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Technifying and gamifying GP teaching

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ABSTRACT

What was the educational challenge?: Create a new GP teaching day based at the university hospital site that inspires medical students to perceive GP lecturers as academics with a view to following primary care as a future career.

What was the solution?: Technifying and gamifying GP teaching. Collaboration with the digital education team using new technology including virtual reality (VR) headsets and immersive projector room to embed innovative teaching practices into traditional GP teaching. Also used a gamification approach to introduce quality improvement and emphasise the importance of communication between healthcare teams.

What lessons were learned?: Students highly rated this teaching. Written feedback suggested it was valued far more than lecture-based teaching due to its immersive and interactive nature. Students strongly felt it prepared them for placement.

What are the next steps?: Further evaluation of this year's student feedback and a follow-up study of perceptions of clinical and academic general practice as career options. Working with the digital technology team to enhance the current teaching further and disseminating this work across the medical school.

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GP educators; gamifying; innovative teaching; immersive learning; virtual reality

What was the challenge

A study by Barber et al. in 2023 found that medical students were less likely to choose GP as a career path. One reason for this was the lack of exposure to academic GPs and the perception of GPs being lower status than hospital colleagues. Students perceived a primary care career as not intellectually stimulating or compatible with academic research [1].

GP teaching is often done in practice and is generally well received by students as a beneficial experience. There is less written about in-house academic GP teaching. As a team of community clinical lecturers, we already delivered two full days of GP-led traditional didactic tutorial teaching based at the university. The feedback from students was mixed with comments it was long and heavy. We were tasked with developing another full day of academic teaching looking at introducing third year medical students to the chronic disease block based in primary care. This teaching, due to logistics, was to be based in the main hospital university campus and not in surgeries. As a group of dedicated educators, we wanted this new teaching to reflect the innovative and up-to-date ethos of GP lecturers working at the university.

We wanted the immersive GP session to attract similar positive feedback as other teaching such as a simulated RTA and not be perceived as long and boring. Our overall aim being for students to enjoy their GP teaching and see GP lecturers as academics, thus, opening their eyes to the valuable and exciting career path that is primary care.

What was the solution

We looked at innovative teaching methods which included gamification. We involved the university's digital education team to help design some of the activities and incorporate immersive learning experiences. We made full use of the newest technologies available, including virtual reality headsets. The day was split into two halves, one to use technology, the other to gamify teaching.

Technifying

We used home visits, sight loss and ENT pathology as our focus of chronic disease and common primary care

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consultations. The students were introduced to the concept of the biopsychosocial model [2] as the learning outcome underpinning this day.

- **Home visits:** We introduced students to the importance of the home visit as a special element of primary care different from many secondary care blocks. We focused on the environment in which patients live and the impact this has on their health and wellbeing. Using an immersive projector room and 360-degree photos, students were able to explore two simulated home environments. The students went into the room and noted anything that they felt may be important to the patient and the reason for the home visit. They were asked to present and discuss their findings with the lecturer. This session involved visual and auditory stimuli to emphasise the impact of environment on health outcomes.
- **Sight loss:** We wanted students to get a better understanding of what it is like to live with chronic disease and gain empathy for their patients beyond the diagnosis. Using VR headsets and 360-degree photos we simulated three different diagnoses: cataract, glaucoma and macular degeneration. The students were able to experience what it would be like for a patient living with these conditions navigating their way around daily life in a range of real-world environments such as a kitchen, a hospital corridor, and in a face-to-face conversation.
- **ENT pathology:** Previous student feedback suggested students wanted more anatomy teaching and a hands-on clinical experience. Therefore, this session took a blended approach to provide students with a look at ear anatomy and pathology alongside an opportunity to practice their skills with otoscopes. Synchronous online quizzes were



used to break up the session and monitor student progress and understanding.

Gamifying

The use of gamification approaches in undergraduate medical education continues to gain momentum. A recent systematic review [3] concluded that it mostly improves medical students' performance.

In this session, we looked at introducing students to primary care, the primary/secondary care interface, the importance of clear communication and quality improvement.

- **Lego game and two way communication:** Students were asked to sit back-to-back and given identical bags of Lego bricks. Whilst constructing their own Lego model, the first student gave instructions to their colleague such that they should be able to produce a replica. The second student was not allowed to ask questions of the first. After comparing what had been built, the limitations of one-way communication were clear. This fed into a group discussion about hospital discharge letters. Making use of anonymised real-life examples, the students were shown three discharge letters received by a local GP. One was excellent, one of moderate quality and the final one was illegible and lacked essential information. Used as an example of one-way communication, GP tutors emphasised how this is a crucial 'one-step' way for hospital teams to communicate important clinical information to primary care. Following this, students again sat back-to-back to repeat the Lego construction. After reflection of what information was omitted, the first time the instructing student aimed to give clearer instructions for their colleague



to build a replica. As one would expect, they were better able to build identical models.

- Quality improvement activity:** The session moved on to introduce the concept of quality improvement activities. Students were divided into teams and each was given a Mr Potato Head toy. This activity was based on D. Williams' PDSA exercise [4]. The teams were asked to race against each other to complete their construction against the clock. Students were allowed several dummy runs, during which they allocated tasks to team members and worked out how to complete their potato in the shortest possible time. In the final step, each team had a race attempt, and their best time was recorded on a Mr Potato Head Leaderboard. The tutor then displayed the Plan Do Study Act (PDSA) model of quality improvement, explaining how they had used an iterative process to improve their performance. Clinical examples of quality improvement were then discussed as a group.



What lessons were learnt?

Feedback on these sessions was positive from both students and lecturers.

Lecturer feedback

Lecturers all stated they enjoyed the sessions and felt the students were engaged and enthusiastic. The immersive and VR elements were met with excitement from the students and prompted many clinical questions. Compared with more formal teaching of QI lecturers felt that the students understanding was consolidated more quickly and the students took responsibility for their individual tasks in the potato head game seriously.

Student feedback

Student feedback from this session was overwhelmingly positive. Feedback was returned from 58 students. One hundred per cent stated they enjoyed the day giving it on average 4.6/5 stars. Ninety-five per cent of students felt it met the learning outcomes and 95% felt it helped prepare them for their 7-week GP placement.

The VR eye session was seen as the most useful and the most fun. The gamification part of the day was second place in terms of enjoyability with ears being second place for most useful.

Student comments were very positive, praising the interactivity in comparison to traditional lecture-based teaching.

This was one of the best teaching days I've ever had. It was so much more interactive and engaging than just sitting in a lecture or reading. I feel like because I "experienced" things myself, I'll remember them much better.

I really enjoyed all aspects of the day as it was so immersive. ... I feel like I'll remember what I learned from them much better than if I'd been sat in a lecture or reading from a textbook.

I found that this has equipped us with essential skills, both clinical and communication for our GP block

Conclusion

With careful planning and design, making full use of new methods and technologies university based primary care teaching can be engaging, fun, and up to date.

The use of VR, immersive rooms and gamification led to this day being well received by students. They were able to meet the learning outcomes and feedback indicated they felt well prepared for GP placement.

It was also enjoyable for staff to deliver, and students preferred these methods to traditional lecture-based teaching.

We hope the continued use of innovative learning and teaching techniques will ensure primary care teaching is considered informative and valuable by students in the future. GP lecturers should be viewed as academics in line with our secondary care colleagues. Hopefully, this in turn will promote the profession and career path.

What are the next steps?

In conjunction with the clinical and digital education team we plan further evaluation of this immersive GP study day. With evolving technology, there is more that can be achieved with the virtual reality and the immersive home visit rooms. For the next academic year, the feedback questionnaire will include specific questions about student's perceptions of GP educators and about student's future career aspirations.

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