PBL: New Learners, New Curriculum

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Overview of BDS Curriculum

A case of a fully integrated, problem-based design

- Problems are the ‘drivers’ of the curriculum
  - Integration of content to create ‘ill-defined’ problems

- Learning Issues
  - Vertical and horizontal integration
  - Cross/interdisciplinary
  - Increasing complexity & clinical focus

- Integration of experiential learning:
  - Practicals
  - Clinical techniques
  - Clinical practice
  - Community health projects
  - International experience

- Formative and summative assessments
  - Individual and whole-group feedback
Curriculum review, development and innovation

TDGs (awarded to date)
- 2007-09 (PI - Bridges et al) “Enhancing Professional Interaction in Dentistry”
- 2008-09 (Co-I - McGrath et al) “English in the Major”
- 2008-09 (PI - Bridges et al) “Blended Learning”
- 2008-2009 (PI - Yiu et al) “Assessing the Competency of Dental Graduates: Graduates’ and Employers’ Perceptions”
- 2009-10 (PI Botelho et al) “Journal-based Learning and Introduction to Dental Research, Continuing on from PBL”
- 2010-11 (PI Bridges et al) “International Peer Review”

2011 Centre for Innovation in Dental Education (CIDE)
Redesigning PBL curricula

Applying the principles of multiliteracies pedagogy to curriculum development and reform
Multiliteracies approach

- Diversity of students & their futures
  - Linguistic and cultural diversity
  - Multiple pathways/multiple futures

- Diversity of literacy practices
  - Increase in the number and range of texts and technologies

- Active Citizenship

(New London Group, 2000)
The design process

“Designs of meaning”

- Available designs
- Designing
- Redesign

PBL@HKU Dentistry

Moving ...
from a digital repository approach
to an interactive blending of technology within PBL tutorials ...
Available design: Resourcing PBL

- Tutorials (face-to-face)
- Self-directed learning (WebCT)

Digital repository approach (asynchronous)
Transformed practice: The redesigned

- Blended learning: Closer integration of learning technologies with face-to-face learning experiences

- Accessing both in-house learning objects and online resources within tutorials
- Supports the group knowledge-construction process
Researching inside curriculum redesign
Interactional Ethnography

- Research knowledge construction:
  - within specific contexts
  - over time

- Focus on classroom interaction (video) and learning artifacts
Materials & methods

- One PBL group (n=8) 1st Year undergraduates

- Learning activities videorecorded during 3 occasions in the same week:
  - first tutorial (T1) with facilitator;
  - self-directed learning (SDL) discussion (directly following T1) without facilitator;
  - second tutorial (T2) with facilitator.

- Learning objects/ multimodal tools
  - PBL: video
  - SDL: 3D animations; online resources

(HREC no 10208074)
Analysis:

- Tracing 'whole-part, part-whole relationships’
- Consequential progression
- Historical and over-time relationship between and among texts and contexts
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**Learning Events Incorporating Online Learning Objects**
### TIMELINE

**Problem 1:9 “Two Face”**

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#### 17 Nov 08: Tutorial 1 (9-11 am)

- **00:11**: Log in WebCT; View Inquiry Material A – Learning Object (video 1)
- **00:17**: View Inquiry Material A – Learning Object (video)
- **00:20**: Group discussion; Scribe records additional FACTS on IWB
- **00:26**: Group discussion; Scribe records IDEAS on IWB (keyboard and MS Word)
- **00:44**: Student searches for definitions online - dental dictionary; Student searches for information online - images
- **00:46**: Scribe records additional IDEAS on IWB (keyboard and MS Word)
- **00:52**: Student search history; Find page and copy text
- **00:30**: Group discussion; Scribe records LEARNING ISSUES on IWB (keyboard and MS Work)
- **1:34**: Scribe saves FACTS/ IDEAS/ LEARNING ISSUES files; Scribe emails to PBL Office and group mates
- **1:41**: Group discussion on the use of IWB
- **1:52**: Close

#### 21 Nov 08: Tutorial 2 (9-11 am)

- **12:01**: Log in WebCT; View Inquiry Material A – Learning Object (video 1)
- **12:05**: Group discusses video
- **12:08**: Group discusses video; Scribe records IDEAS on IWB
- **12:15**: Read ‘Problem Statement - Part 2’
- **12:17**: View Inquiry Material A – Learning Object (video)
- **12:20**: Group discussion; Scribe records additional FACTS on IWB
- **12:26**: Group discussion; Scribe records IDEAS on IWB (keyboard and MS Word)
- **12:44**: Student searches for definitions online - dental dictionary; Student searches for information online - images
- **12:46**: Scribe records additional IDEAS on IWB (keyboard and MS Word)
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**Student 1:** And then for this Greater petrosal nerve (.) It's a synapse with the Carotid tympanic ganglion (.) and then er (.) er (.) again a few branches are from (.) um (.) different here (.) um the first one is the nerve which the (inaudible) gland and the second one (.) and those branches which the nasal cavity and the palate (.) I mean at the soft palate (.) not palate (.) soft palate (.) and at the other hand there are some er (.) sensory neurons from the soft palate which carry taste sensation back to the um to the brain. Student 6: Is that the Chorda tympani (.) um responsible for taste?

**Student 1:** Yes (.) no

**Student 6:** Or has a (.) has a...

**Student 1:** This er (.) you mean this one?

**Student 6:** Yeah

**Student 1:** No (.) um (.) this um...

**Student 5:** I think the Chorda tympani has (.) has the taste sensation for the posterior (.) no anterior (.) 2/3 of the tongue

**Student 1:** Anterior to the...

**Student 5:** Anterior to the (inaudible) (.) and the Greater petrosal has the taste sensation from the palate

**Student 1:** Sensory...

**Student 5:** Yup (.) sensory (.) Taste sensation

**Facilitator:** OK (.) For this problem (.) OK (.) which branch is blocked? According to er (.) here

**Student 1:** Here (point to the IWB)
Findings

1. The group accessed a range of in-house and open access digital materials to support learning within and across all phases of a problem cycle.

2. The use of learning objects and online resources within a problem cycle supported inquiry learning and the discursive shift:
   - from *stimulus* for hypothesising in relatively lay terms in T1
   - to *evidence* for final hypotheses with greater control of medical discourse in T2

3. The integration of face-to-face and virtual modalities through use of an IWB within the tutorial was seamless and supported whole-group engagement in the problem process.

(Bridges, Botelho & Tsang, 2010)

Bridges, S., Botelho, M., Tsang, CSP. (2010). PBL2.0 Blended Learning and interactive pedagogies. *Medical Education. 44*, 1135


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