A photograph of the Portico building at UCL, a large neoclassical structure with a prominent portico supported by tall columns and a large dome on the roof. People are sitting on the steps in front of the building.

# **Using government policy documents (POSTnotes) to inform and improve technical communication for engineering undergraduates**

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# Outline

- ☐ Background
- ☐ Intended Learning Outcomes (ILOs)
- ☐ Reasons for the change
- ☐ Solution proposed
- ☐ Impact of the solution adopted
- ☐ Reflection and Further improvements

# Background

- The assessment presented here is taught in the first year as part of the Integrated Engineering Programme at UCL Engineering (<https://www.ucl.ac.uk/engineering/study/undergraduate/how-we-teach> )
- Continuous redesign of the module (Challenge One): iteration of the contents/ways of assessing the students
  - ✓ Previously: strip and build an engine before writing a magazine article on the future of internal combustion as a small group (5-6 students)
  - ✓ Topic changed: from IC Engines changed to Climate Repair
  - ✓ Aim: promote effective written technical communication with a policy-focussed output



**Honda engine**  
([engines.honda.com](http://engines.honda.com))



**Two painted hands as planet Earth** ([wired.com](http://wired.com))

# Background

## **Performance observed in our students:**

- Technical research and writing improved dramatically
- Continuity of their work: using the research generated in the POSTnote in a subsequent assessment (POSTnote Debate)
- Students gave and received peer-feedback and contributed to formative and summative assessment of each others' work

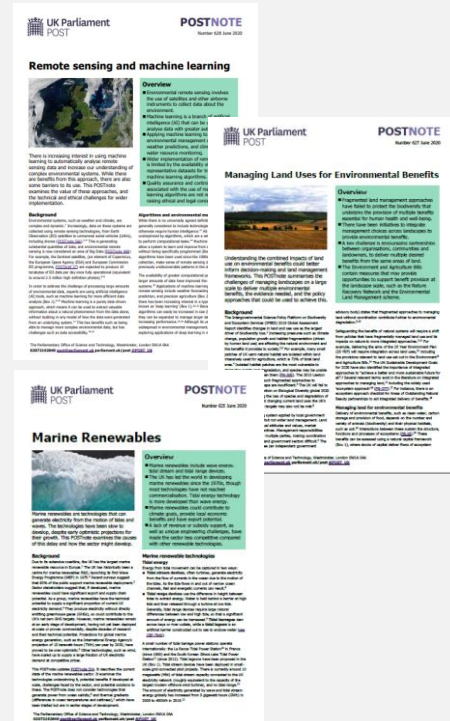
# ILOs

The intended learning outcomes of this session are:

- ✓ Teach how to analyse the audience for a given communication (report or talk) and determine the appropriate point of view, level of detail, and jargon
- ✓ Apply the design process, considering iteration, to the development and creation of an assessment implementing an intensive and strategic high-quality feedback
- ✓ Appreciate the complexity of cross-functional design and interaction between multidisciplinary teams working on a project with a broad societal context

# Reasons for the change

- Reports from previous assessment (*magazine article*) showed to be in the extremes of the spectrum: either very good, or poorly executed
- Advantage of this alternative: students could consult a vast number of real examples (*available at <https://post.parliament.uk/briefing-type/postnote/>*)
- This type of assessment aimed also at improving the referencing skills of our students (*observed to be an issue for all the undergraduates in our Department, from first to fourth year*)



**Images taken from POSTnote articles available at:**  
<https://post.parliament.uk/briefing-type/postnote/>

# Solution proposed

## Our rationale:

- ❑ Students should take an **active role** in their learning
- ❑ They should face **similar** research and communication **tasks** as those that they will encounter in their **professional careers**
- ❑ **Learning relies** heavily on receiving high quality **feedback** at the different stages of the project from different perspectives (module facilitator, TAs and peers)
- ❑ **Continuation** of the research **work**. The POSTnotes were then used as basis for the subsequent assessment that included a roleplay between different stakeholders (technical experts, politicians and the media)

# Solution proposed

## KEY ELEMENTS

☐ Game rules

☐ Special guest

☐ Feedback

☐ Referencing

☐ Teaching assistants

☐ Continuity of the work done

		Insufficient	Developing	Fair	Good	Excellent
		1	2	3	4	5
READER EXPERIENCE	1.1 Referenced sources (30%)	10-20	20-30	30-40	40-50	>50
	1.2 Language Mechanics (10%)	Frequent major grammar and spelling errors. Very hard to follow.	Minor grammar and spelling errors are common. Text sometimes confusing.	Some errors but understanding is not undermined.	Good spelling and grammar. Almost error-free writing.	Clear writing with no spelling or grammar errors.
MESSAGE	2.1 Content & Vocabulary (20%)	Content and vocabulary are irrelevant and untargeted.	Some relevant content and vocabulary. No targeting of the reader.	Adequate content and vocabulary balancing. Some tailoring to create interest in the reader.	Content and vocabulary are tailored to a non-specialist. Creates interest and informs.	Content and vocabulary are well-balanced between tech/non-tech. Creates a high-level of interest.
	2.2 Structure (20%)	No attempt at structure. Sentences and paragraphs are not linked.	Some structure but gaps in logic remain. Linking between points is confusing.	Functional structure with enough continuity to be mostly understood. Some problems with individual elements.	Complete structure with a sense of continuity. Slightly imbalanced structure.	Compelling narrative linking entire structure. Logical and balanced presentation of all elements.
	2.3 Credibility (10%)	The statements are rarely backed up with references; the author(s)' full name(s) is (are) not searchable neither has (have) verifiable credentials. Publishing date is outdated. Citations and links hardly lead to primary or trusted sources.	The statements are backed up sometimes with references; the author(s)' full name(s) is (are) occasionally searchable but does not have verifiable credentials. Publishing date is usually outdated. Citations and links lead to primary or trusted sources only 25% of the times.	The statements are backed up at least in 50% of the cases with references, where the author(s)' full name(s) is (are) searchable and has (have) verifiable credentials. Publishing date is usually current and visible. Citations and links lead to primary or trusted sources only half of the times.	Most of the statements are backed up with references, where all the author(s)' full name(s) is (are) searchable and has (have) verifiable credentials. Publishing date is current and visible. Citations and links lead usually to primary or trusted sources.	All the statements are backed up with references, where all the author(s)' full name(s) is (are) searchable and has (have) verifiable credentials. Publishing date is current and visible. Citations and links lead to primary or trusted sources.
VISUALS	3.1 Visualisation (10%)	No image.	Image is present but not suitable or relevant.	Fair connection of the image selected with the topic.	Relevant and clear connection of the image with the topic of the report.	Well-chosen, high-quality image that elegantly links to or explains the topic.

**Marking scheme for POSTnote Report**



# Solution proposed

## EXPLANATION OF THE GAME RULES

- ❑ Clear explanation of what is expected from them (this includes marking scheme and deadlines for interim and final submissions)
- ❑ The marking scheme allocated marks to:
  - ✓ Reader's experience (referenced sources, language mechanics)
  - ✓ Message (content & vocabulary; structure, credibility),
  - ✓ Visuals
- ❑ The students know what they need to do to achieve the mark they are aiming at
- ❑ Highlight that as a team, they need to get a consensus at an early stage to avoid being disappointed or frustrated with other members of the team
- ❑ Monitoring all the members are participating; in case they are not engaged, we will ask them to do an alternative assessment

# Solution proposed

## SPECIAL GUEST: POSTNOTE AUTHOR

- ☐ Previous preparation required from the students to read two of the POSTnotes written by the guest
- ☐ Short presentation given by the guest on the key points they need to consider for writing a POSTnote
- ☐ How the real process by which a POSTnote is generated happens and how it is used by politicians to inform decisions
- ☐ Q/A session

***(See video available as additional material showing part of the presentation given by our POSTnote expert and Q/A session, where students submitted questions on real time)***

# Solution proposed

## HIGH QUALITY FEEDBACK

- ❑ **Formative** feedback from **TAs**:
  - At the initial stage (i.e., on the introduction of the POSTnote)
  - Throughout the generation of the document (i.e., workshop sessions)
- ❑ **Summative** feedback from **TAs**: after they submit their report
- ❑ **Formative** feedback from **peers**: after submitting in a lecture/workshop session dedicated to review everyone's work- this is framed within another module session dedicated to critical thinking
- ❑ (Later) **Summative** feedback from **peers**. In the subsequent assessment 'POSTnote Debate' their peers evaluate the quality of the material, as they use this as a basis for a presentation of a topic for which they are not experts/knowledgeable

# Solution proposed

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***As the module facilitator, I receive feedback through the sessions where I ask the students to share their thoughts on what they think it worked and what changes could do the exercise better (e.g., more educative, more engaging, more fun?) but also through their submitted individual reflections***

# Solution proposed

## REFERENCES

To help the ***credibility*** and the ***reliability*** of the information included, the ***references*** are weighed in two ways:

- ❑ A minimum of references is set to achieve marks (e.g., for a 1,500 words document: more than 50 refs was marked as excellent; 40-50 was marked as good, etc.)
- ❑ Peer-reviewed sources were awarded with higher marks

# Solution proposed

## TEACHING ASSISTANTS SUPPORTING THE MODULE

- ❑ Thorough ***selection of TAs*** before starting the module (usually recruitment and individual interviews happen during summer), to ensure the individual have the necessary technical and soft skills
- ❑ ***Detailed explanation*** before the start of the module what is expected from them and make sure they will feel self-assured doing the TA tasks
- ❑ **Weekly meetings** (1h) and training if needed, to brief them on what is coming in the next week's session
- ❑ This method has proved to ***improve***:
  - The ***student experience***
  - Higher levels in ***TAs confidence*** observed

# Solution proposed

## CONTINUITY OF THE WORK DONE

### POSTnote Debate: using research from POSTnote Report



**Diagram explaining the POSTnote Debate and interaction between the teams**

#### Marking Sheet

When Your Group Is	Media	Experts	Politicians
You Are Marking	Politicians	Politicians	Experts
Your Mark	Please tick just one box in each column below		
Excellent			
Good			
Satisfactory			
Poor			

#### Marking Criteria

Experts marking Politicians:	How well did the politicians presented your material?
Politicians marking Experts:	How well do you think your researchers prepared you?
Media marking Politicians:	How credible were the politicians?

### Peer evaluation after the POSTnote Debate

# Solution proposed

## CONTINUITY OF THE WORK DONE

Strategy to motivate the students to do their best for this assessment:

- ❑ It is recognised as good practice to build up on the contents and deliverables of the module, so the students see what they do in the initial stage has an impact on the final assessment
- ❑ This way the students feel more ownership of what they are doing in the following assessment
- ❑ Their performance as a team at the final stage of the module is enhanced, they are a more mature team



**Image taken during POSTnote Debate  
(roleplay) assessment**



# Impact



**Images taken during roleplay exercise- Engagement**

- ❑ Game rules → Students knew what they needed to do for achieving the marks they aimed at
- ❑ Special guest → Realistic perspective, enlightened the students
- ❑ Feedback → Complex, high-quality of the reports submitted
- ❑ Referencing → High standards of referencing style and sources used observed
- ❑ Teaching assistants → Very good performance and no complains from students
- ❑ Continuity of the work done → Thought to be one of the causes for the high engagement of the students over the two assessments

# Reflection on the teaching exercise and Further improvements

- It proved to be an excellent assessment; very comprehensive and they can apply the learning lessons learnt on technical writing in other modules
- Starting conversations with other module leaders (UG and PG) to design a short course focused on technical writing
- Students showed high levels of engagement with this exercise, which was observed in the high quality of the reports submitted
- Try to bring more speakers for next academic year (students enjoyed the real life example and being able to ask questions)
- I will start to ask for formal feedback not only from the students but from the TAs (up to now it has been only informal)



# *Thanks*

*Please send any follow-up questions or comments to  
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