A repository of pharmacology multimedia learning objects for pre-registration and post-registration medical and nursing courses

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Introduction: Students have access to a wide range of online materials to support their learning however there are ongoing debates around the quality of the resources that can be found on open repositories such as Wikipaedia (Anthony, Smith & Williamson, 2005). We are building a repository of SCORM compliant (Bohl, Scheuhase, Sengler & Winand, 2002) multimedia pharmacology learning objects using a community based methodology (Boyle *et al*, 2006) to ensure quality and encourage reuse. We report on an evaluation study of the use of RLOs in a non-medical prescribing course and on a new tool to allow tutors to customise the resources by combining RLOs and adding their own context ('glue').

Methods: Pharmacology tutors from nursing veterinary science and medicine, students and learning technologists attended workshops to develop the storyboards for a series of RLOs on pharmacology. Peer review processes ensured quality of the content. 14 RLOs have been evaluated and can be accessed at (www.nottingham.ac.uk/nursing/sonet); a further 12 are in development. A tool (ULO) to allow tutors to select different combinations of RLOs and aggregate them with other materials into a seamless package is at the prototype testing stage (Figure 2).

An evaluation study used questionnaire data from three successive cohorts of nurse prescribing students (n=84) with mixed biological science backgrounds (Figure 1) to evaluate the use of pharmacology RLOs to promote the understanding of these concepts in students. Cohort 1 acted as the control group (no RLOs were available to this group); Cohort 2 and 3 had access to 4 and 8 RLOs respectively. A small number of students from cohorts 2 and 3 (n=10) were followed up by telephone interview one year after qualification to gain further insight into student's perceptions of the value of RLOs as an educational tool.

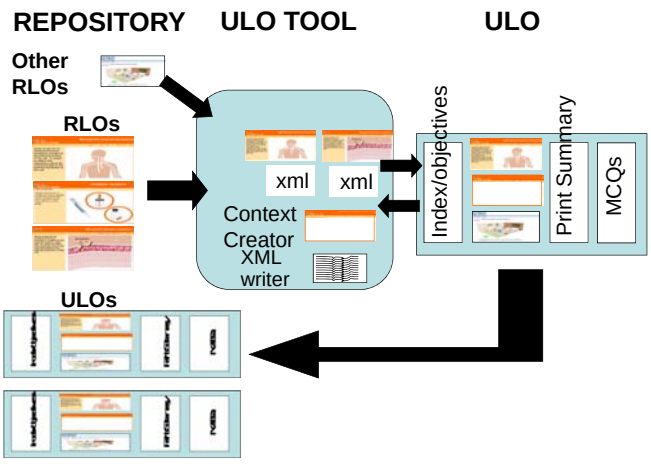

Figure 1: Schematic view of tool to customise and aggregate RLOs

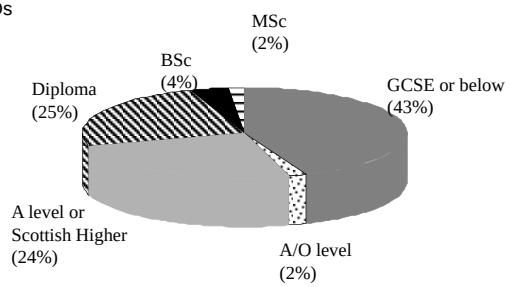

Figure 2: Highest Biological science qualification of students on a nurse prescribing course. Combined data from 3 cohorts (n=70). There was no significant difference between cohorts.

Results: With respect to educational value students were overwhelmingly positive about the value of RLOs with 90% agreeing or strongly agreeing with the statement 'The RLO has aided my understanding and I feel I have achieved the learning objective'

The overall distribution of students' perception of their understanding of pharmacological concepts shifted to the right (towards the 'well' and 'very well' pole) for cohorts 2 and 3 who had had access to RLOs. When RLOs supported the concept no student rated their understanding as 'bad' or 'very bad'. Statistical analysis comparing the responses of the three cohorts was carried out using a Kruskal Wallis test and demonstrated a significant difference between mean ranks of the 3 cohorts (Figure 3). In telephone interviews one year after the course nurses were still very positive about the RLOs (see comments below) and 50% were still accessing the RLOs and recommending them to others.

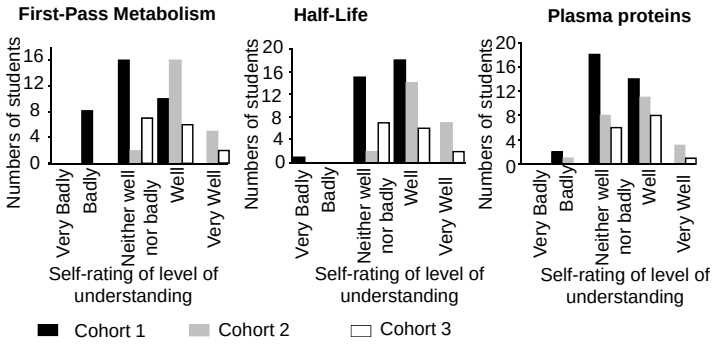

Figure 3 – Students self-rating of understanding of pharmacology concepts

- *For me it was the visual aspect, actually seeing the concept visually was a huge bonus for me because it just made things click. We'd had key lectures and I'd read about things, but I think for me just to see how things worked visually was what I needed to put the whole picture together'* Participant 82 (male)

- *'Invaluable. For me as a mental health nurse practitioner the whole concept of pharmacology, pharmacodynamics, pharmacokinetics was a new concept so I would have really liked some RLOs for each area' Participant 82* (male)

Discussion: The introduction of RLOs dealing with specific pharmacological concepts significantly improved nurse prescribing students perceived understanding of the majority of these concepts. All RLOs were evaluated extremely positively by the students and telephone interviews with a small sample of students suggested that the RLOs were continuing to be used to support learning post-qualification and that a number of students felt their prescribing confidence was due, at least in part, to these educational tools. Developing an understanding of pharmacological concepts will allow nurse prescribing students to apply these fundamental concepts to their specific areas of clinical practice.

This cross disciplinary community based approach to development has resulted in a repository of high quality multimedia learning objects available to the HE wide community. The ULO tool will provide tutors with more choices about how they want to customise and aggregate the RLOs to suit the particular needs of their students.

References:

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