18. Building an Innovative, Competency-based Assessment System to Support a Renewed, Small Group Learning-Based, Spiraled Dental Curriculum at the University of British Columbia

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What? ➔ Opportunity Knocks for Faculty of Dentistry = Curriculum Renewal in UBC Faculty of Medicine (FoM) & Faculty of Dentistry (FoD)

Why? Motivation:

- The Commission on Dental Accreditation of Canada Recommendation ➔ refine medical content depth
- FoM's curriculum renewal focused on MD students' needs > DMD students' ➔ affable separation from FoM
- Student & faculty feedback (e.g. student focus groups, student surveys, faculty meetings)

Who?

Collaborative negotiations with multiple faculty members in numerous health disciplines led by Associate Dean, Academic Affairs

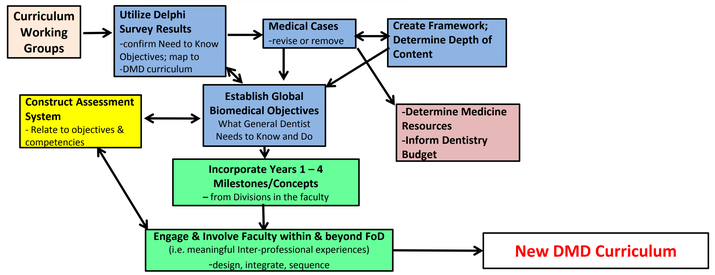
How?

Dentistry faculty reached consensus on "need-to-know" biomedical science objectives[1] ➔ implemented curriculum renewal process (Fig.1)

Measurements of Outcomes:

Current: Student focus group meetings
Future: Progress survey & NDEB comparative outcomes; student & faculty surveys

Figure 1: Curriculum Renewal Process[1]



Opportunities ➔ Benefits

- Eliminated 2 X 2 curriculum ➔ Manage own timetable & content ➔ **positive domino effect**
- Repatriated funding from FoM after separation
- Created meaningful inter-professional experiences (IPE) - e.g. Grad. Specialties, Dental Hygiene, Pharmacy, Medicine, etc.
- Enhanced focus on professionalism & ethics relevant to dentistry - e.g. FoD Clinical Ethicist, IPE integrated-Ethics model,
- Addressed student feedback - e.g. online content delivery & earlier clinical skills experiences ➔ **Integrated Restorative Dentistry Module starting in Year 1**
- Enhanced clinic efficiency
- Incorporated new Assoc. of Canadian Faculties of Dentistry competency framework ➔ implemented standard syllabus template for 4 year DMD program
- Resulted in dentally relevant, integrated, spiraled curriculum ➔ no loss of pertinent basic science & medical content

INCORPORATES:

- **Evidence-based adult learning theory methods ("Flexible/Blended", "Test-Enhanced", and "Peer-Assisted" Learning; multiple forms of small group learning)**

AND

- **Assessment revisions ➔ dentally relevant, authentic, more frequent, lower stakes, formative, varied, and competency-based**

PROGRESS PORTFOLIO consists of:

1. PeerWise Assignment

What? PeerWise

A free online learning tool which allows students to create, answer & comment on each others' multiple choice questions (MCQs)

- Students generate an online question bank with imbedded immediate feedback
- Tag questions with metadata to filter questions based on a topic
- Build a participation score based on activity within the platform & the opinion of peers

Why? Efficient Learning!

- Engages students as teachers ➔ "Docendo discimus" = "By teaching we learn"
- Incorporates the benefits of:
  - "Test-Enhanced Learning"[2, 3] ➔test taking provides better, long-term retention & transfer than studying, & deeper learning
  - "Peer-Assisted Learning"[4] ➔ effective & empowering when part of exam-making
  - Tailoring MCQs & distractors to current level of understanding

Who?

Incorporates:

- An existing learning community
- UBC FoD faculty member
- UBC FoD content experts will vet MCQs

How?

Currently, considered part of Progress Portfolio

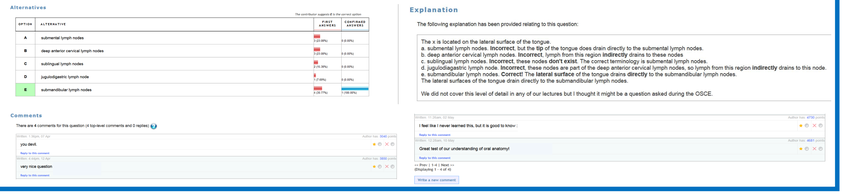
- UBC FoD faculty member ➔piloted with previous Year 3 students
- Intro. lecture; question writing workshop; 4 question writing assignments ➔ cont'd in Year 4
- Other years of DMD classes involved, too
- Engagement increased ➔ some MCQs used in exams as incentive to fully participate

Measurements of Outcomes:

- Pilot group: surveys + focus groups to further gauge satisfaction
- Unable to split cohort so unable to show positive learning outcomes
- Year 1 students ➔ much more engaged than previous cohorts without the offer of MCQ inclusion in faculty exams

Example

of UBC student-generated MCQ: Where does lymph from the location on the tongue labelled "x" directly drain to?

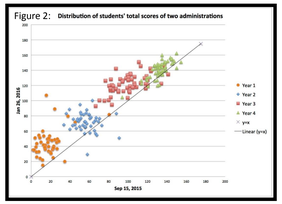


2. Progress Survey

What? ➔ Progress Survey

- 3-hour, 200 MCQ test (aka 'survey')
- tests all cognitive knowledge domains of end-point competencies (Fig.2) ➔ curriculum-independent
- twice/year; formative; no studying required

Figure 2: Distribution of students' total scores of two administrations



Why? ➔ Invaluable Learning!

- "The Testing Effect"[5] ➔tests = extra practice + self-directed learning
- Increase students' awareness of program & competency expectations

How?

- Faculty- & PeerWise-generated MCQs used
- All Years 1-4 – write simultaneously online

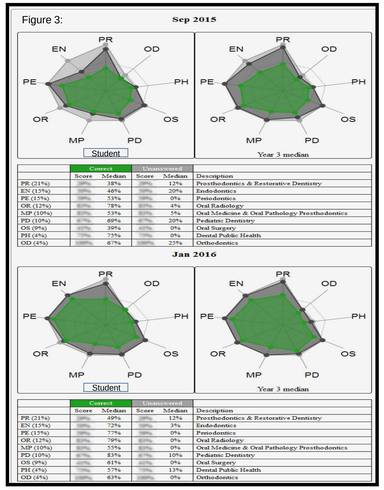
Who?

- TST & invigilator support
- MountainMath Co. generates personal progress index maps (PPIMs)
- UBC FoD Education Specialist
- Faculty & students develop/vet MCQs
- All Years 1 to 4 DMD students

Measurements of Outcomes (Fig. 3):

- Generates individualized PPIMs representing performance in each domain relative to peers
- Comparative subsequent PPIMs indicate progression towards end-point competencies

Figure 3:



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