



UNIVERSITY OF
BIRMINGHAM

COLLEGE OF
ENGINEERING AND
PHYSICAL SCIENCES

Tuning Tensions: Interdisciplinary Learning in an Asynchronous Distance Learning Environment

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(Multi?) Disciplinary Identities



**Programme Director and
Director of Education:
College of Engineering
and Physical Sciences**



**Module Lead and
Postdoctoral
Researcher in Science
Education**



**Programme Lead and
Senior Research Fellow,
Education and Physics**



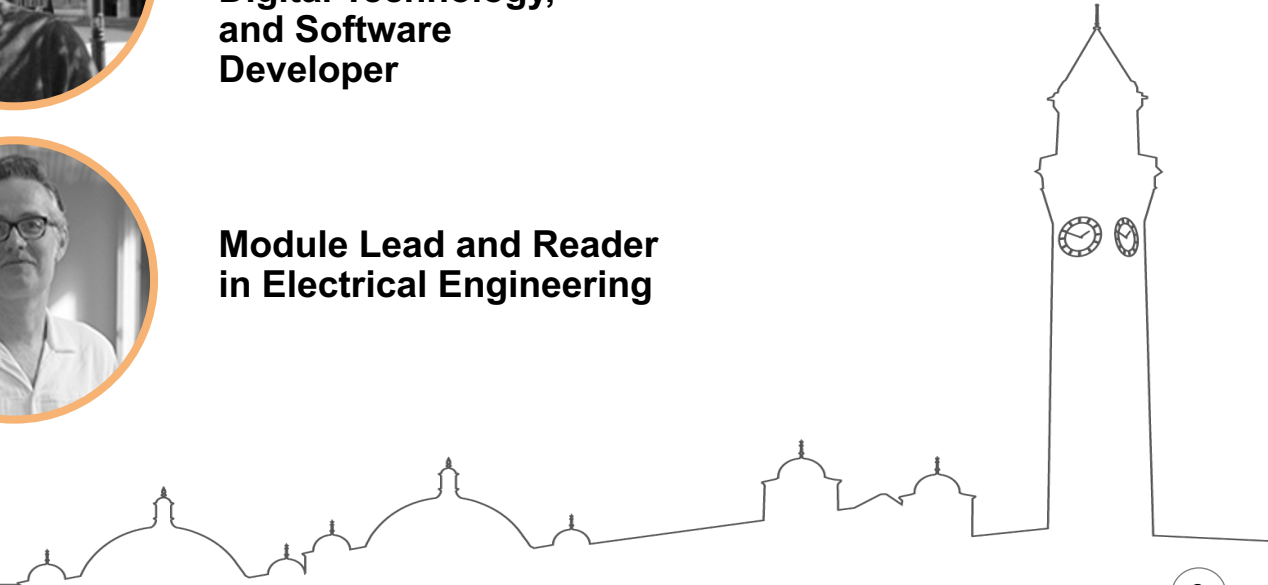
**Module Lead and
Senior Lecturer in
Digital Technology,
and Software
Developer**



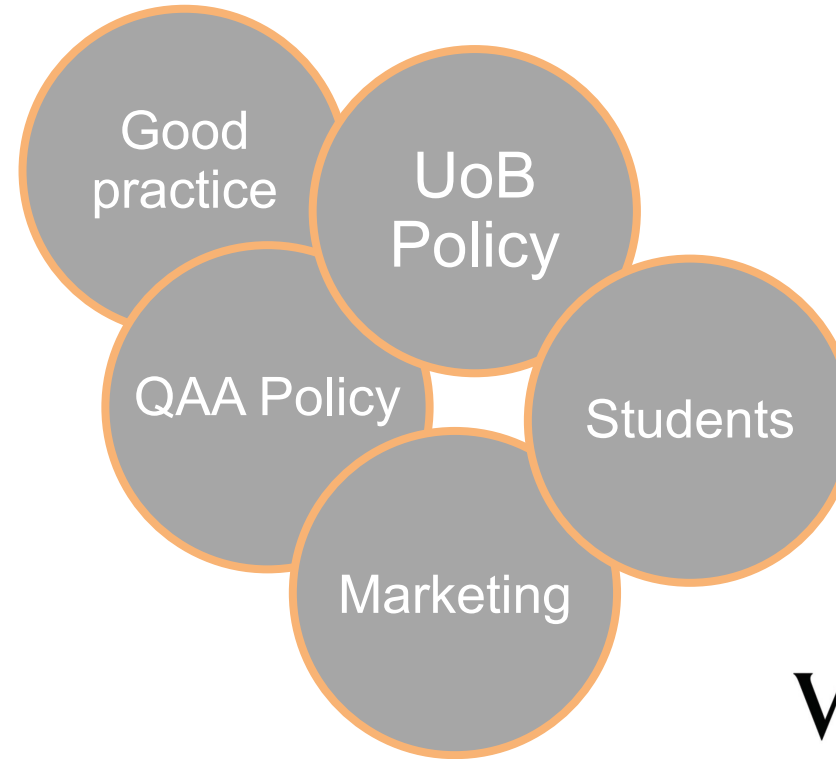
**Module Lead and
Lecturer in Applied
Data Science**



**Module Lead and Reader
in Electrical Engineering**



Multi? Inter? Disciplinary? Design Network



WILEY

EDUCATION
SERVICES

Matthews, A. (2023) 'The Mode 3 Network University and Design: A New Materialist Perspective', in N.B. Dohn et al. (eds) *Sustainable Networked Learning: Individual, Sociological and Design Perspectives*. Cham: Springer Nature Switzerland (Research in Networked Learning). Available at: <https://doi.org/10.1007/978-3-031-42718-3>.

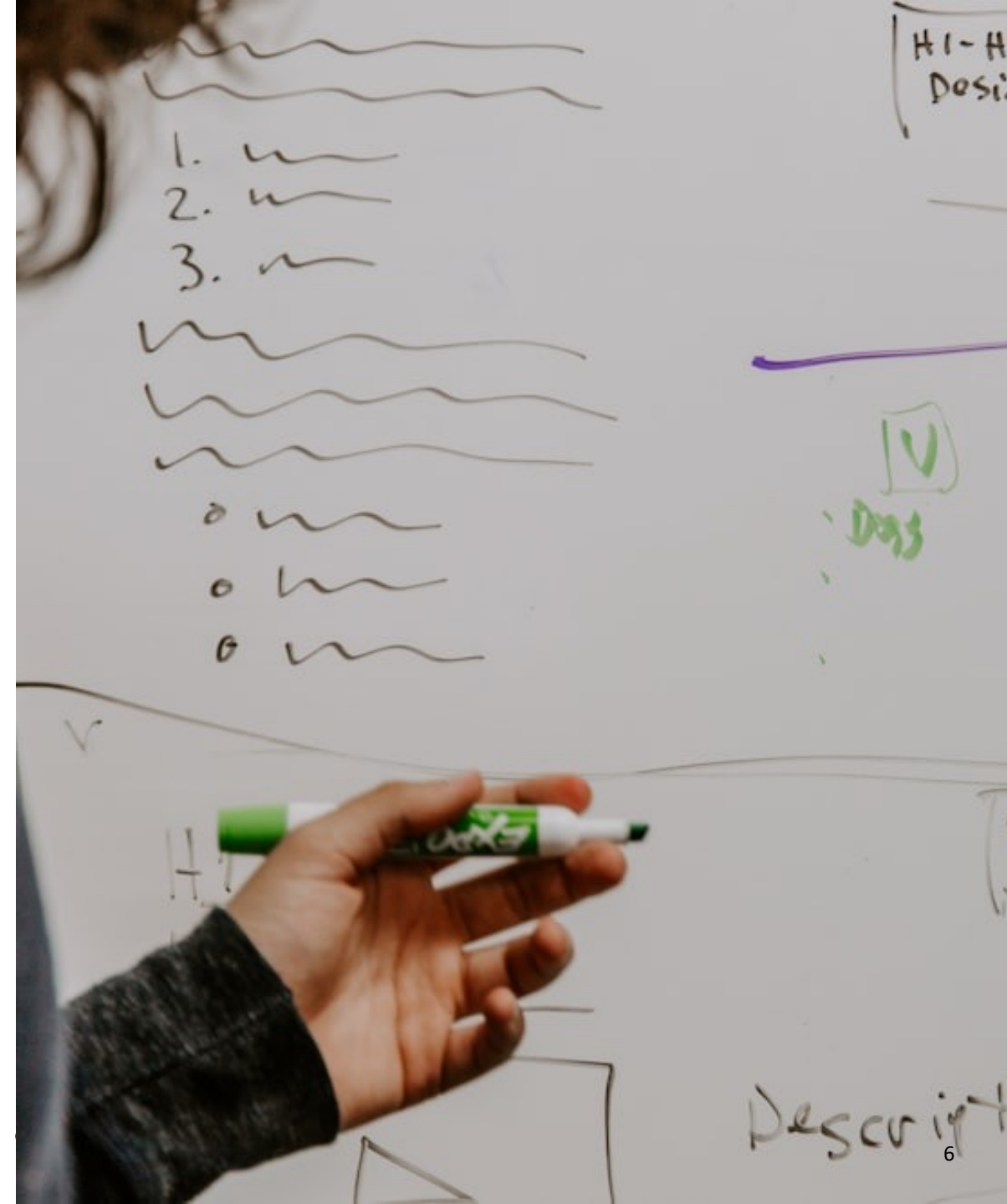
Design and designer as key to interdisciplinarity?

“ Designed things are the means by which we achieve desired ends.
(Petroski [2008](#): 48)

All men (sic) are designers. All that we do, almost all of the time, is design.
(Papanek [1985](#): 23)

Engineers are not the only professional designers. Everyone designs who devises courses of action aimed at changing existing situations into preferred.
(Simon [1988](#): 67)

Matthews, A. (2019) 'Design as a Discipline for Postdigital Learning and Teaching: Bricolage and Actor-Network Theory', *Postdigital Science and Education*, 1(2), pp. 413–426. doi: 10.1007/s42438-019-00036-z.





Learning Environments and Technology

Design for Learning Environments – challenge led

Learning
Sciences

Design and
Design
Thinking

Data Science

Software
Development

Science and
Technology
Studies

“ The design of learning environments is the systematic analysis, planning, development, implementation, and evaluation of physical or virtual settings in which learning takes place.”—Ifenthaler, 2012

Ifenthaler, D. (2012) 'Design of Learning Environments', in N.M. Seel (ed.) Encyclopedia of the Sciences of Learning. Boston, MA: Springer US, pp. 929–931. Available at: https://doi.org/10.1007/978-1-4419-1428-6_186.

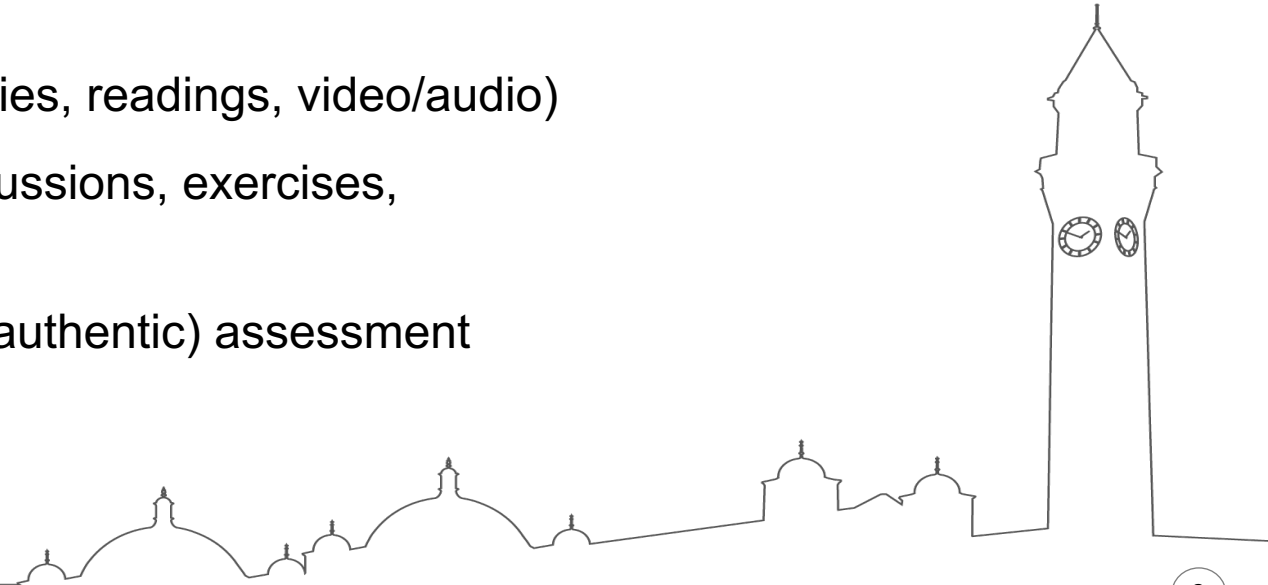
PGCert Design for Learning Environments

Each
module
10
credits

8
weeks of
study per
module

12.5
hours per
week

- Postgraduate level 7
- Designed for those working
- Asynchronous flexibility (exercises, cases studies, readings, video/audio)
- Synchronous (optional Connect sessions, discussions, exercises, announcements, e-mail)
- Integrates theory and practice in content and (authentic) assessment



Programme architecture

MICROCREDENTIALS

Design and design thinking



Applied data science for learning environments



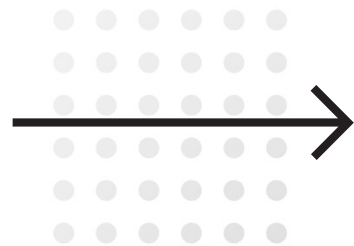
Perspectives on learning



Developing digital artefacts for learning



Sociotechnical learning environments



Communicating design stories



A synoptic module to integrate knowledge

10
credits

Completes
the
Postgraduate
Certificate

Postgraduate
level
7

- Case study based (health and safety)
- Designed for those working
- Asynchronous flexibility (exercises, cases studies, readings, video/audio)
- Synchronous (optional Connect sessions, discussions, exercises, announcements, e-mail)
- Integrates theory and practice in content and (authentic) assessment

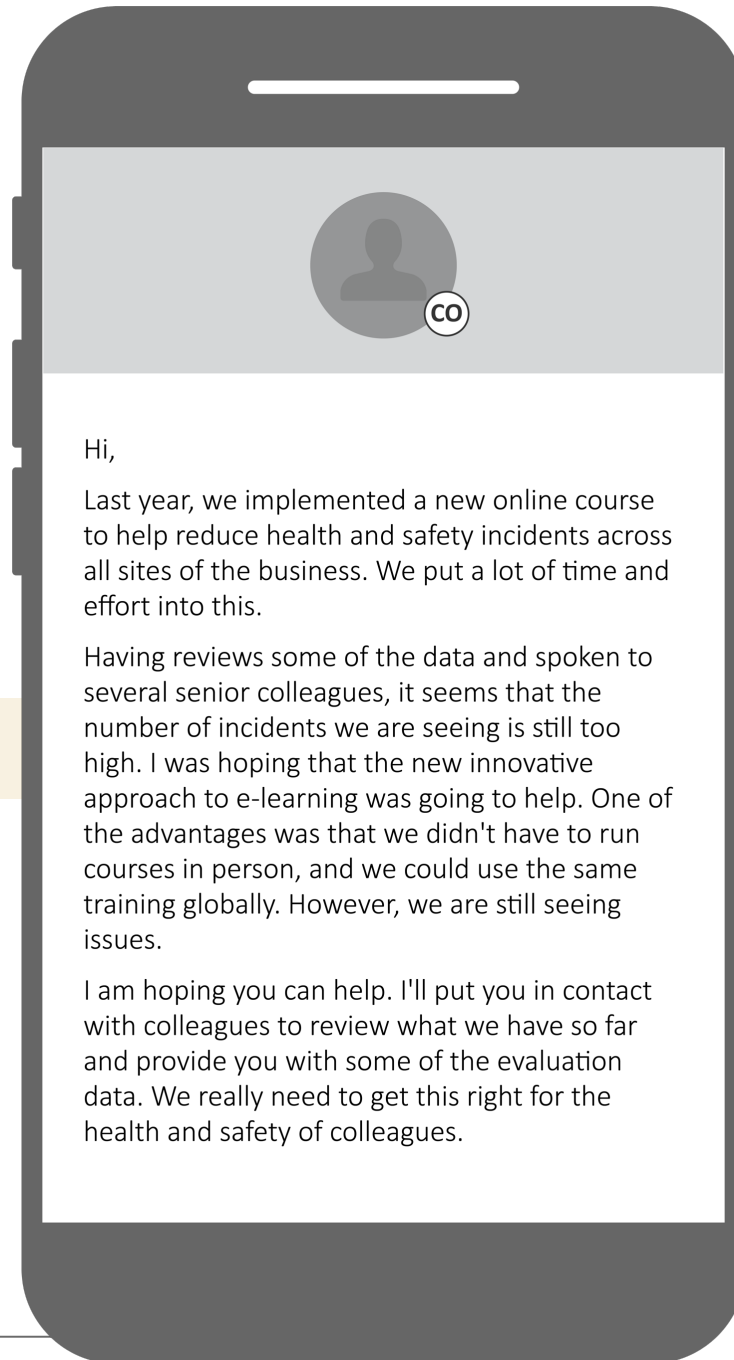


Case Study

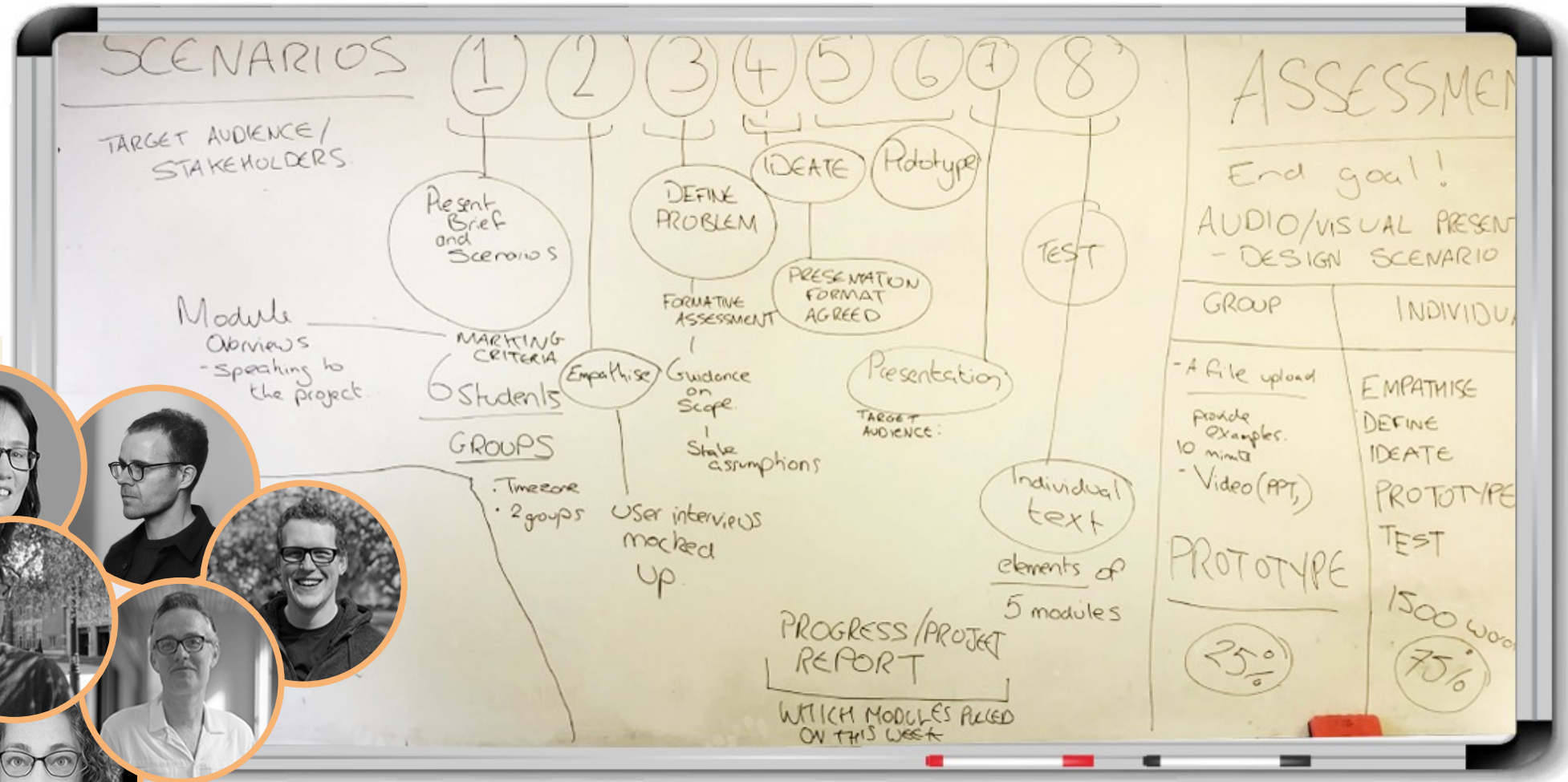
Following the rollout of the training, data from the Health and Safety team's tracking system indicated that reported accidents rose. Most of these incidents were categorized as preventable.

So why did this happen?

Here is an e-mail from the Chief Operating Officer, who wants you to lead on the project to investigate and come up with a design to improve the system for the good of the company and its employees.



Whiteboarding Scenarios



Assessment criteria

Communication

Does the work communicate to the intended audience the rationale for the approach taken, which is clearly accessible for both experts and non-experts?

Disciplinary grounding

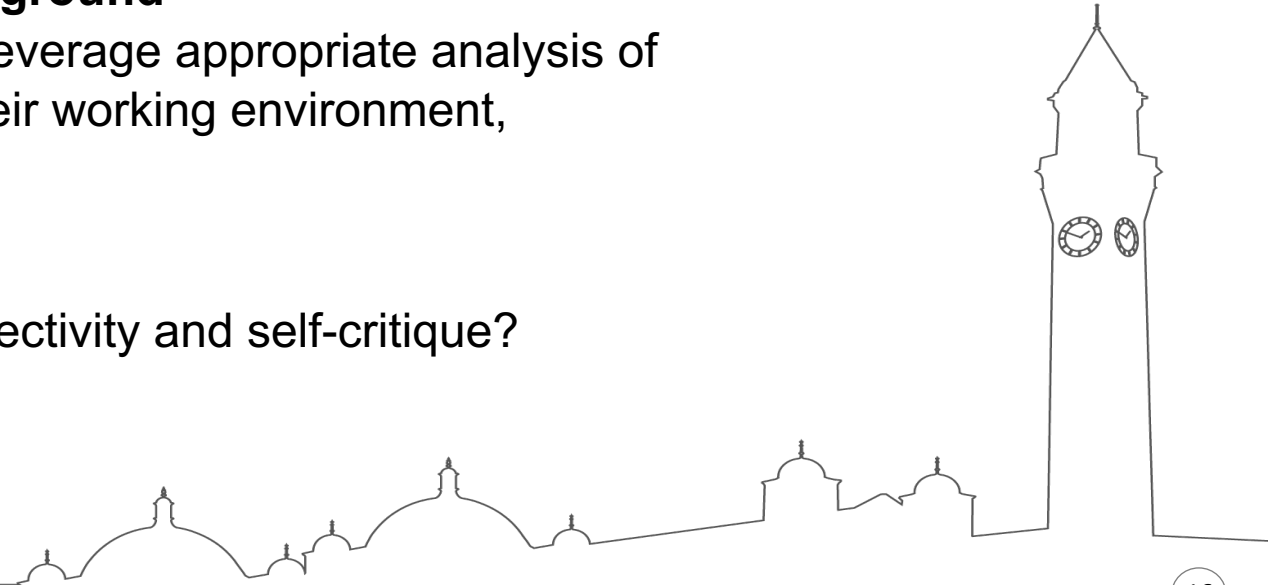
Is the work grounded in carefully selected and adequately employed disciplinary insights?

Advancement through integration and common ground

Are disciplinary insights clearly integrated so as to leverage appropriate analysis of DFLE Inc's issues regarding health and safety in their working environment, alongside your design prototype?

Critical reflection

Does the work exhibit a clear sense of purpose, reflectivity and self-critique?



Tuning tensions



Tuning tensions – social and temporal separation

Time ←————→ Space



Tuning tensions – surface level integration

Depth \longleftrightarrow Breadth



Tuning tensions – disciplines and interdisciplinarity

Grounding ←————→ Integration



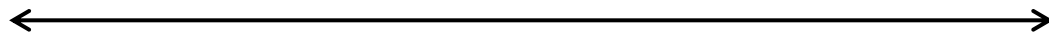
Tuning tensions – Where does knowledge get integrated?

Academics ←————→ Students



Tuning tensions – Level 7 ‘postgraduateness’

Disciplinary
and
institutional
norms

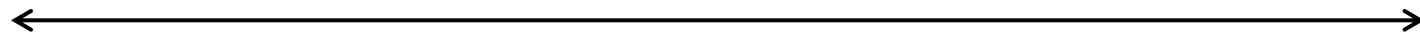


Interdisciplinarity
and
microcredentials



Tuning tensions – [knowledge] theory and practice

Academic
literature



Practice



Thank you for listening

Questions...



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