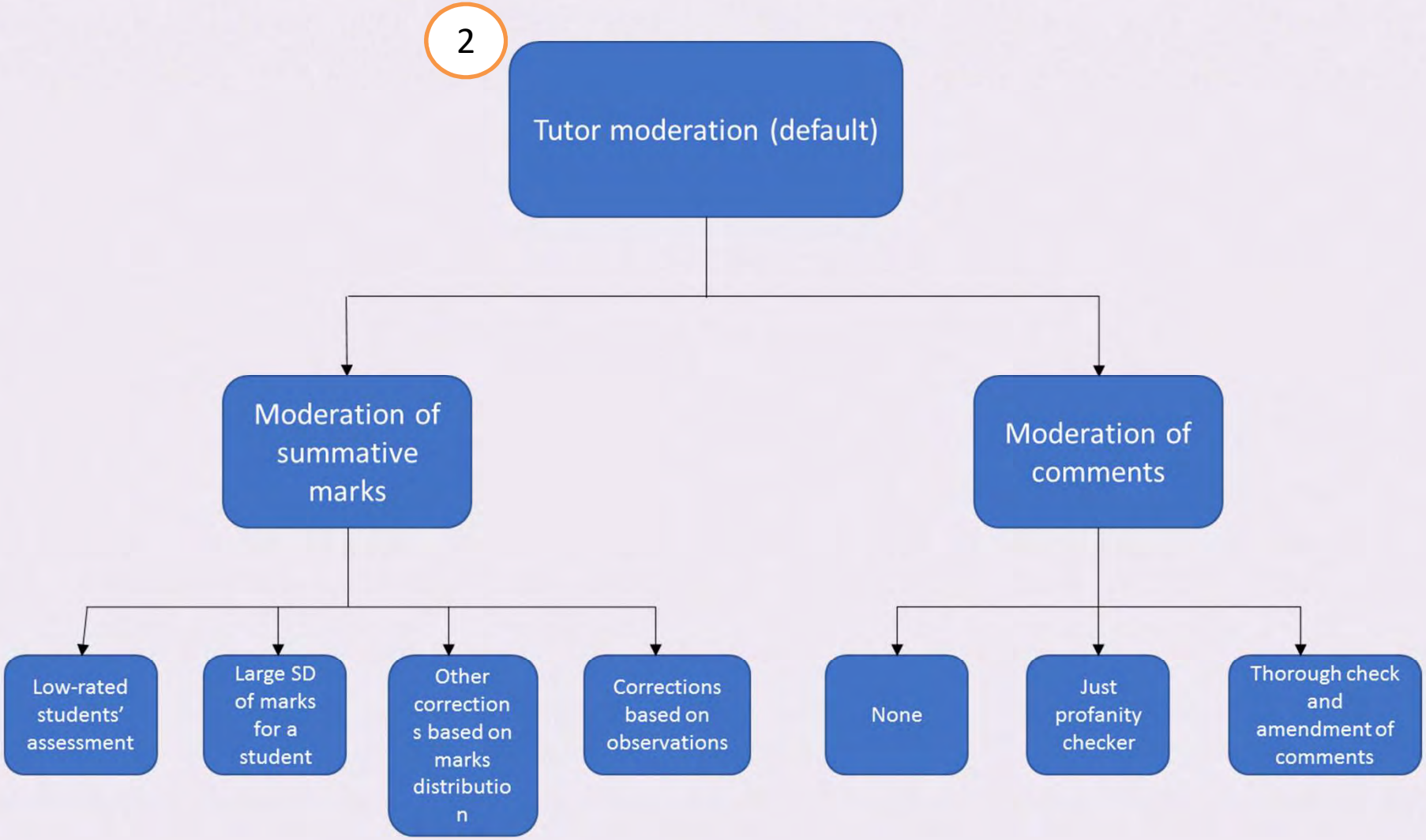
Methodology

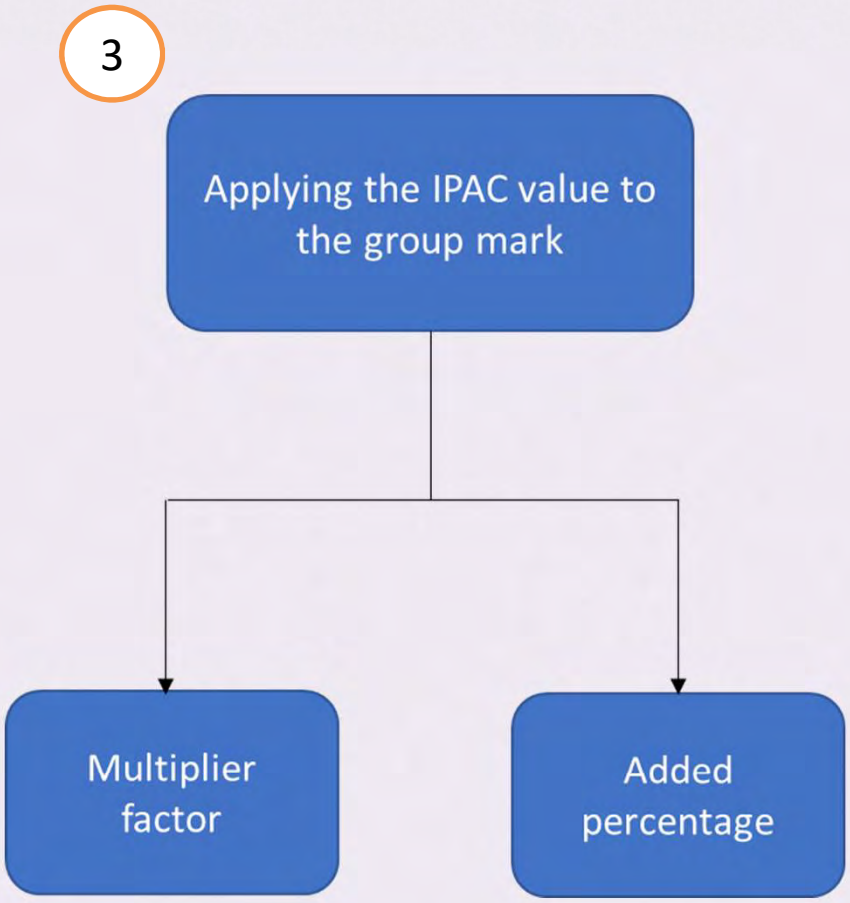
- Assessment of the IPAC value — 1
- Tutor moderation (default) — 2
- Applying the IPAC value to the group mark — 3
- Information and feedback provided to students — 4

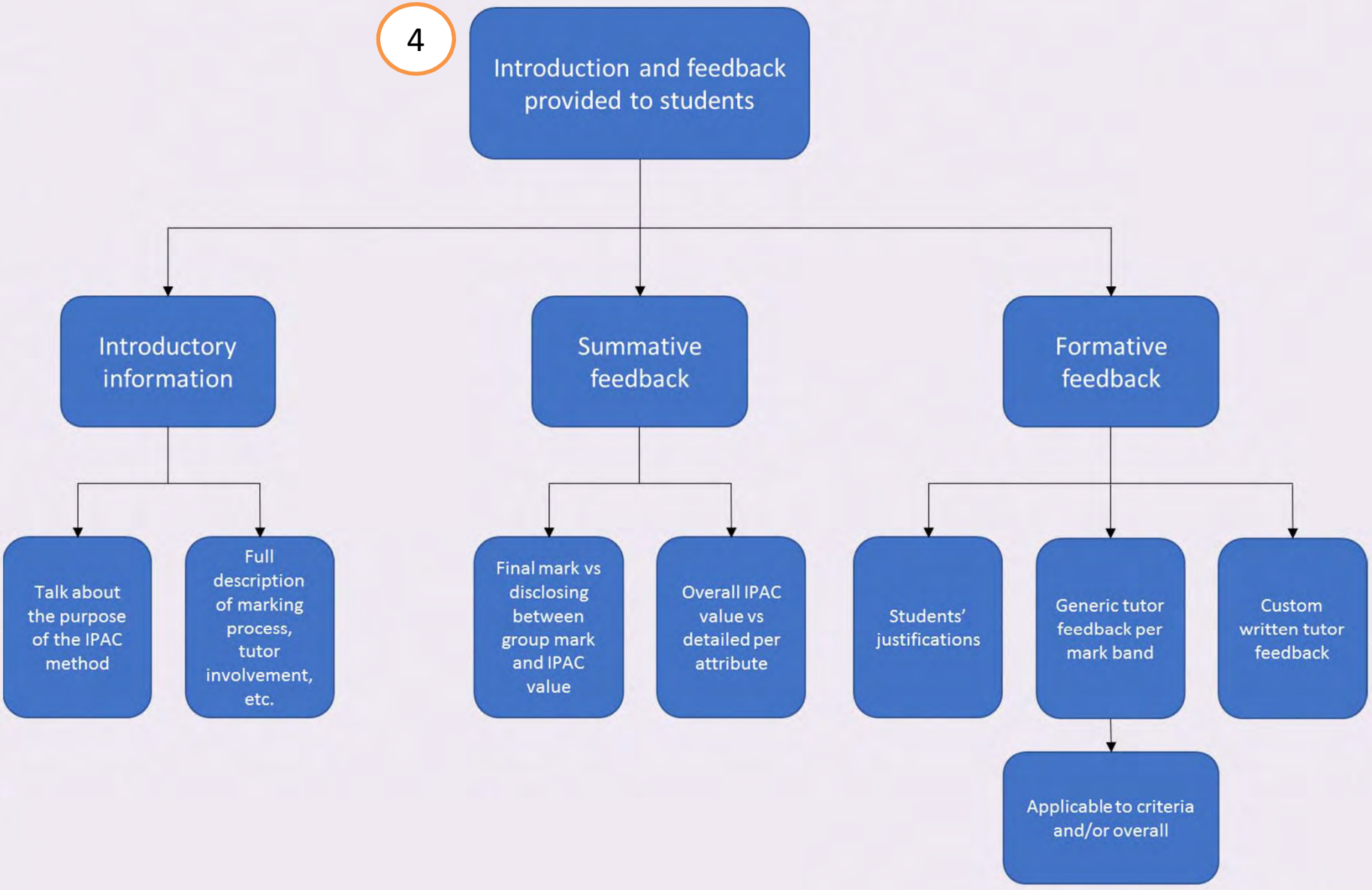
Context — 5

- Class (students and staff)
- Activity

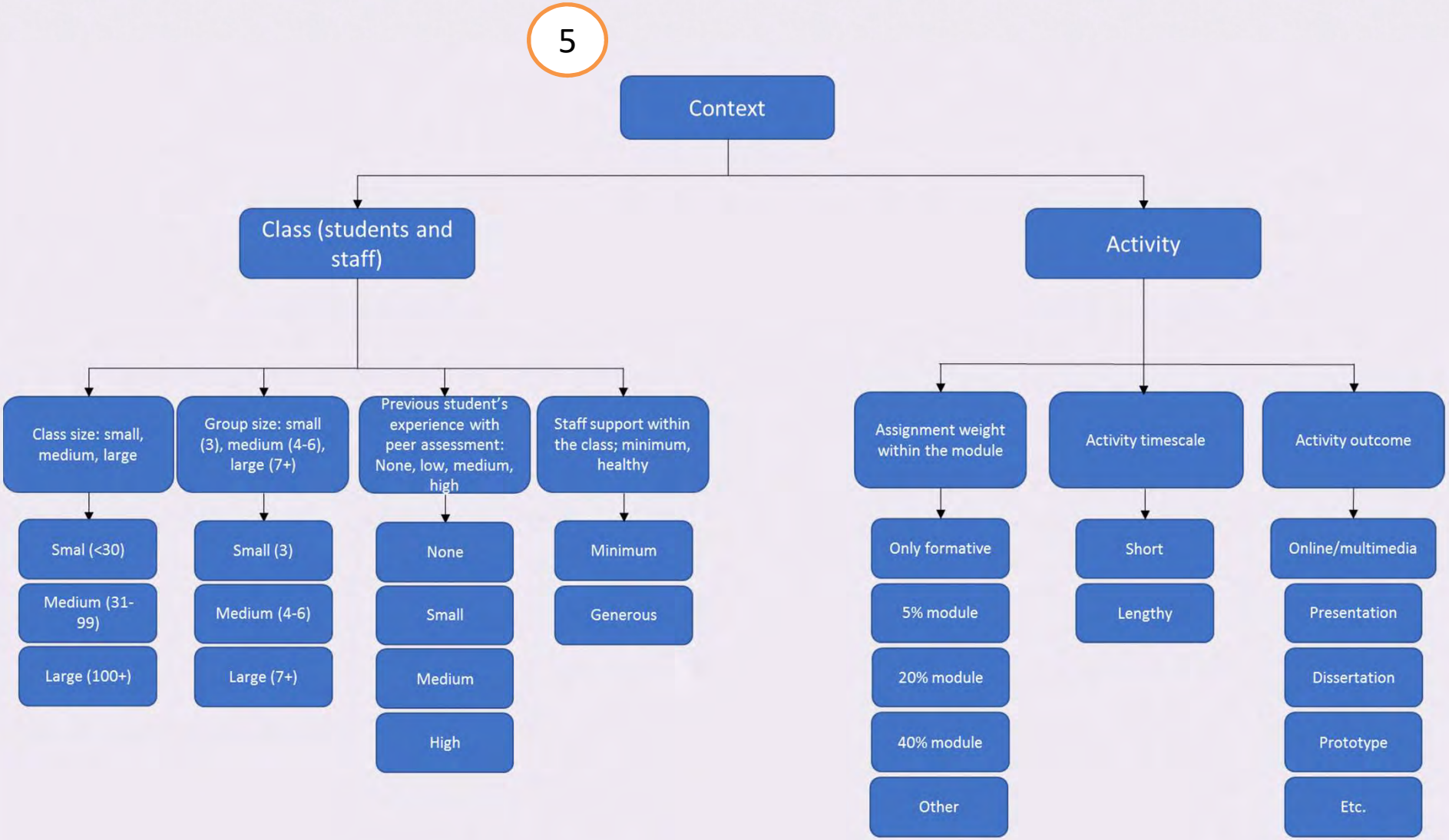

1
Assessment of the IPAC value
Peer assessment criteria
Bias correction
Self-assessment
IPAC output form
Qualities/ attributes to assess
Single vs multiple qualities/a ttributes
Rating scale
Tutor or student led criteria
Justification
Type of bias correction
Included
Not included
%
Around 1
If multiple: equal or unequal weight
Numerical vs categorical
Number of levels
Definitions
Required
Not required
Type of normalization


2
Tutor moderation (default)
Moderation of summative marks
Moderation of comments
Low-rated students' assessment
Large SD of marks for a student
Other corrections based on marks distribution
Corrections based on observations
None
Just profanity checker
Thorough check and amendment of comments


3
Applying the IPAC value to the group mark
Multiplier factor
Added percentage


4
Introduction and feedback provided to students
Introductory information
Summative feedback
Formative feedback
Talk about the purpose of the IPAC method
Full description of marking process, tutor involvement, etc.
Final mark vs disclosing between group mark and IPAC value
Overall IPAC value vs detailed per attribute
Students' justifications
Generic tutor feedback per mark band
Custom written tutor feedback
Applicable to criteria and/or overall

5


Context
Class (students and staff)
Activity
Class size: small, medium, large
Group size: small (3), medium (4-6), large (7+)
Previous student's experience with peer assessment: None, low, medium, high
Staff support within the class; minimum, healthy
Assignment weight within the module
Activity timescale
Activity outcome
Smal (<30)
Medium (31-99)
Large (100+)
Small (3)
Medium (4-6)
Large (7+)
None
Small
Medium
High
Minimum
Generous
Only formative
5% module
20% module
40% module
Other
Short
Lengthy
Online/multimedia
Presentation
Dissertation
Prototype
Etc.

## Platforms and requirements

- Easy to use for students and staff
- Easily accessible by students (works with Moodle)
- Customizable for staff
- Complies with data protection regulations
- Provides the raw data
- Provides calculated values with a transparent methodology
- Option among some methodologies
- Allow for choice of self-assessment
- Provides feedback to the students
- Anonymous

→ Developed own software and rolling out to other institutions

# Methodology recommendations

## Before

- Define your assessment process
  - Your method to assess IPAC
  - How this is combined with the group mark
  - Moderations
  - Tutor involvement
  - Alternative assessment
  - Etc.
- Inform students of your IPAC process
- Ensure students are ready
  - Trained for PA
  - Aware of professional behaviour and expectations in group work, etc.

# Methodology recommendations

## During

- Define/discuss expectations or meaning of each of the assessment scale levels
- (Of value) Keep some tutor observations records
- (Of value) Include self-assessment
- (Recommended) Use only up to 6 qualities/attributes to keep questionnaire short
- (Of value) Request students for justification of marks

# Methodology recommendations

## After

- Watch out for moderation cases
- (Recommended) Bias correction
- (Of value) Give the anonymized students' feedback back to students
  - Inform students (before)
  - Use at least a profanity checker
- Give tutor feedback, even if generic.

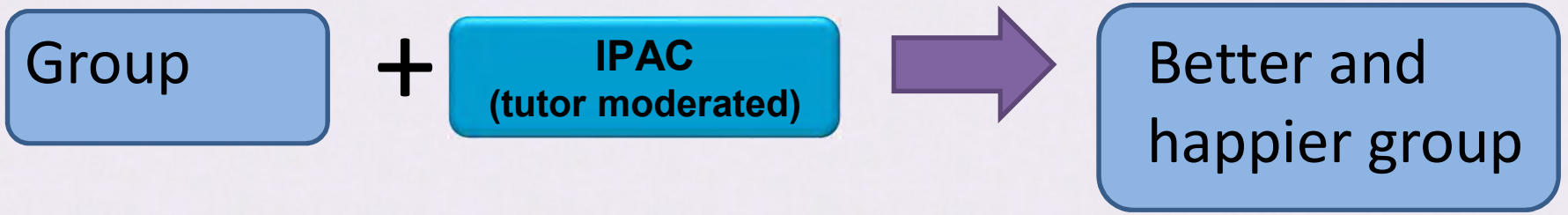
(Make it valuable not just as a summative assessment
… but also formative)

# Methodology recommendations

## Your choice

- Assessment of IPAC
  - Attributes and criteria (but N<=6)
  - Equal or unequal weighting
  - Tutor or student led criteria
  - Rating scale
  - Bias correction (although recommended)
  - Output form, e.g. % or normalized around 1.
- Moderation
  - Low rate students
  - Large SD, etc.
  - Based on observations
- Applying IPAC value to the group mark
  - Multiplier factor vs added percentage

- Conclusion:
  - Group work allows for bigger projects and gives relevant experience to students
  - Individual marks based on student's contribution should be awarded
  - IPAC seems to be a suitable solution



## ➢ (v) Running IPAC effectively – developed software

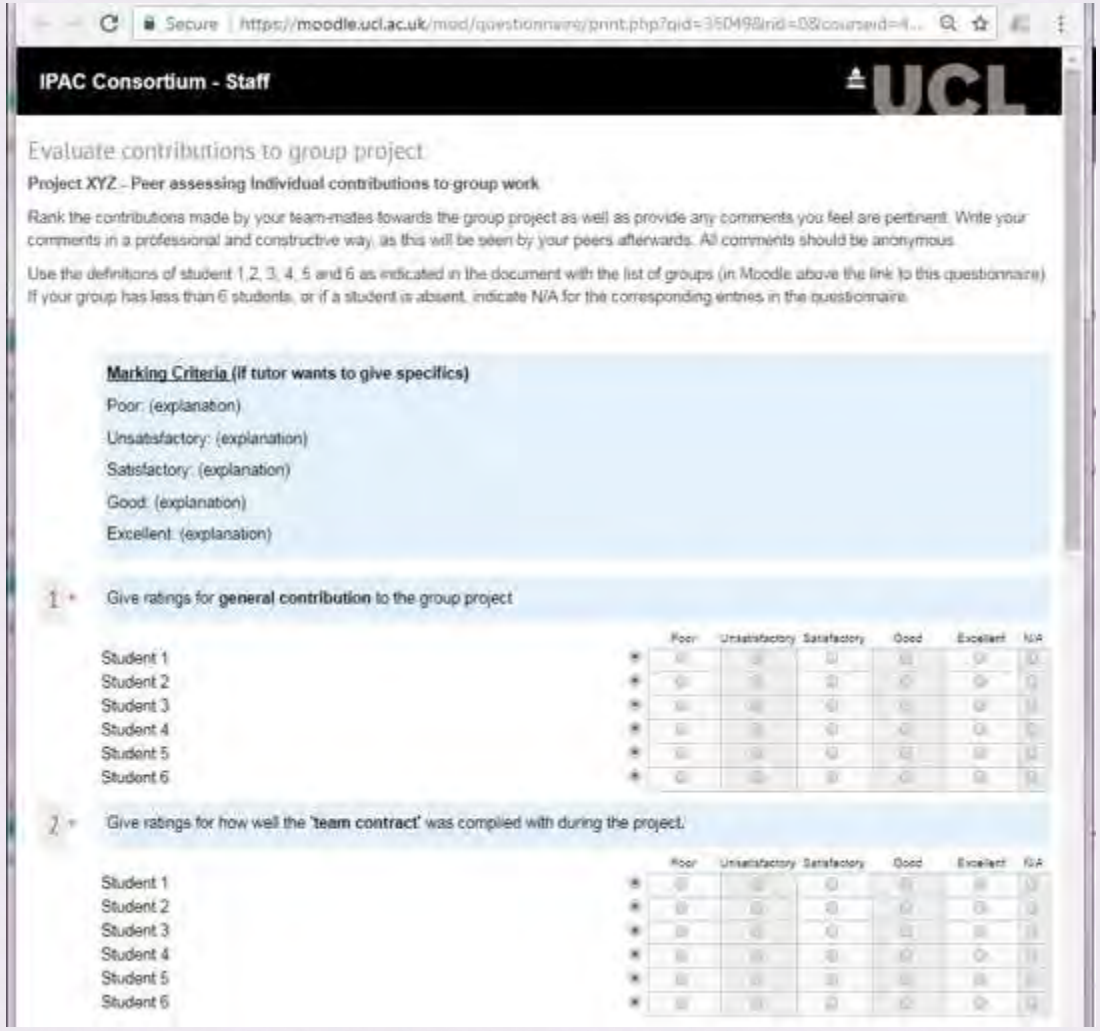
Students complete questionnaire (template available) (10-60 mins)

*In-house IPAC system*

Organize and analyse data (only needs a PC/laptop) (5 mins)

Give quick and personalized feedback to students (summative and formative) (5 mins)

# Student view of the system (uses Moodle)




Completely customizable:

- N of students
- N of questions
- N of levels per criteria
- Description of levels in each criteria
- Text
- Justification included (optional)

# IPAC tool – Main screen of the system (only viewed by tutors)


- Select:
  - Team composition file
  - Questionnaire file downloaded from Moodle
- RUN
- Help documentation

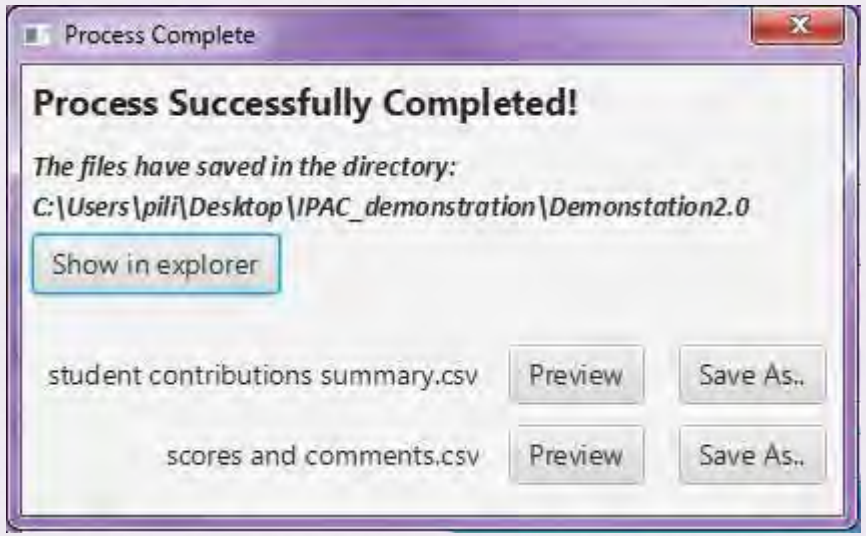
# Settings screen


The system is customizable.

E.g. choose:

- Calculation method
  - Normalization
  - Bias correction
- Moderation
- Automatically generated feedback:
  - Include peer comments
  - Include customized tutor comments

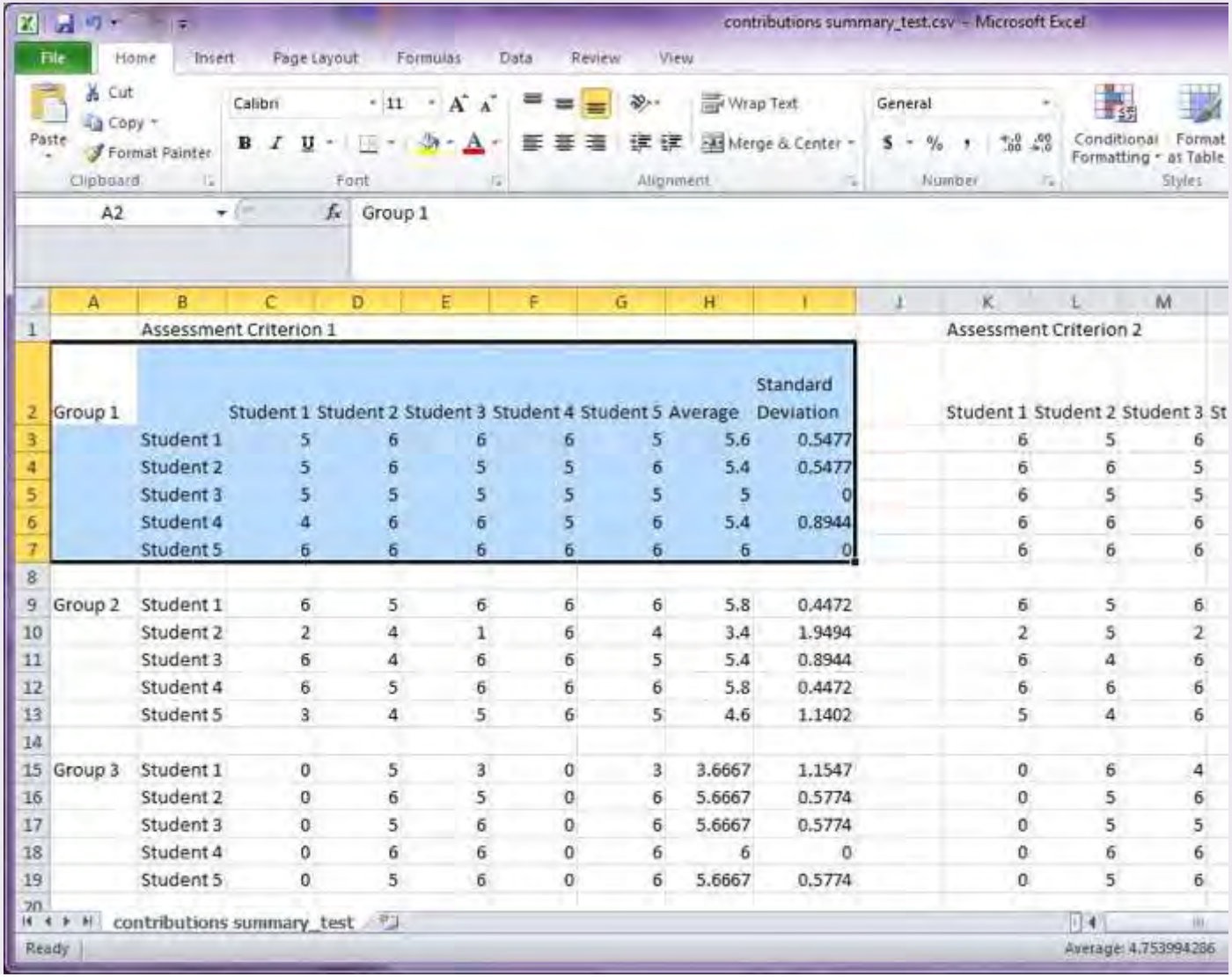
# … and when you click RUN




5 seconds and …

access the data in the explorer or preview it in the program

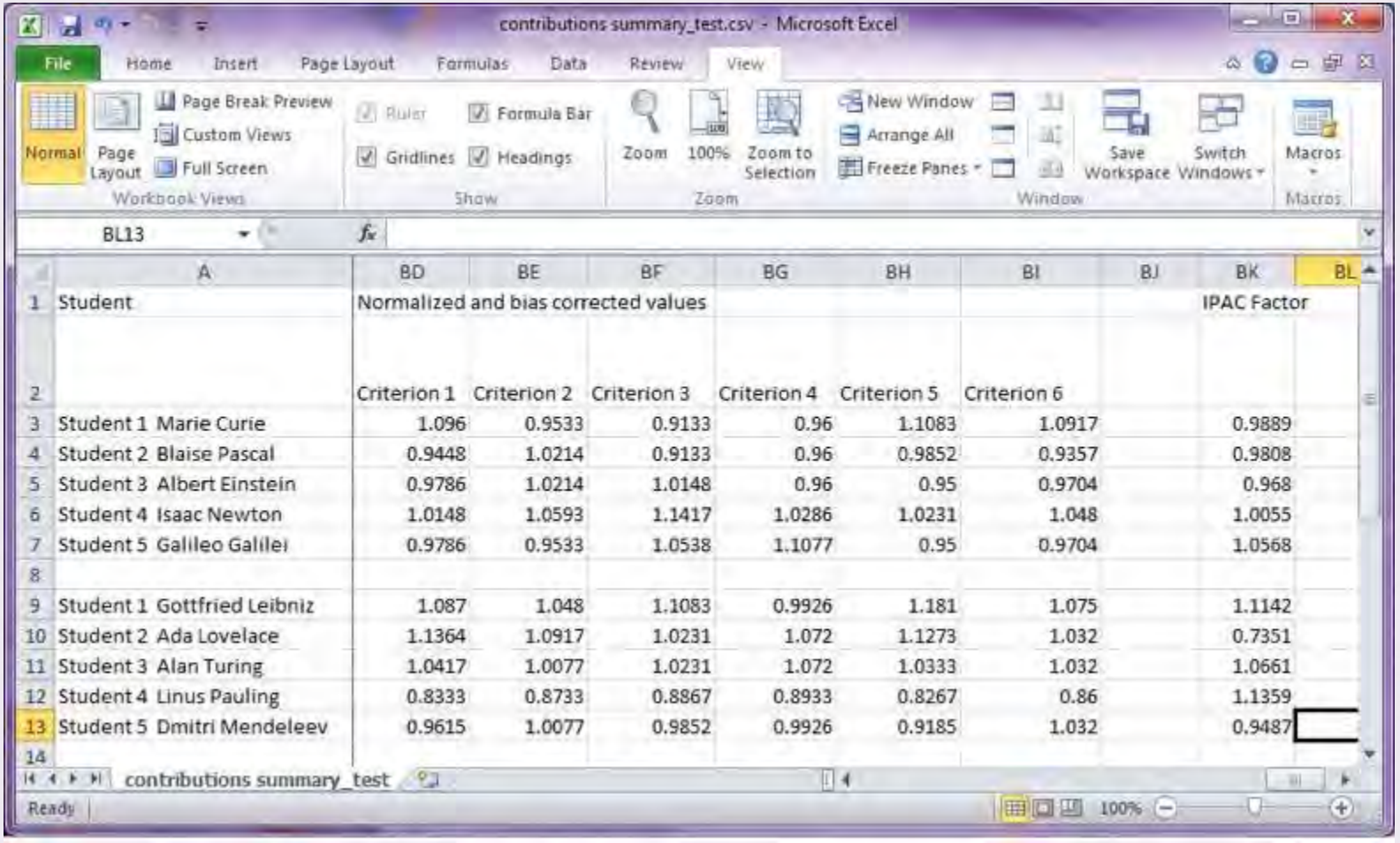
# Output:




| | A | B | C | D | E | F | G | H | I | J | K | L | M |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | | Assessment Criterion 1 | | | | | | | | | Assessment Criterion 2 | | |
| 2 | Group 1 | | Student 1 | Student 2 | Student 3 | Student 4 | Student 5 | Average | Standard Deviation | | Student 1 | Student 2 | Student 3 | St |
| 3 | | Student 1 | 5 | 6 | 6 | 6 | 5 | 5.6 | 0.5477 | | 6 | 5 | 6 | |
| 4 | | Student 2 | 5 | 6 | 5 | 5 | 6 | 5.4 | 0.5477 | | 6 | 6 | 5 | |
| 5 | | Student 3 | 5 | 5 | 5 | 5 | 5 | 5 | 0 | | 6 | 5 | 5 | |
| 6 | | Student 4 | 4 | 6 | 6 | 5 | 6 | 5.4 | 0.8944 | | 6 | 6 | 6 | |
| 7 | | Student 5 | 6 | 6 | 6 | 6 | 6 | 6 | 0 | | 6 | 6 | 6 | |
| 8 | | | | | | | | | | | | | | |
| 9 | Group 2 | Student 1 | 6 | 5 | 6 | 6 | 6 | 5.8 | 0.4472 | | 6 | 5 | 6 | |
| 10 | | Student 2 | 2 | 4 | 1 | 6 | 4 | 3.4 | 1.9494 | | 2 | 5 | 2 | |
| 11 | | Student 3 | 6 | 4 | 6 | 6 | 5 | 5.4 | 0.8944 | | 6 | 4 | 6 | |
| 12 | | Student 4 | 6 | 5 | 6 | 6 | 6 | 5.8 | 0.4472 | | 6 | 6 | 6 | |
| 13 | | Student 5 | 3 | 4 | 5 | 6 | 5 | 4.6 | 1.1402 | | 5 | 4 | 6 | |
| 14 | | | | | | | | | | | | | | |
| 15 | Group 3 | Student 1 | 0 | 5 | 3 | 0 | 3 | 3.6667 | 1.1547 | | 0 | 6 | 4 | |
| 16 | | Student 2 | 0 | 6 | 5 | 0 | 6 | 5.6667 | 0.5774 | | 0 | 5 | 6 | |
| 17 | | Student 3 | 0 | 5 | 6 | 0 | 6 | 5.6667 | 0.5774 | | 0 | 5 | 5 | |
| 18 | | Student 4 | 0 | 6 | 6 | 0 | 6 | 6 | 0 | | 0 | 6 | 6 | |
| 19 | | Student 5 | 0 | 5 | 6 | 0 | 6 | 5.6667 | 0.5774 | | 0 | 5 | 6 | |
| 20 | | | | | | | | | | | | | | |

Organized data per group, student, criteria,… with mean and SD calculated

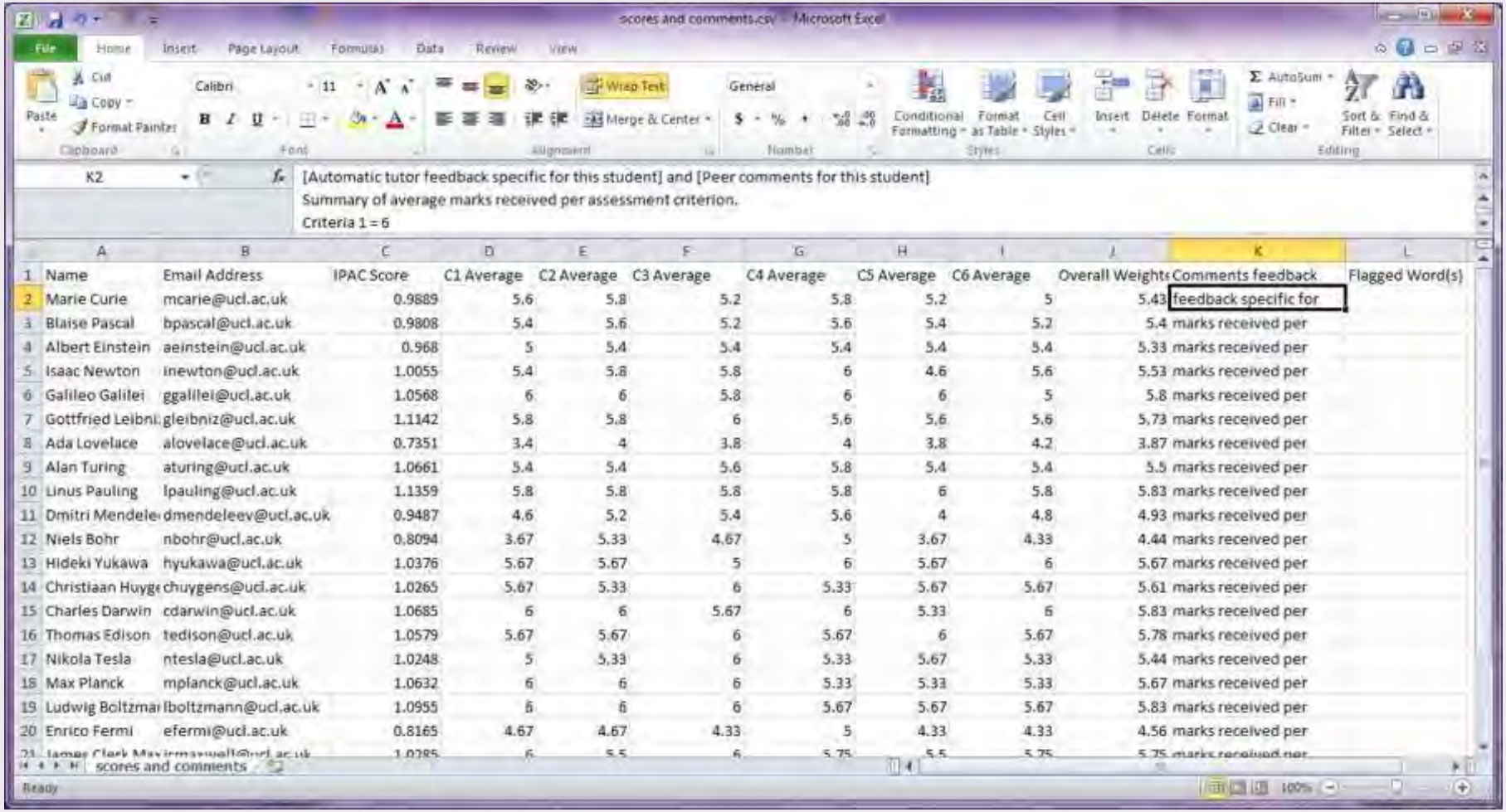
# Output:




| | A | BD | BE | BF | BG | BH | BI | BJ | BK | BL |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Student | Normalized and bias corrected values | | | | | | | IPAC Factor | |
| 2 | | Criterion 1 | Criterion 2 | Criterion 3 | Criterion 4 | Criterion 5 | Criterion 6 | | | |
| 3 | Student 1 Marie Curie | 1.096 | 0.9533 | 0.9133 | 0.96 | 1.1083 | 1.0917 | | 0.9889 | |
| 4 | Student 2 Blaise Pascal | 0.9448 | 1.0214 | 0.9133 | 0.96 | 0.9852 | 0.9357 | | 0.9808 | |
| 5 | Student 3 Albert Einstein | 0.9786 | 1.0214 | 1.0148 | 0.96 | 0.95 | 0.9704 | | 0.968 | |
| 6 | Student 4 Isaac Newton | 1.0148 | 1.0593 | 1.1417 | 1.0286 | 1.0231 | 1.048 | | 1.0055 | |
| 7 | Student 5 Galileo Galilei | 0.9786 | 0.9533 | 1.0538 | 1.1077 | 0.95 | 0.9704 | | 1.0568 | |
| 8 | | | | | | | | | | |
| 9 | Student 1 Gottfried Leibniz | 1.087 | 1.048 | 1.1083 | 0.9926 | 1.181 | 1.075 | | 1.1142 | |
| 10 | Student 2 Ada Lovelace | 1.1364 | 1.0917 | 1.0231 | 1.072 | 1.1273 | 1.032 | | 0.7351 | |
| 11 | Student 3 Alan Turing | 1.0417 | 1.0077 | 1.0231 | 1.072 | 1.0333 | 1.032 | | 1.0661 | |
| 12 | Student 4 Linus Pauling | 0.8333 | 0.8733 | 0.8867 | 0.8933 | 0.8267 | 0.86 | | 1.1359 | |
| 13 | Student 5 Dmitri Mendeleev | 0.9615 | 1.0077 | 0.9852 | 0.9926 | 0.9185 | 1.032 | | 0.9487 | |
| 14 | | | | | | | | | | |

And at the end of the document, summarized the average mark per student per criteria, and the overall IPAC value per student

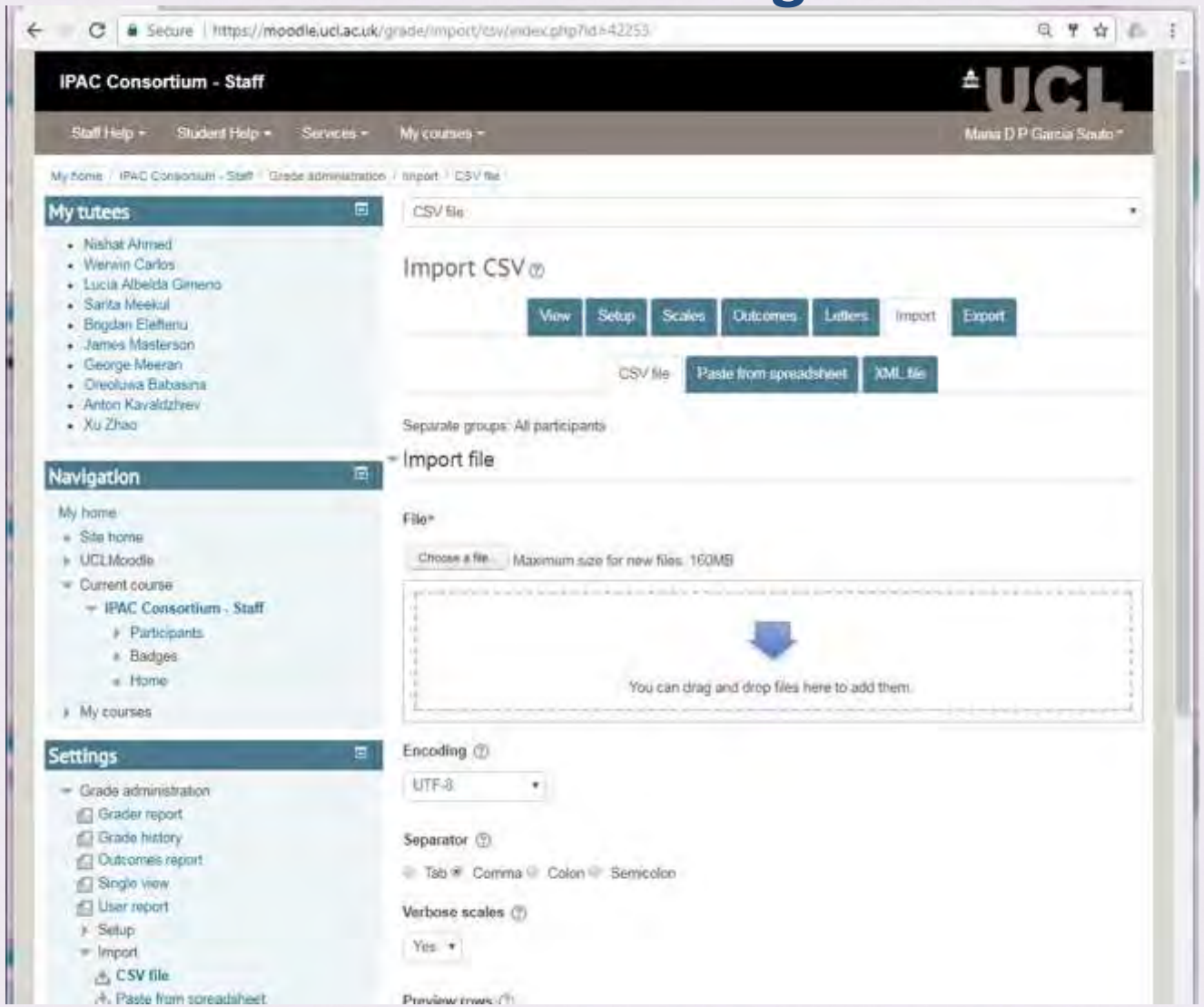
# Feedback to students (uploads into Moodle)




| | A | B | C | D | E | F | G | H | I | J | K | L |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Name | Email Address | IPAC Score | C1 Average | C2 Average | C3 Average | C4 Average | C5 Average | C6 Average | Overall Weighte | Comments feedback | Flagged Word(s) |
| 2 | Marie Curie | mcarie@ucl.ac.uk | 0.9889 | 5.6 | 5.8 | 5.2 | 5.8 | 5.2 | 5 | 5.43 | feedback specific for | |
| 3 | Blaise Pascal | bpascal@ucl.ac.uk | 0.9808 | 5.4 | 5.6 | 5.2 | 5.6 | 5.4 | 5.2 | 5.4 | marks received per | |
| 4 | Albert Einstein | aeinstein@ucl.ac.uk | 0.968 | 5 | 5.4 | 5.4 | 5.4 | 5.4 | 5.4 | 5.33 | marks received per | |
| 5 | Isaac Newton | inewton@ucl.ac.uk | 1.0055 | 5.4 | 5.8 | 5.8 | 6 | 4.6 | 5.6 | 5.53 | marks received per | |
| 6 | Galileo Galilei | ggalilei@ucl.ac.uk | 1.0568 | 6 | 6 | 5.8 | 6 | 6 | 5 | 5.8 | marks received per | |
| 7 | Gottfried Leibni | gleibniz@ucl.ac.uk | 1.1142 | 5.8 | 5.8 | 6 | 5.6 | 5.6 | 5.6 | 5.73 | marks received per | |
| 8 | Ada Lovelace | alovelace@ucl.ac.uk | 0.7351 | 3.4 | 4 | 3.8 | 4 | 3.8 | 4.2 | 3.87 | marks received per | |
| 9 | Alan Turing | aturing@ucl.ac.uk | 1.0661 | 5.4 | 5.4 | 5.6 | 5.8 | 5.4 | 5.4 | 5.5 | marks received per | |
| 10 | Linus Pauling | lpauling@ucl.ac.uk | 1.1359 | 5.8 | 5.8 | 5.8 | 5.8 | 6 | 5.8 | 5.83 | marks received per | |
| 11 | Dmitri Mendele | dmendeleev@ucl.ac.uk | 0.9487 | 4.6 | 5.2 | 5.4 | 5.6 | 4 | 4.8 | 4.93 | marks received per | |
| 12 | Niels Bohr | nbohr@ucl.ac.uk | 0.8094 | 3.67 | 5.33 | 4.67 | 5 | 3.67 | 4.33 | 4.44 | marks received per | |
| 13 | Hideki Yukawa | hyukawa@ucl.ac.uk | 1.0376 | 5.67 | 5.67 | 5 | 6 | 5.67 | 6 | 5.67 | marks received per | |
| 14 | Christiaan Huyge | chuygens@ucl.ac.uk | 1.0265 | 5.67 | 5.33 | 6 | 5.33 | 5.67 | 5.67 | 5.61 | marks received per | |
| 15 | Charles Darwin | cdarwin@ucl.ac.uk | 1.0685 | 6 | 6 | 5.67 | 6 | 5.33 | 6 | 5.83 | marks received per | |
| 16 | Thomas Edison | tedison@ucl.ac.uk | 1.0579 | 5.67 | 5.67 | 6 | 5.67 | 6 | 5.67 | 5.78 | marks received per | |
| 17 | Nikola Tesla | ntesla@ucl.ac.uk | 1.0248 | 5 | 5.33 | 6 | 5.33 | 5.67 | 5.33 | 5.44 | marks received per | |
| 18 | Max Planck | mplanck@ucl.ac.uk | 1.0632 | 6 | 6 | 6 | 5.33 | 5.33 | 5.33 | 5.67 | marks received per | |
| 19 | Ludwig Boltzmar | lboltzmann@ucl.ac.uk | 1.0955 | 6 | 6 | 6 | 5.67 | 5.67 | 5.67 | 5.83 | marks received per | |
| 20 | Enrico Fermi | efermi@ucl.ac.uk | 0.8165 | 4.67 | 4.67 | 4.33 | 5 | 4.33 | 4.33 | 4.56 | marks received per | |
| 21 | James Clerk Max | jmaxwell@ucl.ac.uk | 1.0285 | 6 | 5.5 | 6 | 5.75 | 5.5 | 5.75 | 5.75 | marks received per | |

# Import marks and feedback into Moodle grade book

Few clicks and …
feedback and marks provided to all students!



- What to know more about the IPAC methodology? Maybe use the software developed at UCL?
  - Email Pilar: p.garciasouto@ucl.ac.uk

- (vi) Opportunities for IPAC in your degree?
  - Discussion (20 mins)

- (iii) Q & A

# S7: Connecting your activity, assessment and feedback

- What have we looked at?
  - What is authenticity?
  - Through-lines and links with Learning Objectives
  - Types of assessment
  - Assessment tools
  - Peer assessment and feedback
  - Giving good quality feedback

# S7: Connecting your activity, assessment and feedback

- Spend 5 minutes thinking of a teaching activity and learning objectives relevant to you
- Discuss with your neighbours for 10 minutes
- Work in groups with similar ideas to design a full activity

# Activity

## Students need to know:

What prior knowledge do you expect?

## Assessment

## Learning Objectives

## Resources

People, space, equipment

## Feedback Mechanisms

Thank you for your time and contributions

What will you do next?

Write it down!