A Novel, Online, Interactive, Problem-Based Approach To Learning Oncology

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The mediocre teacher tells.
The good teacher explains.
The superior teacher demonstrates.
The great teacher inspires

William Arthur Ward

Aims

- To incorporate technology into problem-based learning (PBL) approach
- To include access to experts
- To incorporate online formative as well as summative assessments in order to enhance students’ learning at undergraduate level

Rationale

- Pressure on academics to develop online approaches to teaching and learning
  - trend worldwide to focus on learning rather than teaching
  - student-centred learning environments are replacing teacher-centred ones
  - increased use of technology as an aid to learning
- Shift towards a constructivist philosophy in teaching with emphasis on:
  - active learning
  - collaboration
  - critical thinking
  - problem solving
  - lifelong-learning attitudes

Rationale cont’d

- Student-centred learning approach incorporated into:
  - development of a WebCT (World Wide Web Course Tools) education program
  - for undergraduate oncology students

Rationale cont’d

- Oncology
  - second year unit of study (Bachelor of Applied Science - Medical Radiation Sciences)
  - composed of 2 Cross-Disciplinary Units of study (CDU)
  - Tumour Pathology taught didactically in the School of Biomedical Sciences and
  - Principles of Oncology taught didactically by the School of Medical Radiation Sciences
Rationale cont’d

- Problem-based learning (PBL) - 2000
  Introduced PBL at the inception of the Oncology, due to issues of:
  - overlap in content
  - didactic lectures

- Mixed mode delivery - 2003
  Online teaching and learning introduced to give students more flexibility to fit their studies around:
  - domestic
  - employment commitments.
  and thus provide:
  - support for students on campus

Strategies

- Domain specific educational instruction
- Student-centred PBL
- Interactive online discussion to support collaboration and communication
- Engaging students in the learning process

Strategy 1

- Principles of PBL address the need for students to acquire generic skills
- Students work in groups to solve 6 cases
- WebCT allows for feedback from professionals outside the University
- WebCT allows for collection of resources, completion and submission of reports via the Assignment Box
- WebCT allows for multimode explanatory notes (audio and text based hints)

Strategy 1 cont’d

- Help pages assist students with navigational problems and the tools used
- Quiz facility provides an invaluable tool for formative assessment and evaluation

Strategy 2

- Cases evolved through the blending of expertise of a cross disciplinary team:
  - Academic – content expert
  - Oncologist – clinical management
- Active interaction is provided by WebCT’s synchronous and asynchronous discussion forums
  - Students encouraged to become responsible for their own learning
  - Chatspace facility provides interaction at a personal level, since dialogue is not recorded
  - Student Pages facility allows student and facilitator personal details and pictures to be uploaded
- Collaborative learning is emphasized, encouraged and rewarded
  - Peer marking – 5% of total marks
- Quiz facility provides tool for formative assessment
  - Questions and answers
  - Diagnostic mock exam
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Strategy 3

- WebCT extends the classroom experience of PBL by providing greater support in learning.
- WebCT is useful for sharing expertise, experience, and individual consultation and trouble shooting.
- WebCT allows for further the feeling of group rapport during a web of learning.
- Debriefing and opportunities for professional networking are important benefits of computer conferencing.

Strategy 4

- To encourage engagement in the learning process, groups are required to submit a weekly case 
  Proforma:
  - Role play: facilitator assumes role of patient.
  - Students ask about patient clinical data, with associated reasons for their questions.
  - The group formulates objectives for solving the case.
  - The group writes a report in the Proforma.
- Feedback on the contents of the Proforma and reflection on the feedback engage students in the learning process.
- Broad reading but succinct reports were encouraged.

Results

- Students found domain specific educational instruction helpful (Mean=4.5, SD=0.5).
- The generic skills scale was very beneficial (Mean=4.6, SD=0.6).
- Engaging students in the learning process was rated as important (Mean=4.7, SD=0.4).
- Students were satisfied with the methods used for teaching and learning and with WebCT as the course infrastructure.
  - 'Oncologists visits gave insight into course and occupation'.
  - PBL was important as I was in charge of how much you learn as you yourself had to find answers and theory on the cases.
  - Easier for students to communicate with facilitators and peers.

Results cont’d

- Strategies used led to deep learning.
- 10% increase in graded passes following PBL.
- The design and instructional methods facilitated by WebCT have enhanced:
  - Participation and interaction.
  - Peer collaboration and student motivation.
  - Consultation with peers and facilitators.
  - Written communication.
  - Ability to apply theory to practice.

Results cont’d

- Further 10% increase in graded passes following WebCT.
- Students became familiar with online technology.
- Ad libitum consultation with facilitators made their role more rewarding.
- Subject coordination was facilitated.

Discussion

- Online PBL - valuable addition to on-campus student learning.
- Accommodated the attributes of lifelong learning and critical reasoning skills.
- Active learning made learning more pleasurable and satisfying.
- Using a single system, e.g., WebCT, allows students to focus on academic matters rather than the system.
Conclusion

- The concept of online research-led teaching provided by the specialists is novel.
- Integration of technology into the teaching and learning processes of PBL has created a web-enhanced, web-managed, web-delivered course.
- Supports but does not replace face-to-face teaching.

Conclusion cont’d

- It encourages students to apply their knowledgebase to solve career-related problems.
- More importantly, students realize that learning is not an end unto itself, but a means onto which they will base their future professional practice.