Title: Problem based learning in undergraduate education: Refining the neurological rehabilitation curriculum

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Summary:
This case study focuses on the development and implementation journey of a new delivery of teaching and learning which facilitates problem based learning (PBL) that includes service user (SU) involvement and technology enhancements, within undergraduate physiotherapy education and the use of an online multimedia based assessment to drive key skills in problem solving.

Keywords: Multimedia, Problem based learning, Service User involvement

What was done:

The project was underpinned by key research in the established use of PBL as an approach to education in healthcare (particularly medical education) in terms of it being grounded in experiential, collaborative, contextual, and constructivist theories of learning. We wanted to apply its use in entry level therapy education and the professional requirements for those professions such as physiotherapy.

To address the need for inquiry based learning and critical thinking onto the curriculum, a multimedia online assessment was produced; this consisted of pre-recorded video and image-based case study analysis in partnership with service users, who were integral to the project. Encouraging creativity and active learning; a flipped classroom approach was introduced and has been implemented both face and face and more recently online considering COVID-19. Student learning was then aligned to the assessment by practicing video analysis of clinical manifestations and receiving formative feedback on their performance. The online multimedia assessment mirrored the delivery methods however using a different, unseen SU in the videos and images.

This innovative practice supports the priorities within the Five & Fifty strategy:

Civic contribution - By working with services users and clinical colleagues across the region, we enabled collaboration with our network of partners in the health care sector and widened the educational community.

Academic excellence - This is the first time this innovation has been incorporated into the BSc Honours Physiotherapy programme, providing a unique opportunity for students. The involvement of service users creates real live practical situations.

Global vision skills – The acquisition of skills in problem-solving to optimise patient care whilst working in evolving models of practice, enhances both clinical decision making and readiness for the challenges faced in the NHS work environment as healthcare professions and beyond. This has been pertinent particularly this year as the students faced front line experience in the response to COVID-19.

Operational excellence –This multimedia platform embraces technology to facilitate and compliment established teaching infrastructure, supporting and maximising a student's educational experience.

Motivation and aims:

Considering the impact of COVID-19 on NHS healthcare workers, physiotherapy graduates require more than ever, skills in problem-solving to optimise patient care whilst working in evolving models of practice. Adopting a problem-solving approach is especially needed in the management of neurological patients who are becoming more complex in their presentation (CSP 2011, NGCS 2018). Physiotherapy students need to adopt a questioning and critical stance with research reinforcing the use of SUs in PBL; the problem needs to be contextualized for students´ future or real workplaces, which are seen as authentic (Jonassen & Hung, 2015). This work responded to this need by focusing on the development of this problem base learning method in teaching and learning which gives students a chance to prepare themselves for future physiotherapy work (Korpi et al 2019)

Implementation:

Students, SUs, clinicians, and academics were involved in the design of the online multimedia assessment. The assessment uses a problem-based approach to primarily assess students clinical reasoning. Both still shots and video clips of SUs are embedded alongside questions based on these, for example to identify key problems and explain the rationale for these.
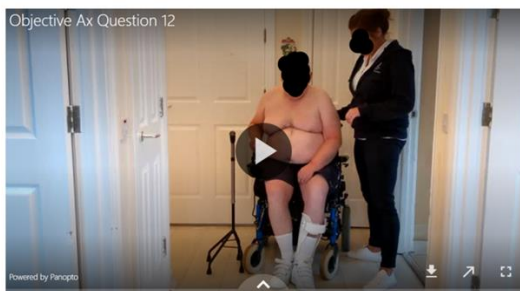
Example

Look at the 3 images of Patient x in sitting:
Describe patient x's body alignment (head, shoulder, feet, trunk) in this position)

Example

Watch the video of patient x completing a sit to stand movement
How do these movement components differ to the normal sit to stand movement components? Give 5 answers

To further facilitate their learning, a collaborative project was completed with the Office for Digital Learning to create a media bank of a series of education videos using narration to provide key knowledge to students, alongside verbal reasoning to enhance their understanding of the clinical reasoning process. This project focused on creating media that visually demonstrated a therapist completing an assessment whilst using voice over techniques and camera focusing to provide students with underpinning information related to the assessment. In addition, visual text and voice over were used to allow students to experience the clinical reasoning process I.e., what the therapist was assessing, why they were assessing it and what they were thinking whilst assessing it. This method of delivery is unique as it is often the

clinical reasoning aspect that is most difficult to replicate with students in a non-clinical environment.

Students engaged in peer assessment of clinical skills learned throughout the module and used exemplars as a basis of comparison and feedback.

Successes and lessons learnt:

A cohort of 60 students reported high satisfaction with use of the assessment. 87% of students were satisfied with the quality of the module and 77% reported assessment requirements were made clear.

There are some challenges in implementing approaches that involve feedback-based performance rather than results. Some students also resist new approaches to assessment that involve an element (including technology) of the unknown for the student. The students recognise that the new approach which facilitates problem-based learning, were skills embedded throughout the module and therefore directly aligned in the assessment and the link to a future career as health care problem solver.

The students particularly enjoyed engaging with service users across the module, gaining a deeper retainment of knowledge and understanding. Some students reported that they would remember the faces (in the context of holistic care), movements and impairments of the SU involved and that would help them problem solve by 'reflecting in action' in the future.

The SUs felt they were included in the development of the future workforce and were giving back to a profession that had helped them in their rehabilitation. There was however, a lack of university process and procedure to facilitate their inclusion in the curriculum, rather many basic costs such as parking, refreshments etc were not easily retrieved, which may be perceived as undervaluing their contribution.

Students developed kudos boards to thank the service users involved in the videos, the quotes below are taken from these.

"Having access to your videos helped to apply all the theory to practice"

"Thanks so much for your time and honesty in regard to your stroke. It really helps us see people who have experienced this rather than just reading about it."

"Thank you for explaining the detail of your stroke to us and how it impacts on your day-to-day activities. It really helps us understand from a personal point of view."

"Your video was used for our exam, so we didn't have a chance to take notes or go over again, yet you still remain very clear and vivid in my mind. This shows how valuable it is to see real people living with conditions and learning from your experience."
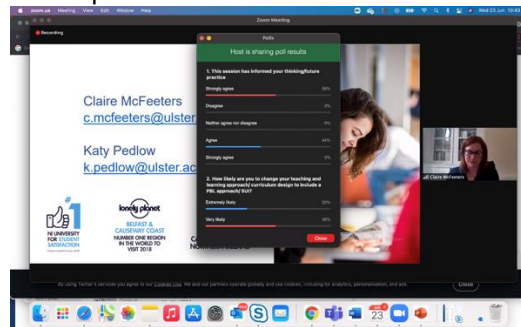
Transferability:

As a result of this project, we have facilitated the development of, and continue to contribute into, a service user involvement working group to review the process of involving patients and public in education.

Problem based learning and service user partnership in teaching and learning influences positively, the development of professionals as problem solvers, better equipping the future workforce of healthcare. It is however, time consuming in terms of organising SU involvement and; setting up, shooting, directing, scripting and editing videos.

This project has been presented at our National conference for Physiotherapists (CSP UK) and an Advance HE conference. Within the CSP UK conference the project generated conversation with

academics in other institutions who planned to adopt it going forward. Within the advance HE conference, a poll was taken at the end, in which 21 attendees reported this would inform their future practice.

Further information:

CSP conference 2020 - Poster presentation
https://physiotherapyuk2021.abstractserver.com/program/#/program/1/horizontal
HE Conference agenda 2021
https://www.advance-he.ac.uk/programmes-events/calendar/island-ireland-symposium-partnership-student-success-developing