Endless opportunities: AI co-creation of e-learning tools and targeted simulators

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For more information on designing and evaluating AI co-created learning tools:

Introduction

The role of artificial Intelligence (AI) enhanced learning in medical education is growing, including well-established uses in simulation. *We explored a novel method of AI use in co-creating e-learning tools.*

Widely available AI coding aids, such as GitHub CoPilot can generate HTML-5 tools using free-text prompts. We hypothesised that these aids could quickly develop simulators that can improve medical education. Here, we **outline the development of two AI co-created e-learning tool** (Fig. 1 & 2) and evaluate its use.

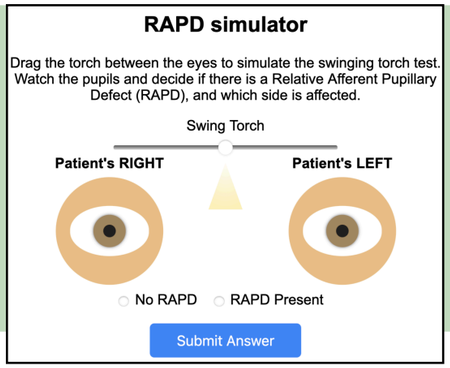

Figure 1: A screenshot of the RAPD simulator, available at *wkxm.org/rapd*

Try vOKNdrum here!

Try the RAPD tool here!

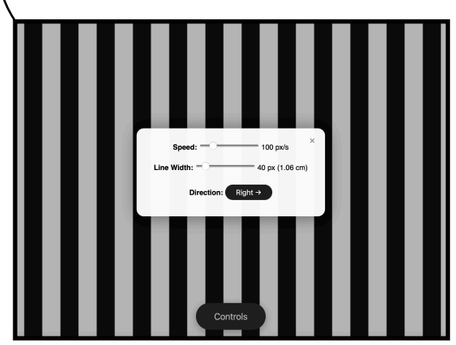

Figure 2: A screenshot of the vOKNdrum simulator, available at *wkxm.org/vokndrum*

Methods

- An AI-powered coding tool (GitHub Co-Pilot) was used to generate a website-hosted HyperText Mark Up Language (HTML-5) simulators
- We provided free-text prompts (Fig. 3) and adapted the tools to achieve the current simulator in under an hour
- This pupil tool is interactive and simulates a relative afferent pupillary defect (RAPD) when users engage the on-screen torch
- Pilot testing of the RAPD simulator was carried out using an anonymous online form circulated via e-mail to UK resident doctors which included pre- and post-use questions

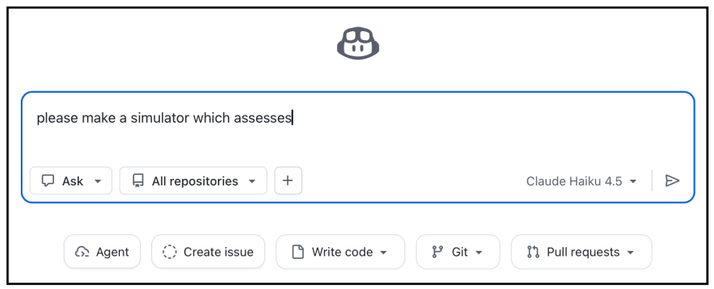

Figure 3: A screenshot of the GitHub CoPilot AI coding aid

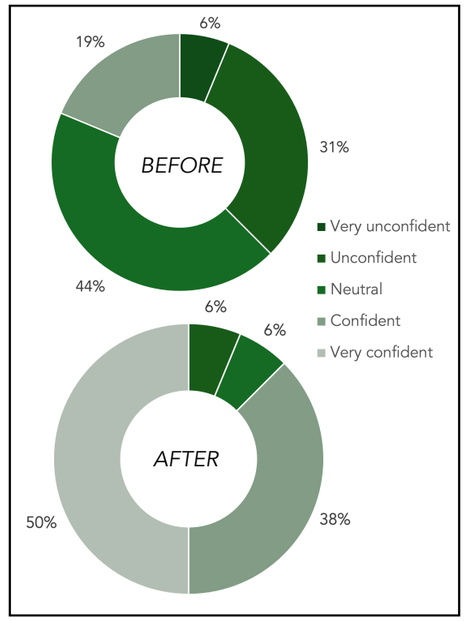

Figure 4: Pie chart demonstrating UK resident doctor confidence in identifying RAPD pre- and post-use of the simulator, respectively. (n=16)

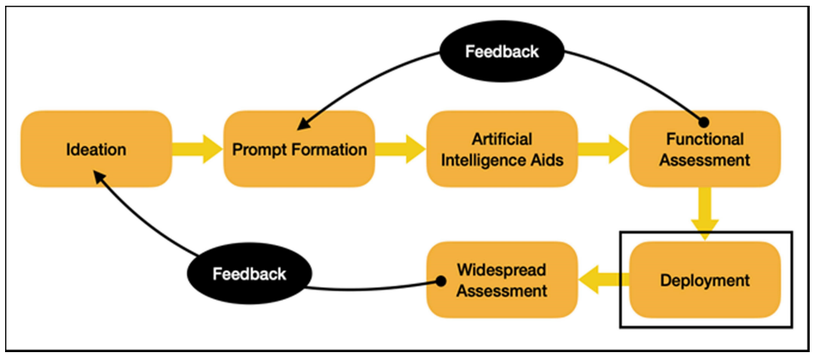

Figure 5: Flow chart depicting the process of co-creating an AI learning tool or simulator

Results

16 resident doctors completed **pilot testing** over a 1 week period in October 2025 of our pupil simulator.

Only **44%** (n=7/16) of respondents were *able to describe how an RAPD presents prior to using the tool*, and 37% (n=6/16) felt 'unconfident' or 'very unconfident' and 44% (n = 7) 'neutral' in their ability to identify an RAPD.

Following simulator use, 88% (n=14/16) users were 'confident' or 'very confident' in identifying an RAPD, as shown in Fig. 4. This is a statistically significant ($p<0.0002$, Fisher's Exact Test) increase from just 12% (n = 2) prior to use.

The *majority (88%, n = 14) of users rated the simulator as 'above average' or 'excellent' in fidelity in simulating pupils.*

Conclusions

The AI co-created tool outlined here was a quick and simple tool to generate with a statistically significant improvement in confidence in the abilities of respondents tested. This was an opportunity to extend medical education beyond traditional textbook learning. A similar method can be used to generate e-learning tools simulating other clinical signs. Ideal clinical signs to simulate are those which are relatively rare (as learners may not have encountered these before) but important signs that should not be missed. AI co-creation tools expand the horizon of medical education and can provide endless opportunities to allow learners to practice their skills in identifying clinical signs. Figure 5 demonstrates the process of developing an AI co-creation tool, and highlights the importance of feedback throughout the process.