IMPERIAL

Developing an AI-driven telephone consultation clinic

Presenters: Dr Viral Thakerar, Dr Agirta Zalli

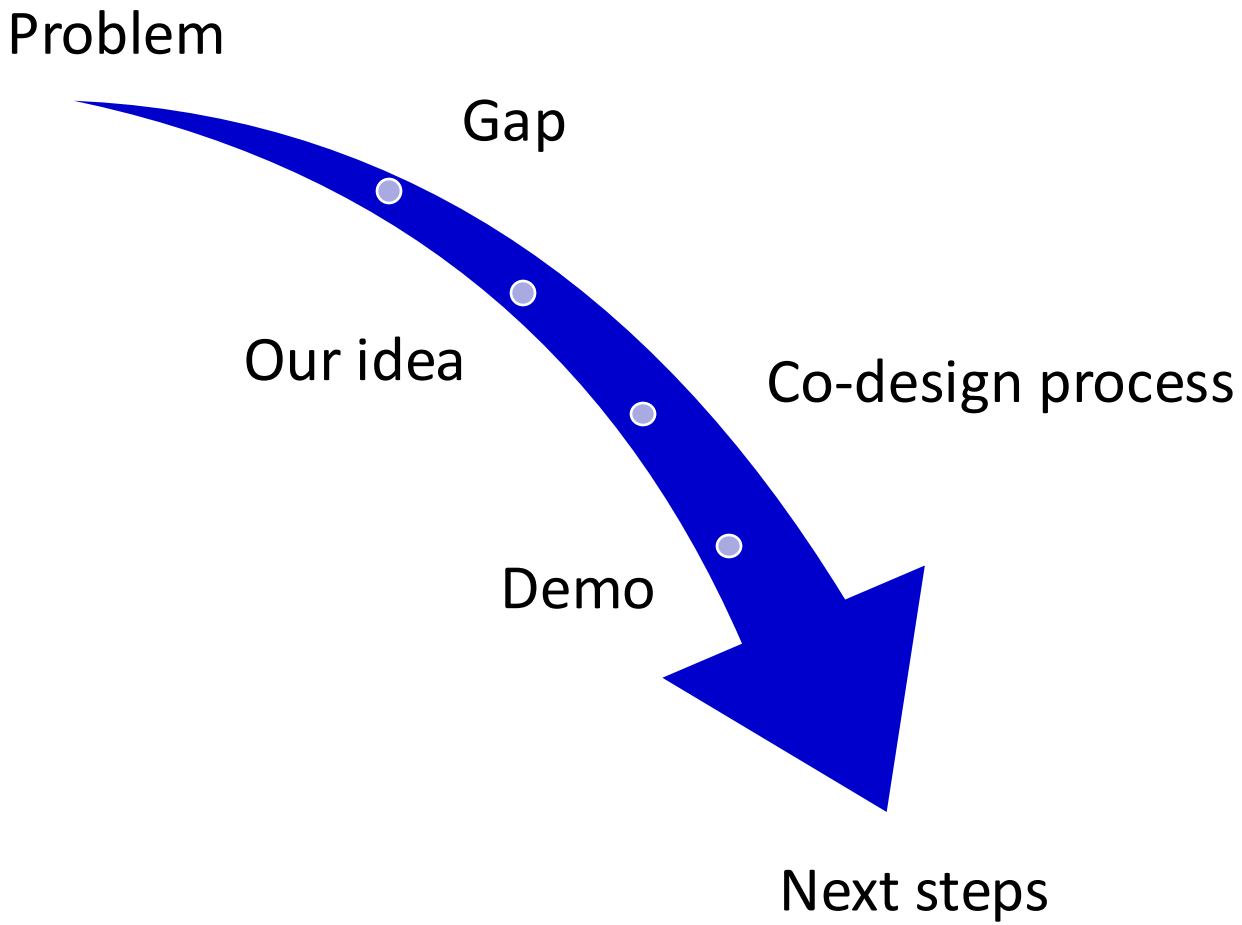
Co-authors: Prof Arti Maini, Dr Aisha Yahaya

Undergraduate Primary Care Education Unit

March 2026

AI telephone consultation clinic

What will we cover?



AI telephone consultation clinic

The problem

Developing consultation skills requires consulting with patients, yet capacity to deliver such opportunities to students is increasingly limited in the UK

"Placement capacity, particularly in primary care, is a major constraint but could be improved through funding reform and **digital learning**"

– Medical Schools Council (1)

AI telephone consultation clinic
Challenges with existing solutions

Actor patients:

Difficult to scale, resource intensive

Existing AI patients:

Text-based:	not a typical modality for real consultations
Video-based:	discomfort when interacting with near-human entity (2)
Commercial:	• student data goes to third parties • cannot iterate/tailor to **our** students or curriculum • not always based on pedagogy • high cost

AI telephone consultation clinic

Our idea:

Design an in-house, student-facing custom AI virtual patient consultation platform for self-directed learning

How this address the gaps:

1. Scalable, low ongoing costs once built
2. All data remains within faculty
3. Tailored and adaptable to our curriculum
4. Apply pedagogy (e.g. authentic learning/simulation)
5. Safe space for students to practice

+ 6. **Real time feedback** on students' speech prosody (e.g., intonation, rhythm, loudness)

AI telephone consultation clinic

Literature findings influencing our design

US based study involving conversations with LLM patient done with real clinicians (3)

↓ authenticity of LLM patient:

- overly agreeable

↓ usefulness of feedback:

- excessively positive feedback

↑ authenticity of LLM patient:

- expressing explicit preferences, emotions and natural speech

↑ usefulness of feedback:

- notably specific or actionable

AI telephone consultation clinic

How the literature shaped our design

↑ **authenticity of LLM patient:**

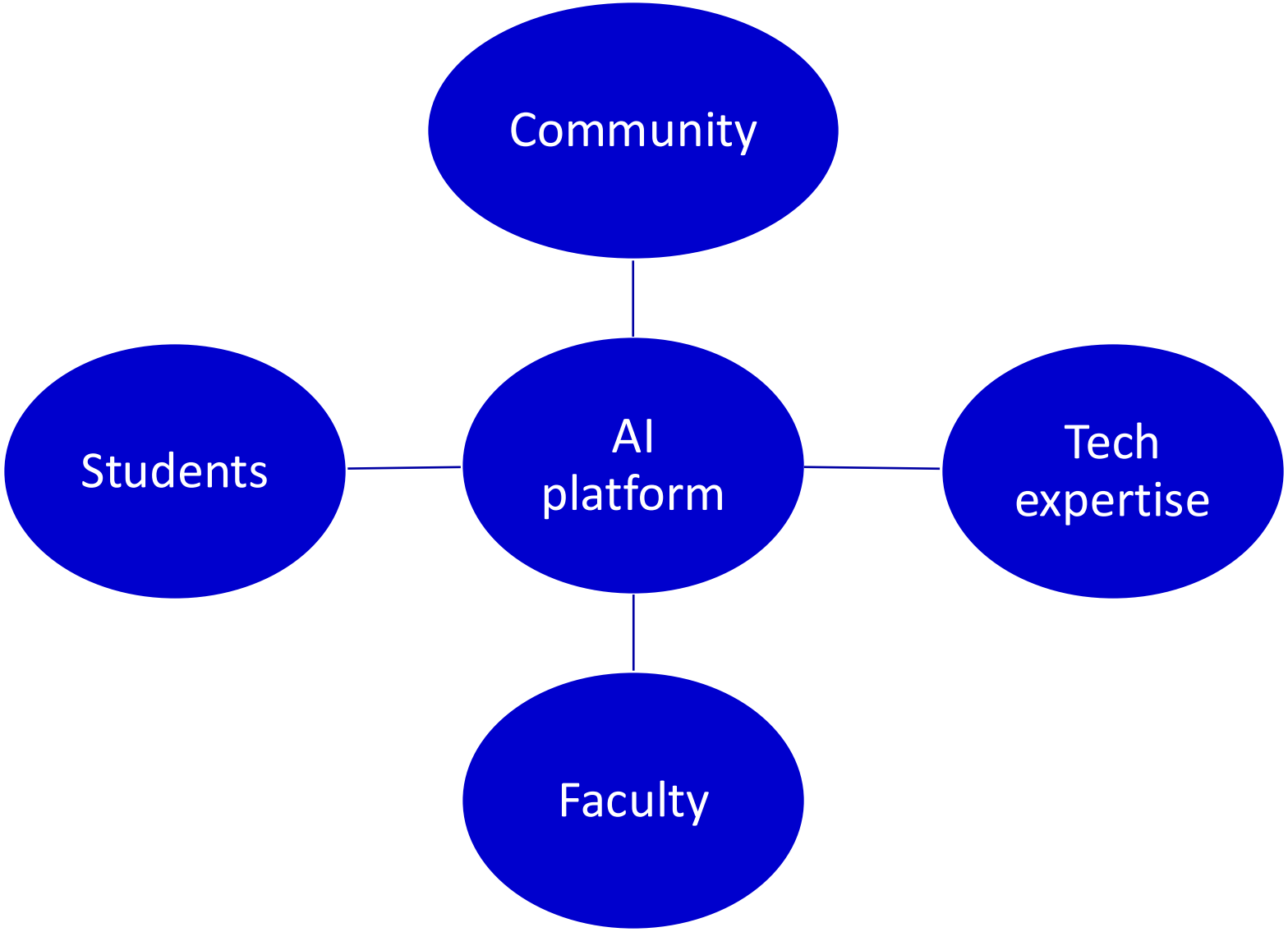
- patient has clear preferences and a detailed social history to potentially help the AI be less generic
- Hume AI used for natural voices and potentially more authentic emotions

↑ **usefulness of feedback:**

- uses a structured output template, so feedback is specific and AI is "confident" marking down (rather than defaulting to agreeable)
- references transcript excerpts when giving feedback, with the aim of improving trust in the feedback

AI telephone consultation clinic

Our co-design process



AI telephone consultation clinic

How our co-design process is progressing

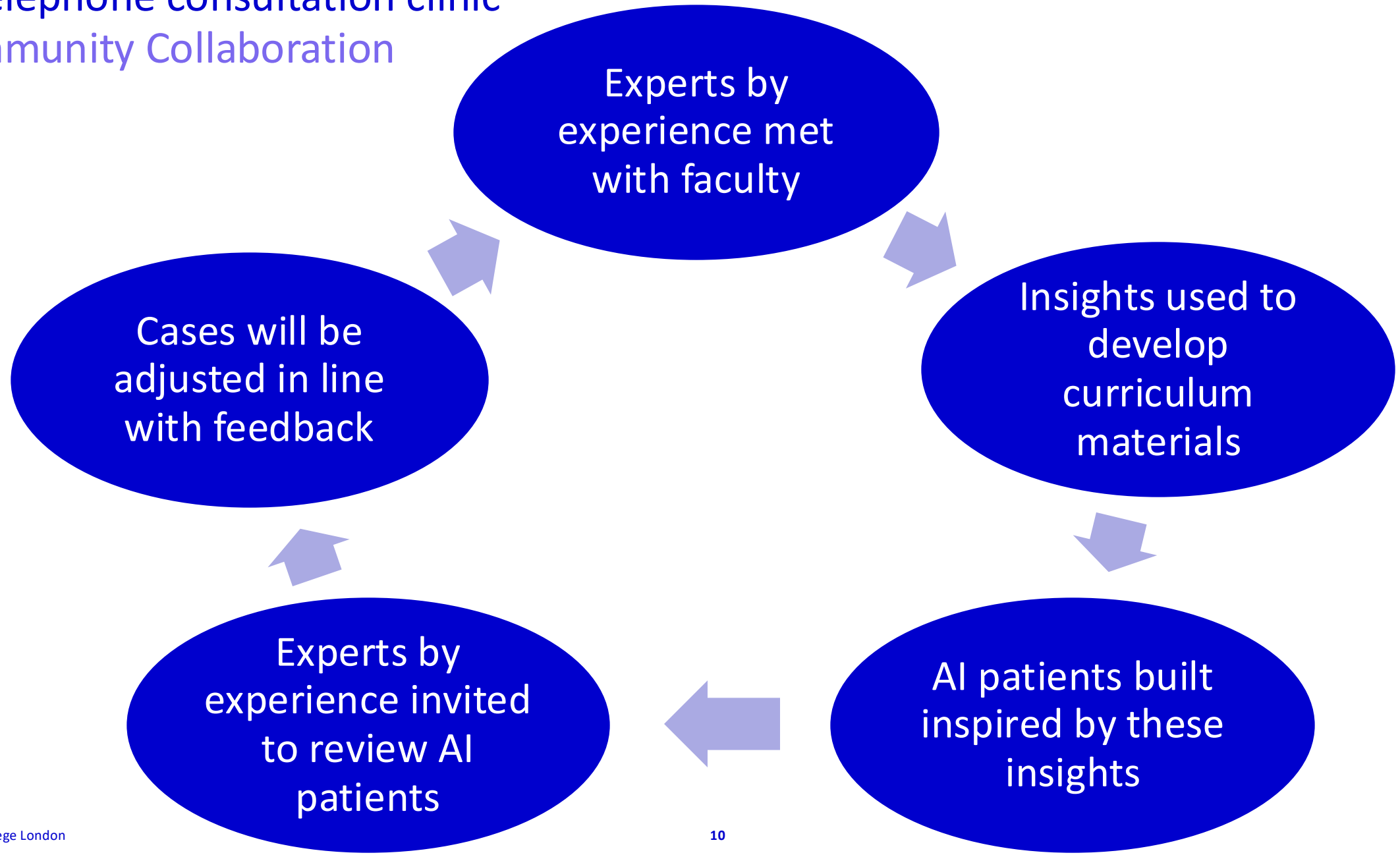
Student feedback from our pilot

Community collaboration

Align/contribute to the discussion in this field with UK universities

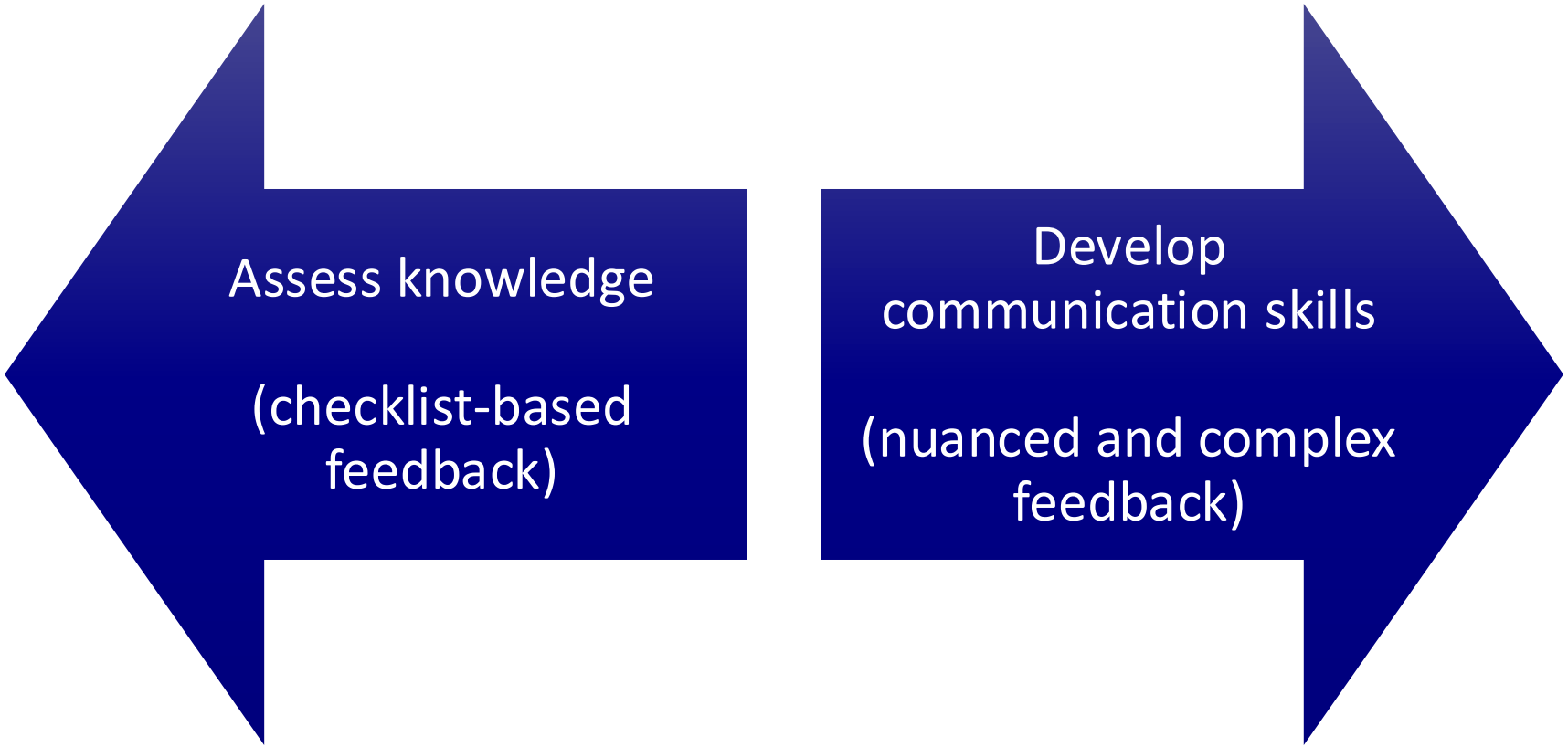
AI telephone consultation clinic

Community Collaboration

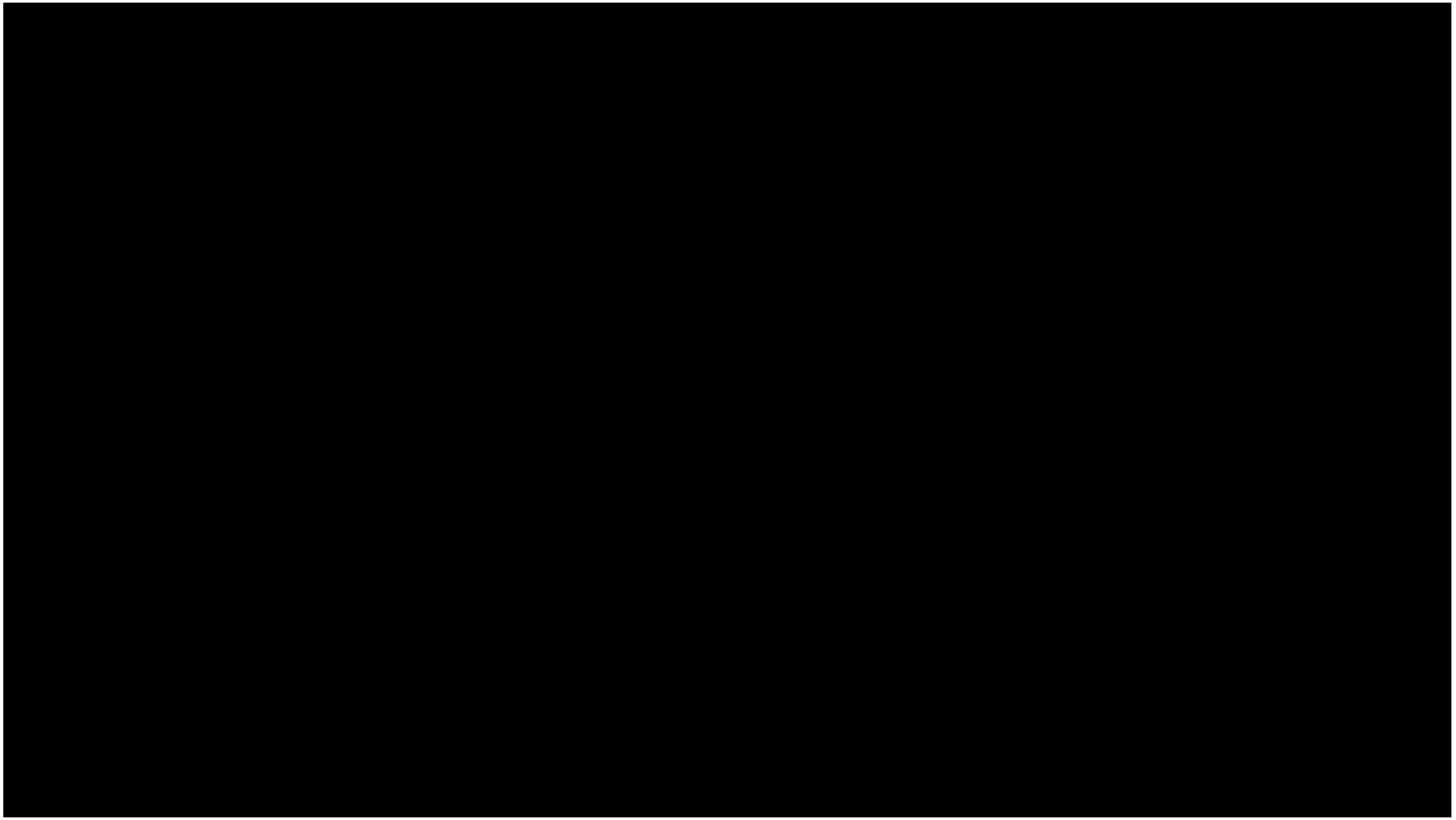


AI telephone consultation clinic

How UK universities are considering using AI virtual patients



AI telephone consultation clinic – in house platform using Hume/OpenAI's APIs



AI telephone consultation clinic

Student feedback themes from pilot (year 5 students)

Overall

Saw this being potentially their top choice for consultation practice for practical exams

Authenticity of patient consultation

- AI voice considered authentic, but lag or reverting to a “script” reduced immersion
- Short, specific answers from AI patient useful for knowledge practice, but less authentic

Usefulness of feedback

- Real time feedback gave new actionable insights into speech prosody
- Real time feedback led to superficial student “acting” to attempt to address feedback
- Open to receiving constructive feedback from AI, due to perception of non-judgement

AI telephone consultation clinic

Summary of Year 3 focus group findings

They liked:

- Realistic
- Opportunity to practice parts of GP consulting they don't try much
  - Telephone calls
  - Practical advice about getting to hospital
  - Realistic responses to inadvertent medical jargon / alarm words e.g. "tumour"
  - Safety netting and escalation
- A safe space to make mistakes
- Having to respond on the spot
- Specific feedback, especially on clinical reasoning and communication, that you don't often get with SPs

AI telephone consultation clinic

Summary of Year 3 focus group initial findings

Ideas for future development:

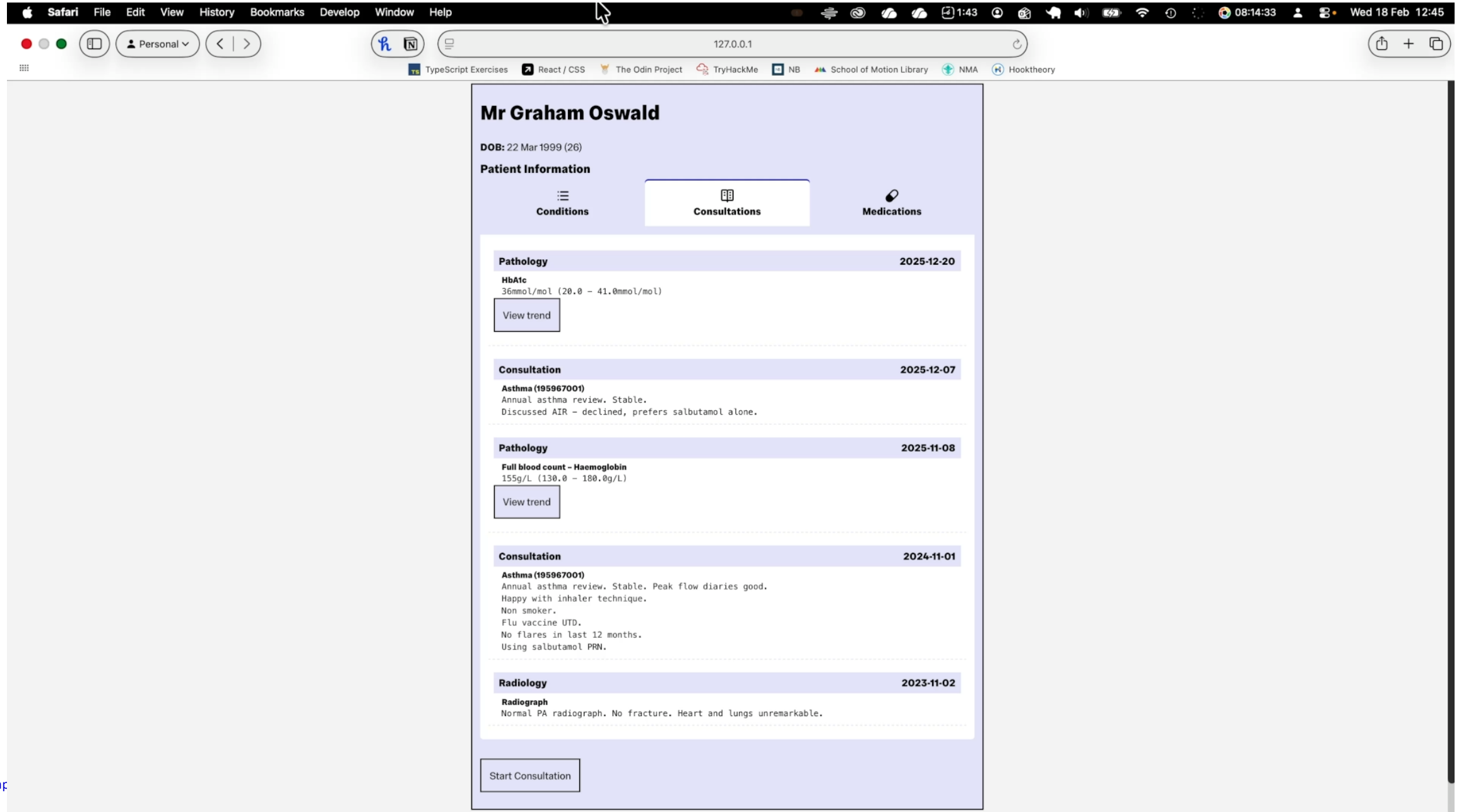
- Provide a GP-system-like patient record view (recent attendances, relevant background)
- Practice the “full flow” of a GP consultation, including reviewing notes, practical / logistical aspects and follow up – “can I feed my dog before going to hospital?”
- Broader range of conditions, including those they might not see in their local population
- Give specific best-practice examples in the feedback
- Transparent marking criteria
- Vary the health literacy of the patient
- Vary the level of spoken English of the patient

AI telephone consultation clinic

Updates in light of student feedback

Remove real time feedback	Done
GP record to be authentically simulated	In progress
Emphasise “full flow” GP consulting – add medications, write referrals etc. and AI factors this in when marking	In progress
Provide examples of what the student could have done better	In progress
Maybe recorded consultations by real GPs with the AI	Considering

AI telephone consultation clinic – updated post student feedback



Back to today's overview

Patient List

Mr Graham Oswald (DOB: 23 Apr 1999)

Booking Notes: headache

AI telephone consultation clinic

Summary of lessons we have learnt so far

- In-house AI virtual patients may have a role in consultation skills development and can be scalable, low-cost and tailored to community, student and faculty needs
- Students see a significant role for this tool
- Unintended consequences of real time/unactionable feedback e.g. speech prosody led to self-consciousness and focus on superficial corrections
- Students most appreciate:
  - a safe space to make mistakes
  - practicing “full flow” consultations, including situations they don’t practice in real life
- Currently better for knowledge-based practice than nuanced communication skills

Next steps

- Develop medical record simulation with “full flow” consultations
- Feedback from people with lived experienced of marginalised virtual patient interactions
- Integrate into curriculum applying self-directed learning principles and evaluate

IMPERIAL

Thank you

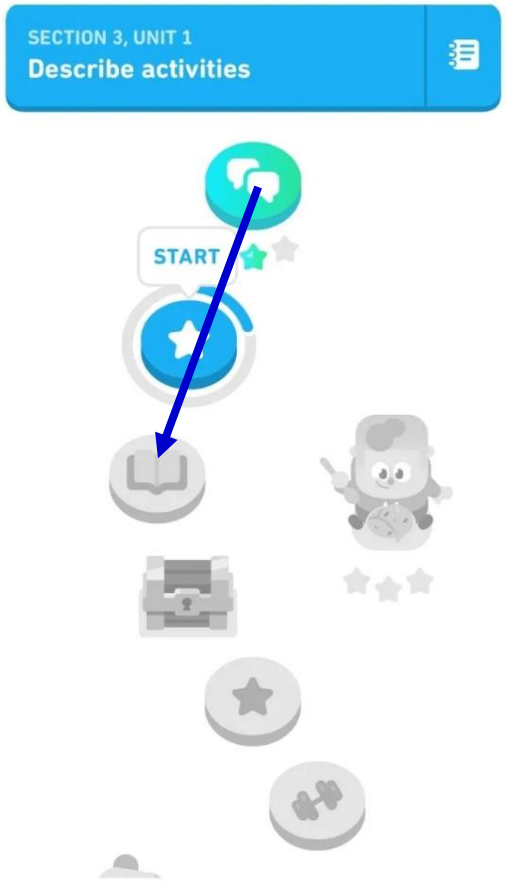
Contact: v.thakerar@imperial.ac.uk (Viral Thakerar)

a.zalli@imperial.ac.uk (Agirta Zalli)

AI telephone consultation clinic

Self directed learning (SDL) principles

- SDL requires a balance of independence with structured guidance
- Metacognition and SDL readiness predict success (4)
- Progression paths (like Duolingo or Brilliant.org) may help scaffold (5)
- Authentic tasks may foster engagement (6)
- Profile the student and longitudinally show progress (radar chart / summaries)



Duolingo's progression path

AI telephone consultation clinic

References

(1) Medical Schools Council. The expansion of medical student numbers in the UK: Position paper. Medical Schools Council; [cited 2025 Sep 2]. Available from: https://www.medschools.ac.uk/latest/publications/the-expansion-of-medical-student-numbers-in-the-uk-position-paper/

(2) Wang A, Morgenstern J, Dickerson JP. Large language models should not replace human participants because they can misportray and flatten identity groups. 2024. doi:https://doi.org/10.48550/arXiv.2402.01908

(3) Cook DA, Overgaard J, Pankratz VS, Del Fiol G, Aakre CA. Virtual Patients Using Large Language Models: Scalable, Contextualized Simulation of Clinician-Patient Dialogue With Feedback. J Med Internet Res. 2025 Apr 4; e68486. doi:10.2196/68486

AI telephone consultation clinic

References

(4) Kim S. The effect of metacognition and self-directed learning readiness on learning performance of nursing students in online practice classes during the COVID-19 pandemic period. Nurs Open. 2024 Jan;11(1):e2093. doi:10.1002/nop2.2093

(5) Rivas SF, Saiz C, Ossa C. Metacognitive strategies and development of critical thinking in higher education. Front Psychol. 2022;13:913219. doi:10.3389/fpsyg.2022.913219

(6) Cortázar C, Nussbaum M, Harcha J, Alvares D, López F, Goñi J, Cabezas V. Promoting critical thinking in an online, project-based course. Comput Hum Behav. 2021;119:106705.