UNIVERSITY OF LEEDS

Searching for a common language – a story of collaboration across disciplines

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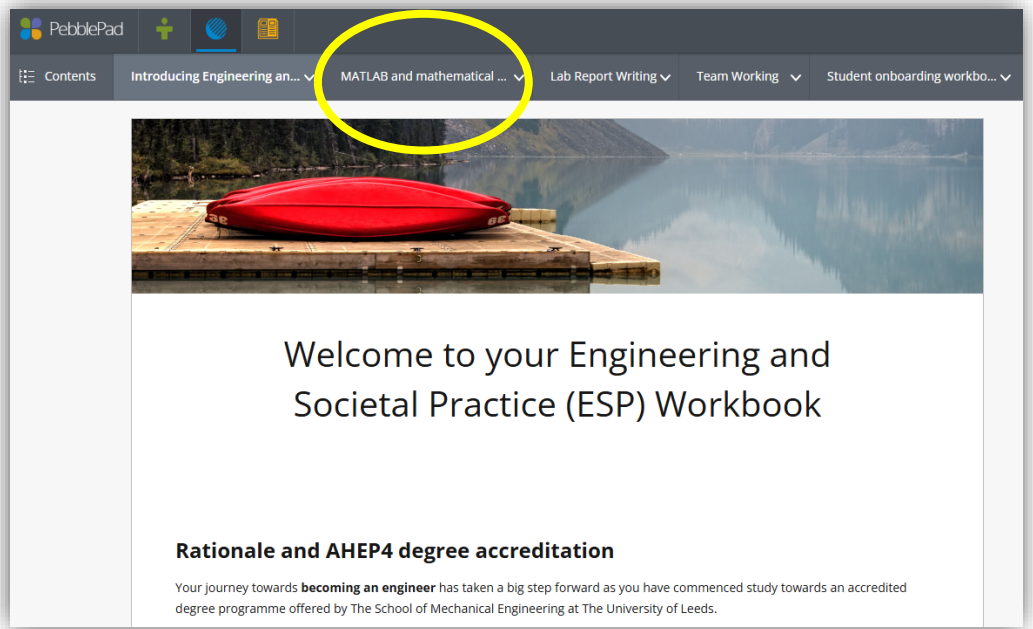
Overview

- About us and the project
- Conditions of collaboration
- Practitioner’s journey into the disciplinary language
- Challenges & reflections

Email: a.murawska@leeds.ac.uk
Location: School of Mechanical Engineering
Faculty: Engineering and Physical Sciences
School: The Language Centre, LCS

Position: Associate Professor

Areas of expertise: solid mechanics; finite element analysis; multibody dynamics; automotive brake systems; rail vehicle systems



In numbers:
2
300+
12
3

Collaboration mapped. Factors of effective team-collaboration by Newell&Bain (2018, 2020)

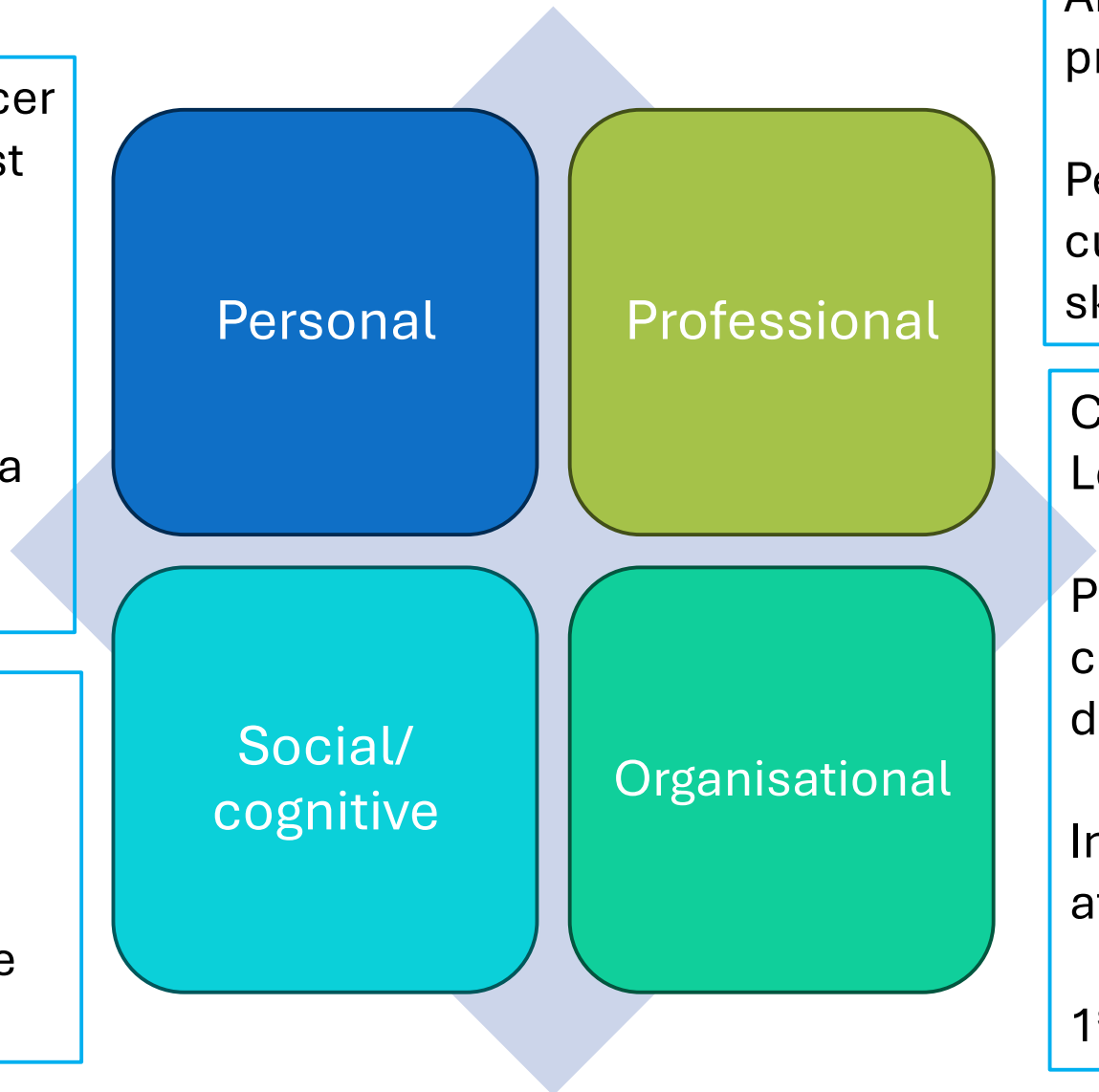
Academic Literacy Officer and APT Lead → interest in Student Education

Education innovation

Desire to 'add value' to a mature programme of study

Intellectual curiosity

Openess to explore problems / propose solutions from alternate viewpoints



Anna: Writing support, reflective practice, PebblePad

Pete: tutorial system, L1 curriculum, professional values & skills

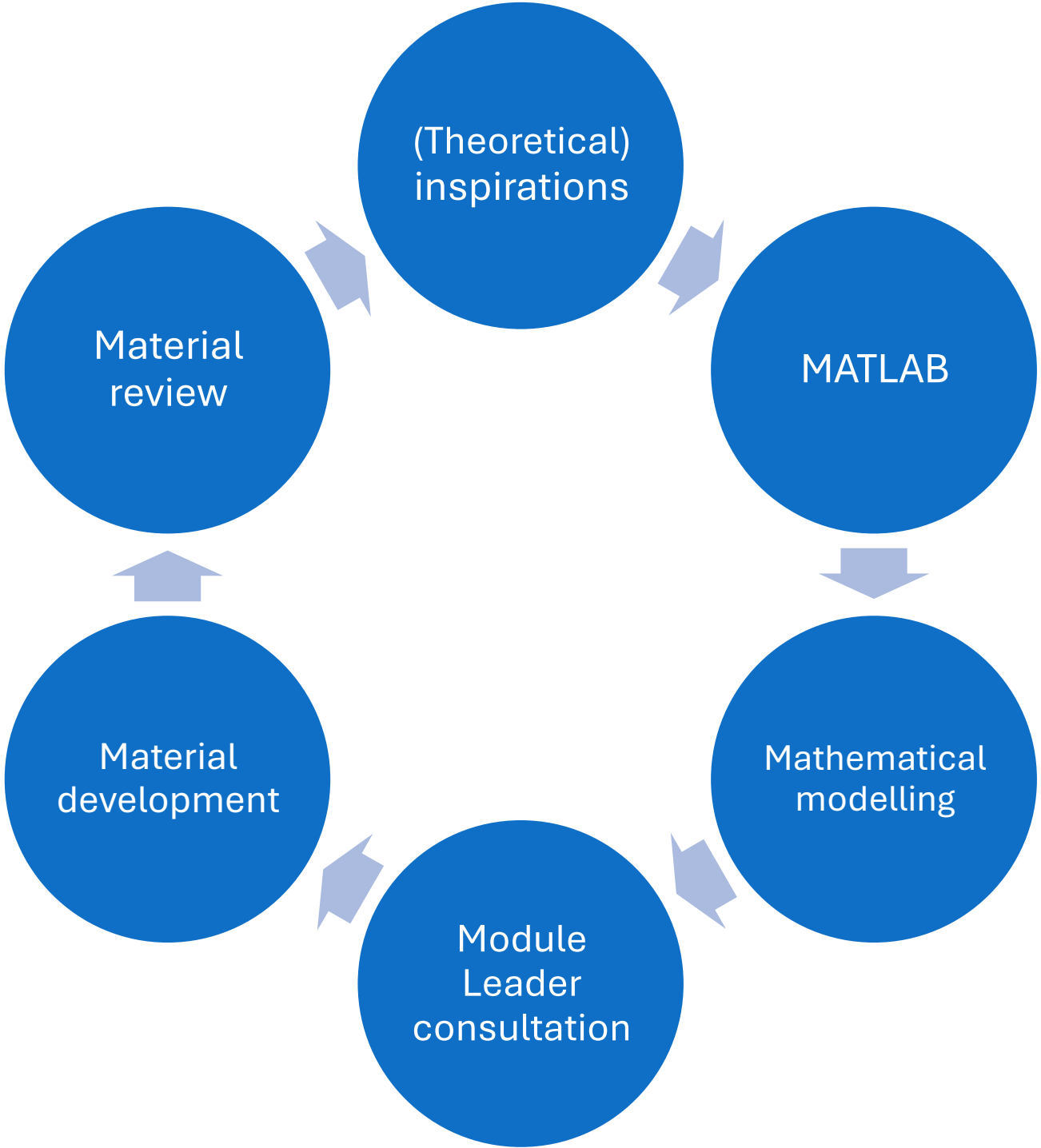
Catalyst → AHEP4 C18 Lifelong Learning

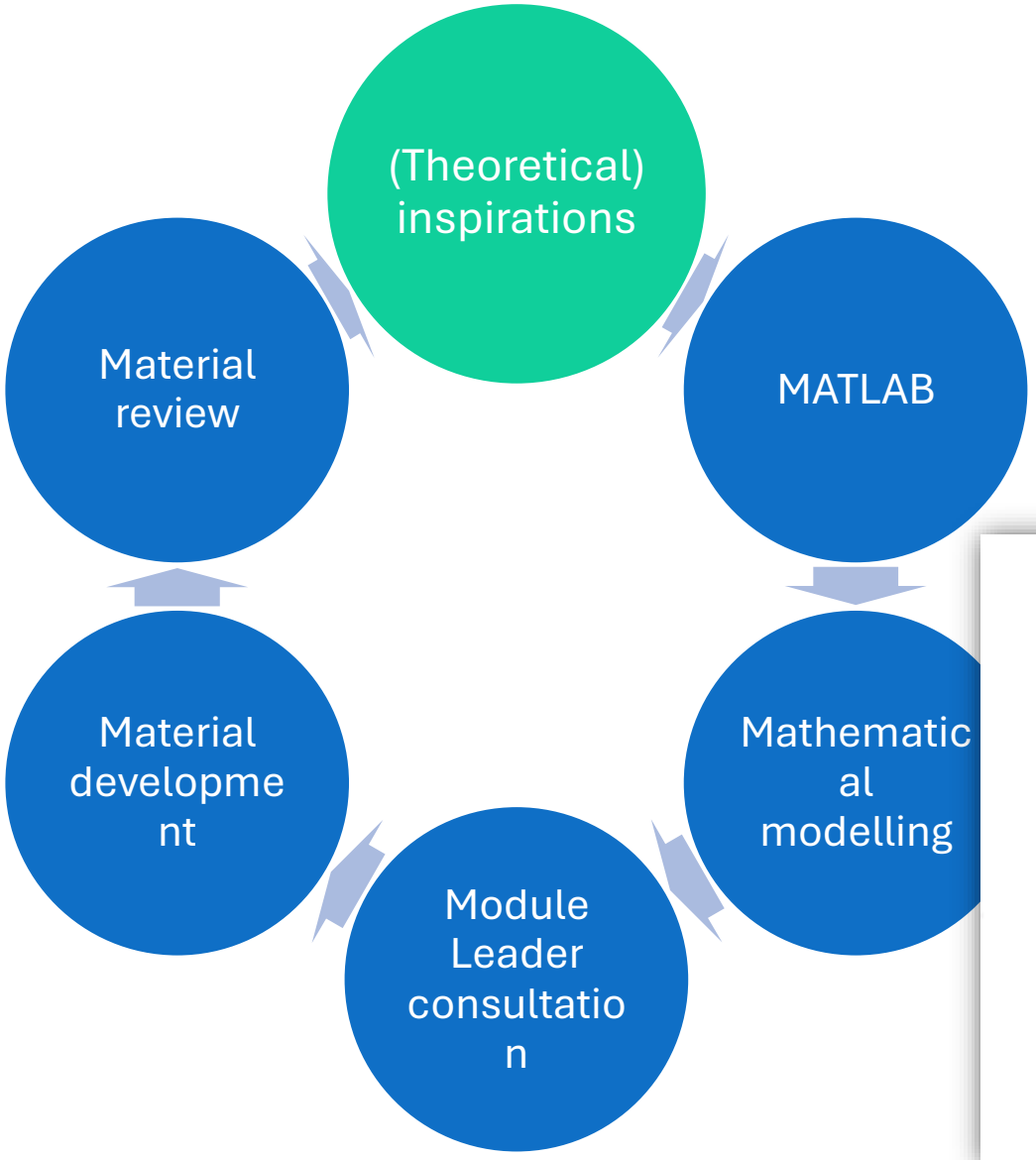
Pete's role: able to bring about change in content + mode of delivery at school level.

In-sessional support established at MSc level

1st collab: L2 Literacy tutorial

Practitioner's journey into the disciplinary language: choosing MATLAB for students' first reflection.





Wolf (2022)

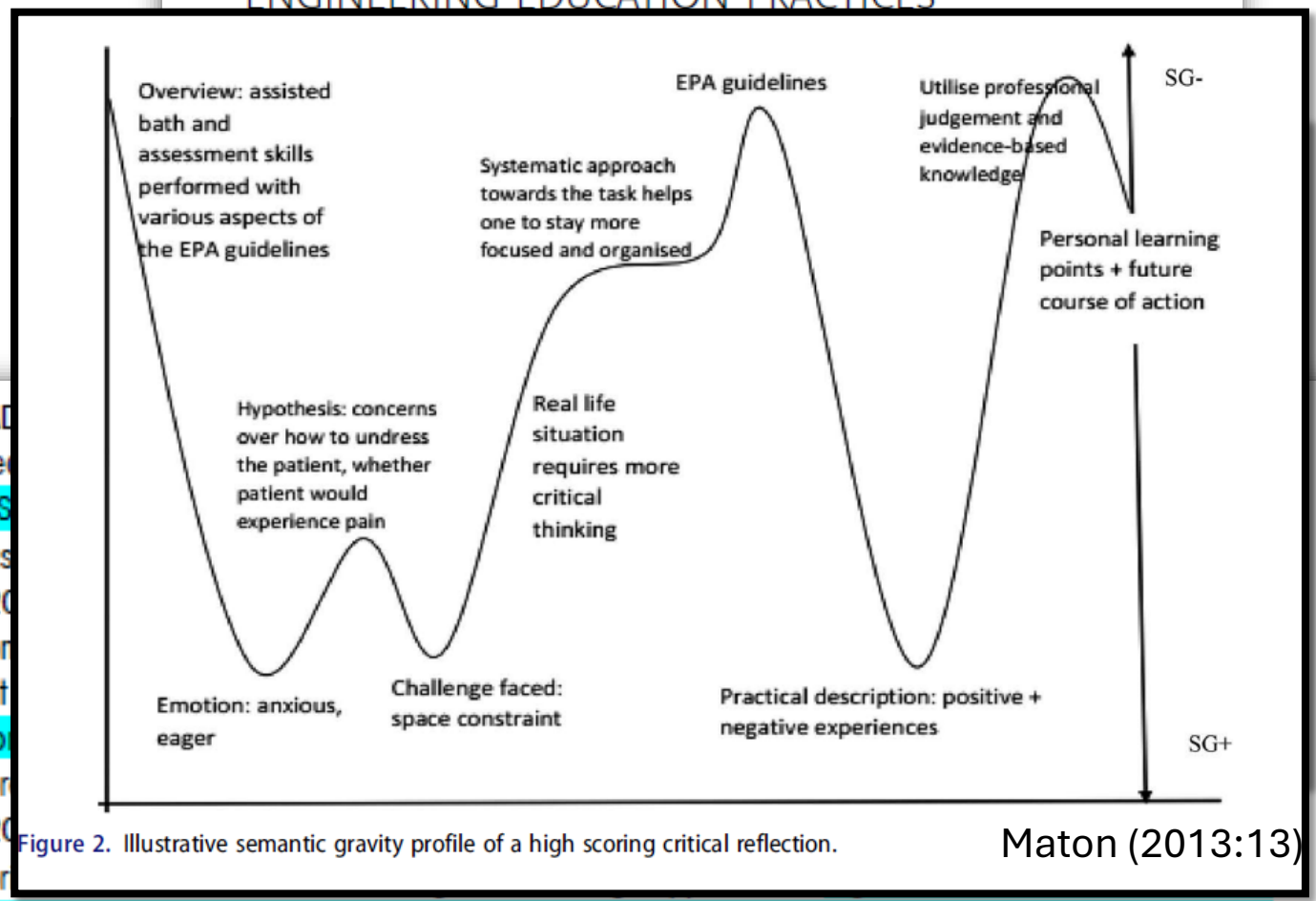


Figure 2. Illustrative semantic gravity profile of a high scoring critical reflection.

Maton (2013:13)

communities, forms of knowledge and associated practices on either side of the Humanities and

Monbec et al. (2021:1164)

- "Disciplinary empathy" (Driscoll, 2023)
- Guided by students' interest
- Context specificity (SG+)

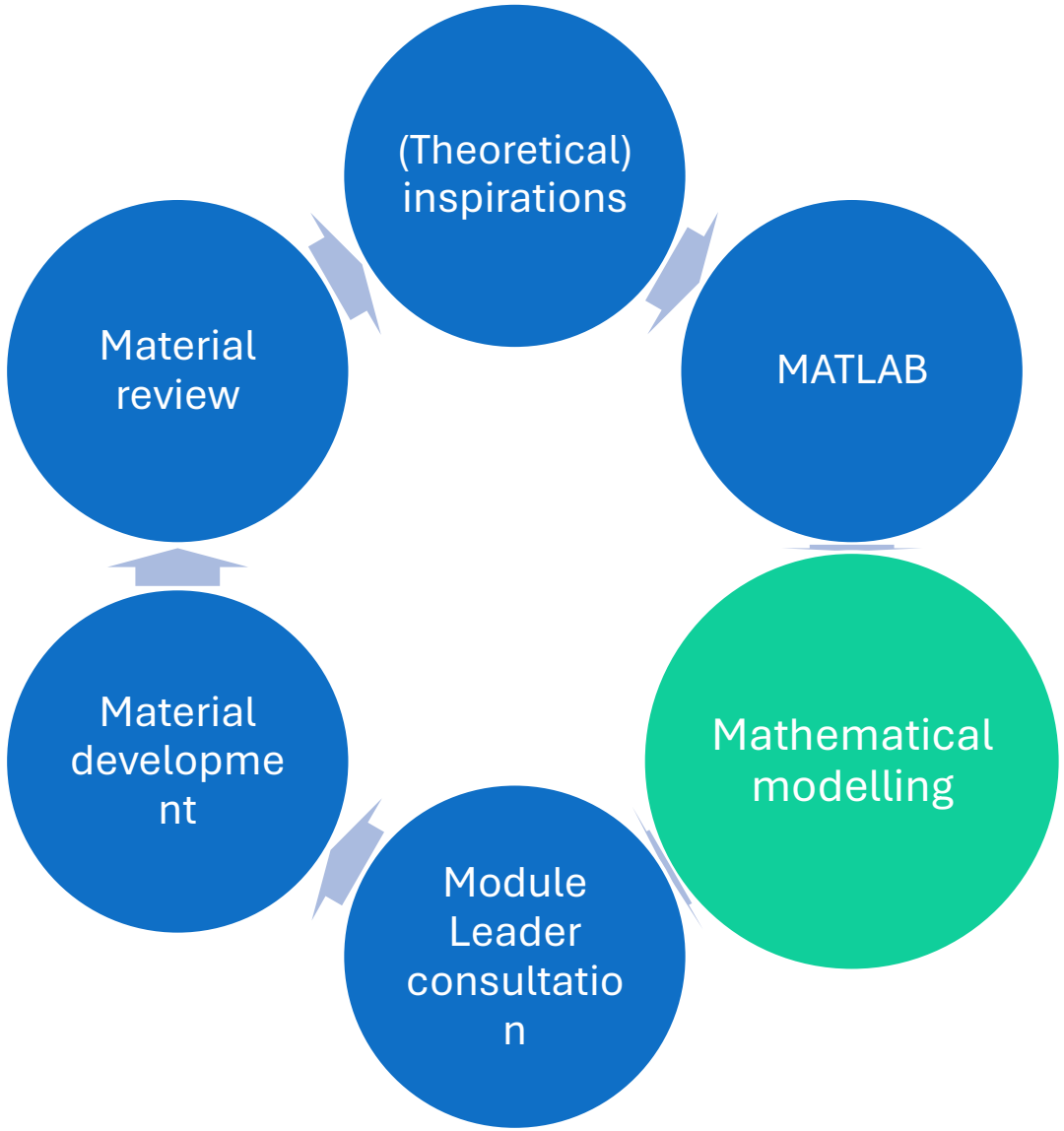
Activity 1a. Your experience. Preparing to reflect.

Think of **a challenge** you faced during the IT training you have completed so far*. This may relate to your previous knowledge and experience, your skills, learning style, ease of access, support available, etc. Name the challenge in the box below.

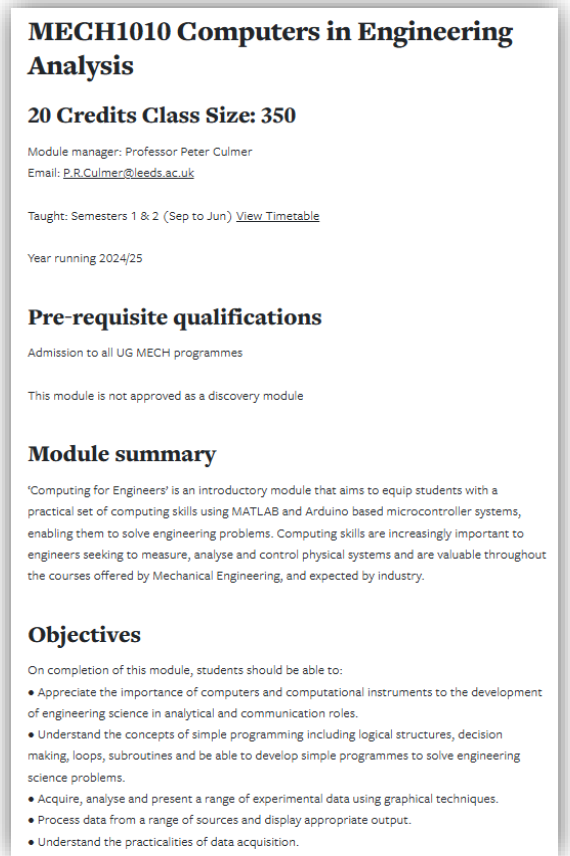
*If you completed more than three sections of the training, please consider all of them.

Given that the general IT induction was not generally challenging, I will consider an example drawn from the contents of the engineering course.

Induction into MECH1010's use of MATLAB as a tool for data processing, particularly the use of FOR and WHILE loops with regards to indexing matrices and vectors.



- Module description + reading
- Endorsed by the faculty
- Moving towards abstract concepts (SG-)



MECH1010 Computers in Engineering Analysis

20 Credits Class Size: 350

Module manager: Professor Peter Culmer
Email: P.R.Culmer@leeds.ac.uk

Taught: Semesters 1 & 2 (Sep to Jun) View Timetable

Year running 2024/25

Pre-requisite qualifications

Admission to all UG MECH programmes

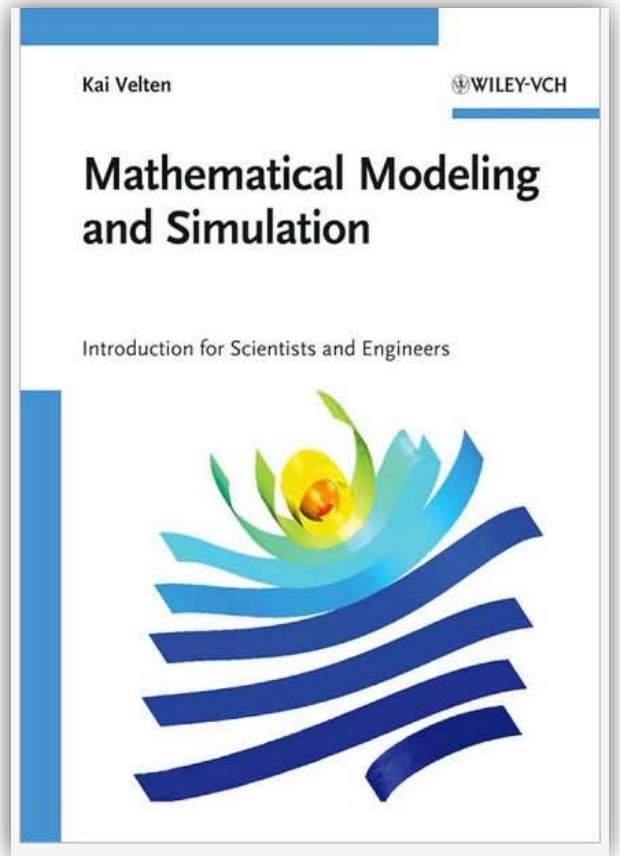
This module is not approved as a discovery module

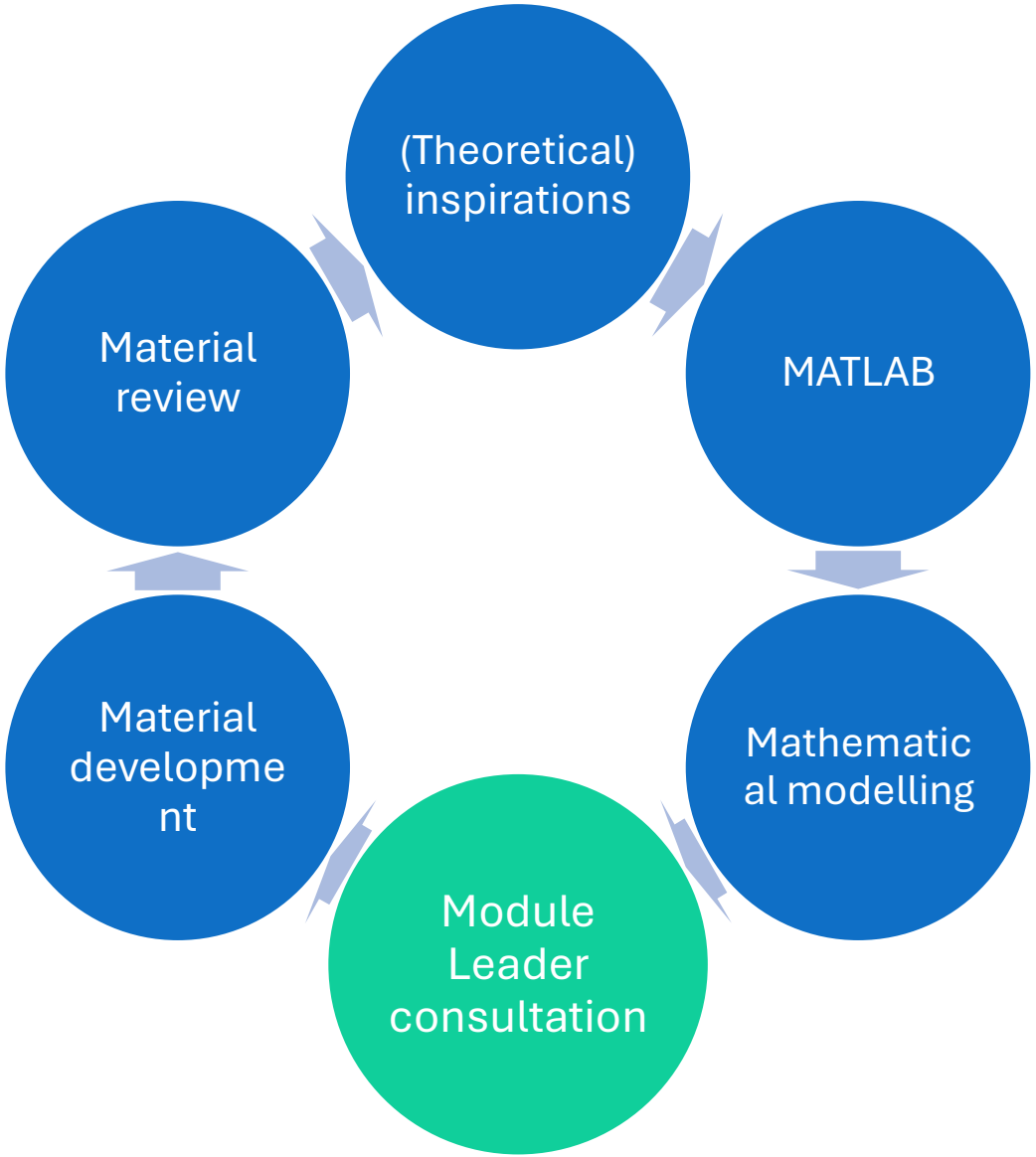
Module summary

'Computing for Engineers' is an introductory module that aims to equip students with a practical set of computing skills using MATLAB and Arduino based microcontroller systems, enabling them to solve engineering problems. Computing skills are increasingly important to engineers seeking to measure, analyse and control physical systems and are valuable throughout the courses offered by Mechanical Engineering, and expected by industry.

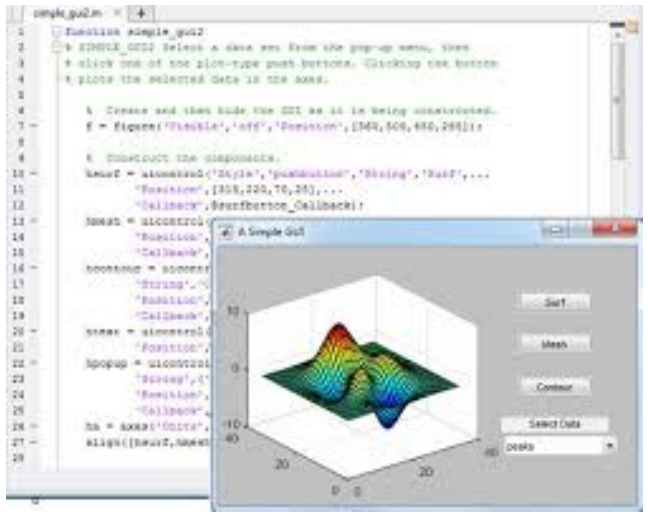
Objectives

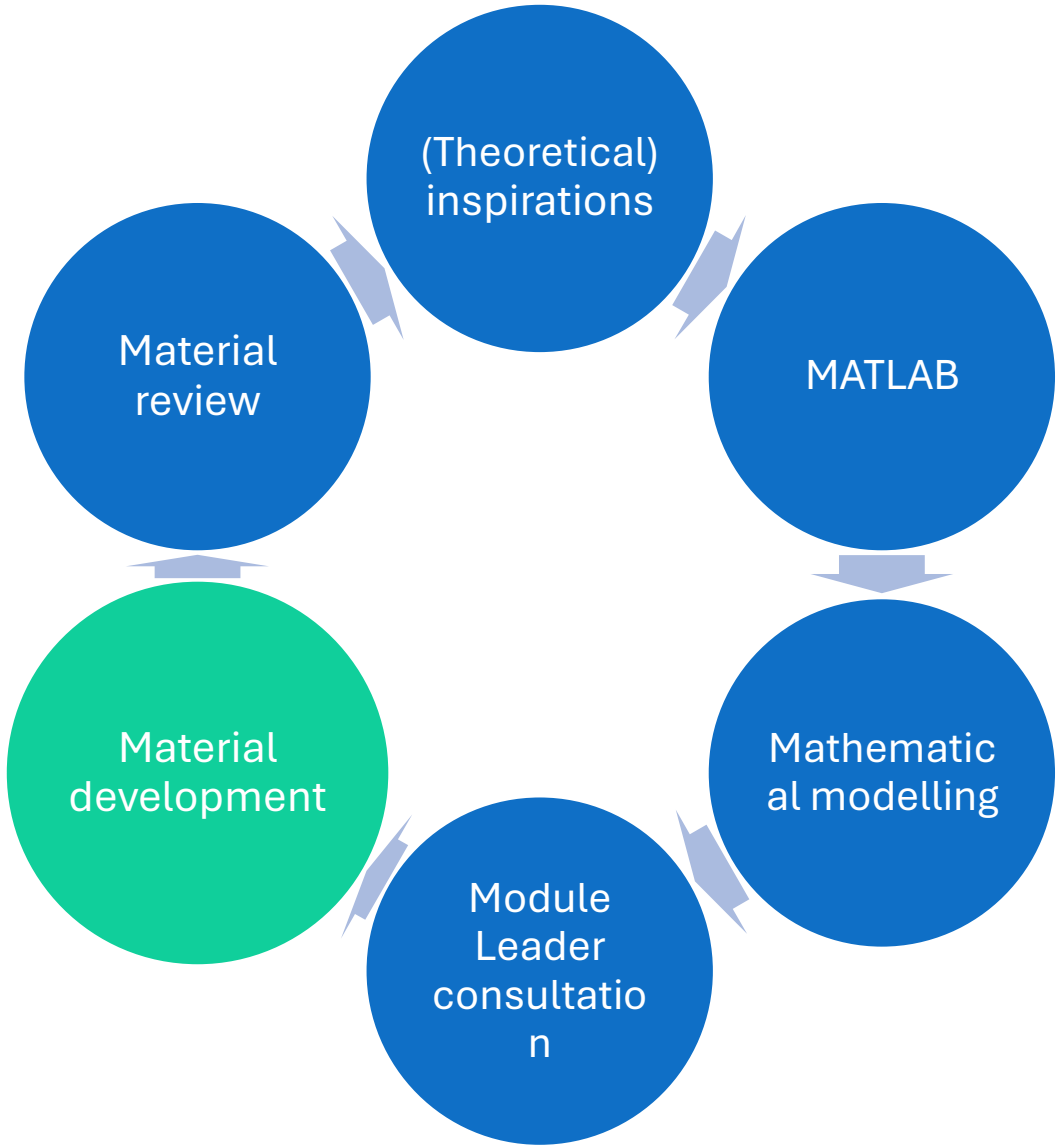
On completion of this module, students should be able to:
- Appreciate the importance of computers and computational instruments to the development of engineering science in analytical and communication roles.
- Understand the concepts of simple programming including logical structures, decision making, loops, subroutines and be able to develop simple programmes to solve engineering science problems.
- Acquire, analyse and present a range of experimental data using graphical techniques.
- Process data from a range of sources and display appropriate output.
- Understand the practicalities of data acquisition.





- Feasibility check
- Beginner's mindset + "disciplinary empathy" (Driscol, 2023)
- Grounding in the module, programme of study (SG+) and engineering practice (SG-)





- Conversations & comments turning into the task brief, and PebblePad activities

Week 2 sample Pebble Pad questions:

1. Note down your initial reaction/thoughts/observations and ideas that have come from your introduction to MATLAB.
2. Do you think that understanding/competency in 'coding' will impact positively in your ability to problem solve/innovate? In what ways?
3. How does this activity (learning how to use MATLAB) compliment work that you undertake in other areas of study (for example in mathematics, design or engineering science)?

Week 5 sample Pebble Pad questions:

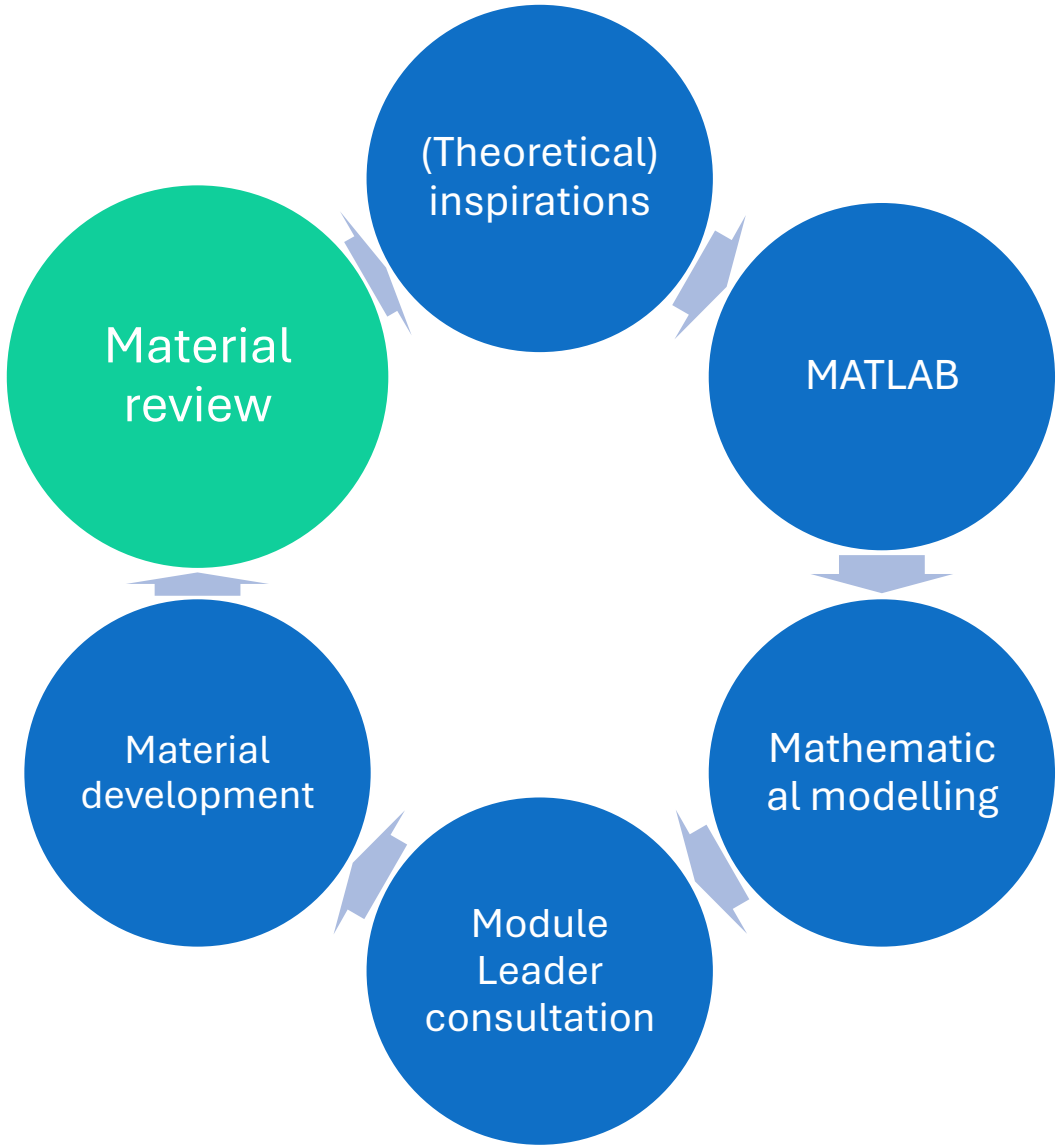
1. Rate your level of competency. Note down your weaknesses and strengths. (possible areas of focus: **efficiency of the code** – marker of depth of understanding. Is your code an **Elegant** solution? E.g. includes minimum number of variables. – influence how long it takes to run. And does it matter? ((If a solution is immature, there are many variables)). **Comments** – lines, extra info that allows to revisit the code later. Clarity. // Good practice dictates th comments. Example of loops and statement that checks logic – shared by Peter// **refine assumptions** that you made. iterative cycle . **other.** Adding levels of complexity t a code so that it works. Writing and checking your code step by step.. thinking how problems looked at

Assignment guidance

Identify, assess and propose a solution to a learning challenge you faced on MECH1010 module. Along with your descriptive text, you are required to submit evidence that demonstrates your progress through the learning challenge (from its identification to solution).

Supplementary guidance

- Potential learning challenges you might want to discuss may include (but are not limited to) efficiency of the code, elegance of the solution, comments, refining assumptions, adding levels of complexity, use of loops and addition of logic, etc.
- The provision of evidence is mandatory. This could include appropriate screenshot(s), scan(s) of ideas etc. An assignment without evidence will not be assessed.
- You will write in continuous text (without bullet points), dividing your work into paragraphs,



- Marking catch-ups & informal exchanges
- Reflections overly technical and narrow at times (e.g. focus on syntax)
- End of year review: focus on skills preferred
- Moving forward: subject lecturers' input to refine the materials

Challenges

- Time & timeline
- Communicating with a range of stakeholders: students, C18 Lifelong Learning Tutors, STSEC (School Taught Student Education Committee), student education interest group
- Forgetting “home” – limited focus on language, and developing reflective writing
- Excessive “technicality”?

Reflections, lessons learnt & unexpected insights

- importance of learning each other's language
- collaboration as "a relationship, style or approach, process, capacity, and **learning opportunity**" (Newell&Bain, 2020:750)
- EAP "practitioner reconstructed" (Driscol, 2023)
- reality check: "humanities vs STEM divide" (Wolf, 2022:209) did not materialize
- "Shifted away from being firmly glued in the sciency part of things, where you have rigid boundaries around your area, moving you somewhere where the boundaries are a bit more flexible, because you have the freedom to change your language. You can become less formal, use different words, add a bit of colour to what you're saying."

References

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Maton, K. (2013). Making semantic waves: A key to cumulative knowledge-building, Linguistics and Education, 24(1): 8–22.

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