Meeting your students’ learning via various learning tools.

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Aim

You will learn to expand on your student engagement and interaction by

- enhanced knowledge of pedagogy
- understanding of individual learning needs of students
- providing a variety of learning tools.

Background/Context

- different learning theories/pedagogies - teaching perspective
- student individual learning styles (VARK, MyersBriggs etc)
- QUT medical radiation sciences perspective
- Actual learning tools
  - description
  - demonstration/examples of

Methodology

- Surveys were completed by student prior to and after their first clinical placement.
- Questions followed a Likert Scale with some open-ended questions.
- This study has been approved by the QUT Human Research Ethics Committee (approval number 1400000526).

Results and feedback

- Pre and post surveys measured the perceived effectiveness of the various learning tools provided by the institution for individual students both prior to the first clinical experience and then in hindsight.

Conclusion

Initial data shows that whilst some learning methods proved more effective than others, each learning method resonated as being the preferred method for one or more students.

Intro

In order to be effective teachers, we first need to consider;

- our own academic preferences,
- the available tools accessible to both the teacher and the learner, and
- the individual learning needs of the student.

We propose that this can be catered for by providing various activities to encourage effective learning.

Whilst it could be argued that particular courses/professions (Medical Radiation Science) have a tendency to attract students with a predominant learning style (Dungey, G., Yielder, J. 2016), all students need to have an opportunity to learn via their learning strengths.

Queensland University of Technology

A world class University situated in the middle of Brisbane, Queensland

- We’re well known as ‘a university for the real world’
- Industry representatives and professionals contribute to our course development, adding a practical perspective to theoretical education.
- Our academic staff consult in industry and work on industry projects which often involve students.
- Staff and students have access to the latest teaching technology.

2016 statistics

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<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td><strong>Student enrolments</strong></td>
<td>48,853</td>
</tr>
<tr>
<td><strong>Full-time students</strong></td>
<td>36,911</td>
</tr>
<tr>
<td><strong>International students</strong></td>
<td>7,947</td>
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<tr>
<td><strong>Course completions</strong></td>
<td>11,543</td>
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<td><strong>Staff</strong></td>
<td>12,017</td>
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<tr>
<td><strong>(individuals employed in the 2016-2017 financial year)</strong></td>
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<tr>
<td><strong>Alumni</strong></td>
<td>247,420</td>
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<tr>
<td><strong>Total university revenue</strong></td>
<td>$885 million</td>
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CRICOS No. 00213J

QUT Bachelor of Medical Imaging (B.MI)

This course is taught by registered professionals and opportunities for practical experience begin in the first year. We incorporate technology into our teaching practices so that you learn in simulated clinical environments and practice relevant skills before imaging real patients. Four year program consisting of 58 weeks clinical placement throughout.

Entry requirements – B.MI

A selection score is a numerical score between 1 and 99 (99 is the highest), used to compare different qualifications on the same scale for the purpose of tertiary entrance.

Accounted knowledge
Before you start this course, you must have sound knowledge in these areas:
oughness

We assume that you have knowledge acquired in your secondary school level Mathematics 9 and 10 with some exposure to B.MI.

Learning outcomes

Learning Outcomes – CSB021

1. Describe patient considerations, including patient care and preparation, for radiographic examinations of the skeleton, chest and abdomen.

2. Describe the radiographic procedure including preparation of the room, immobilisation devices, patient positioning and radiographic techniques for routine radiographic examinations of the skeleton, chest and abdomen.

3. Demonstrate an ability to evaluate imaging requests, nominate the appropriate imaging series and recognise normal bony anatomy on radiographic images.

Learning Outcomes – CSB022

1. Demonstrate positioning skills, radiographic techniques and professional behaviour used for a range of routine general radiographic examinations and related pre-clinical skills in the laboratory situation.

2. Critically evaluate and analyse the resultant images produced with regard to technical quality and anatomical detail appropriate for diagnosis.

3. Recognise normal and abnormal anatomical structures and disease processes on radiographic images.

4. Evaluate imaging request forms and nominate the appropriate imaging series.

5. Apply the physical principles of image production and processing, in the laboratory and clinical situation.

6. Reflect on the professional role of the radiographer in the clinical department.

Types of students

https://www.slideshare.net/DigitasLBiNordics/millennials-the-young-generation-shaping-the-future

https://www.ascentis.com/generational-diplomacy-appreciating-utilizing-our-differences/
Transitioning learning through the ages

Not just a recent challenge

TPACK

Mishra and Koehler, 2006

Content

Pedagogy

PCK

Contact Knowledge

CK

Shulman, 1986

Learning Styles

Audio

Visual

Kinaesthetic

https://www.elcomcms.com/resources/blog/posts/learning-styles-and-how-they-are-complemented-by-learning-management

Learning Tools

Tutorial

VR Simulation

Student centered learning

Image centered learning

Image taking (phantoms)

Role Play

Theory

Lectorial

Theory - (Online) Lectures/Text books/Lectorials

Lectorial
Practical (Technical skills) VR Simulation - Medspace.VR

Practical (Technical skills) Simulation – Role Play

Practical (Technical skills) Simulation – Image Taking

Practical (Technical skills) Simulation – Image Review

Tutorial – Soft skills

Research - methodology

Pre and post-clinical surveys (7 weeks placement)
This study has been approved by the QUT Human Research Ethics Committee (approval number 1400000526).

5 point Likert scale:
Strongly disagree, disagree, neither, agree, strongly agree

Pre-clinical Survey:
• First year cohorts - 2014 (n=62), 2016 (n=60), 2017 (n=66)
Total students surveyed n=178
• Usefulness of the learning tools (Theory, tutorials, phantoms, VR Sim, Role play and Self-Directed Learning)
• Importance of variety of skill sets (Technique, Equipment, Anatomy, Communication, Interpretation of request)
Research - methodology

Post-clinical Survey:
- First year cohorts - 2014 (n=62), 2016 (n=58), Total students surveyed (2014, 2016) n=120
  (2017 cohort is yet to be evaluated)
- Usefulness of the learning tools (Theory, tutorials, phantoms, VR Sim, Role play and Self-Directed Learning)
- Influence on clinical experience (technical skill, anatomy, MI staff relationship)

Results - Demographics

Results - Pre Clinical
"I have benefited from exposure to multiple tools to better prepare me for clinical placement"
DISCUSSION - Pre-Clinical Results

Of those 11 students that disagreed or strongly disagreed with the usefulness of one or more methods for learning, they agreed or strongly agreed to the usefulness of three or more methods for learning.

Total 11 students disagreed or strongly disagreed to usefulness of one or more learning methods:

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<thead>
<tr>
<th>Student Identifier</th>
<th>Theory</th>
<th>Tutorials</th>
<th>Phantoms</th>
<th>VR Simulation</th>
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DISCUSSION - Post-Clinical Results

Hindsight

More students disagreed or strongly disagreed with the usefulness of each of the learning methods after the total of 7 weeks of clinical experience.
Pre Vs Post Clinical

<table>
<thead>
<tr>
<th>Useful Method of Learning</th>
<th>Pre-Clinical (n=178) (Strongly Disagree)</th>
<th>Post - Clinical (n=120) (Strongly Disagree)</th>
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</table>

Conclusion

- Individual learners.
- Engage with various learning methods to different levels.
- The more options/tools provided, the more likely each individual student will find at least one method of learning to engage with and therefore find useful.

Where to from here?

http://hanedanrg.com/WDF-364273.html

References