A/ Professor Mark Coulthard

Context: Final Year, Core Rotation, Paediatrics and Child Health, School of Medicine
Pedagogy: Using the flipped classroom model to apply case-based learning to prepare medical students for professional practice.
Technology: Moodle LMS, Paediatric On Line Interactive Education (POLIE)

Overview

This study examines the design and development of a case-based curriculum for final year medical students on an eight-week rotation in Paediatrics and Child Health. The focus is to teach medical students to think like medical professionals through clinical reasoning, correct investigations and patient management strategies. Students gain exposure to a range of patient cases through a blend of online modules and opportunities for active learning in tutorial sessions.

Case study summary

Benefits

- Using active learning pedagogies, such as case-based learning, provides students with exposure to authentic, common cases that they will experience as medical practitioners.
- Students are required to use clinical reasoning skills to determine appropriate diagnoses and treatment plans.
- Students study the cases through the online system (POLIE) and then have opportunities to further explore the cases in face-to-face tutorials.
- Tutorials provide opportunities for active learning such as role-plays, open discussions and brainstorming with peers.
- There is continuity of learning by providing the same case-based learning for medical student as junior doctors.
- Students can view the modules flexibly on multiple devices.
Issues to consider

- Substantial resources required to design the curriculum and produce the online modules.
- The need for opportunities to research on the effectiveness of this approach compared with traditional approaches.
- During the change management process, wide consultation with other stakeholders is necessary for shaping the project and driving it forward.

Reasons for adopting the flipped classroom

Medical students are generally not provided opportunities to think like doctors. They are taught how to do a history or an examination and are provided with a lot of didactic material, but are not taught how to apply this knowledge. The case-based learning approach embedded in the POLIE modules encourages students to employ a range of strategies such as differential diagnosis, calculating probabilities, reliability of tests, and case management strategies that reflect the challenges of clinical situations. This provides an authentic framework to help prepare medical students for professional practice.

Planning

The team started to design and develop the case-based curriculum four years ago based on 200 topics identified by experts as essential for paediatric studies. The aim was to develop a continuum of learning by using similar cases as those used by Queensland Health in junior doctor training around common cases interns will be exposed to such as fever, vomiting, seizure, neonatal issues, etc. The curriculum comprised of ten modules, tutorial resources, and the development of online materials mostly funded by Queensland Health.

Flipping the class

**Face-to-face sessions:** Tutorial sessions provide opportunities for active learning such as discussion, brainstorming, and role-plays to reinforce case study findings.

**Online component:** The Learning Management System, Moodle, is used to develop ten POLIE (Paediatric On Line Interactive Education) modules with three cases, each based on 200 topics and links to a variety of resources.

Conclusion

Using case-based learning in a blended learning context provides medical students with opportunities to undertake online case studies flexibly while on core rotation for their final year. Students can consolidate knowledge of content in face-to-face tutorial sessions where there are opportunities for active learning. This is a much more focussed style of teaching and learning and there is continuity of learning by providing the same cases in final year of
studies as for their internship as doctors. The key purpose of this approach is to provide authentic experience for students with a context that encourages them to think like medical professionals.

Useful links

Comparing problem-based learning with case-based learning: effects of a major curricular shift at two institutions. Srinivasan et al (2007). This paper compares faculty and medical students’ perceptions of traditional PBL with CBL after a curricular shift at two institutions.

Putting Case-Based Instruction Into Context: Examples from legal and medical education, Williams (2009). This paper describes the use of cognitive apprenticeship and anchored instruction to contextualise learning.

For further information, see the TEDI Flipped Classroom website.

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