

The 5C's of Radiology Education: A Framework for Developing a Comprehensive Approach for Radiology Education for Medical students

Visscher KL^a, Faden L^b, Nassrallah G^c, Speer S^a, Wiseman D^a.

a Department of Medical Imaging, London Health Sciences Centre, Victoria
Hospital, Ontario, Canada

b Centre for Educational Research & Innovation, Schulich School of Medicine
& Dentistry, Western University, Ontario, Canada

c Department of Medicine, Schulich School of Medicine & Dentistry, Canada

Disclosure of Interest

I do not have an affiliation, financial or otherwise, with a pharmaceutical company, medical device or communications organization.

Background

This is the second part of a 2-part study designed to explore how exposure to radiology during medical school impacts medical students' opinions and perceptions of radiology and radiologists.

In the first part we found:

1. The stereotype of the isolated radiologist working in a dark room persists mainly through informal interactions, the so-called “hidden” curriculum.
2. Due to the perceived lack of exposure to radiology in medical school, every contact a radiologist has with a medical student has a significant impact, either positive or negative.
3. Students want meaningful interactions with radiologists and radiology residents. To help create these interactions the memory aid “explain, engage, offer and converse” is discussed.

Purpose

In the second part, we focus on

1. Conducting a 'radiology exposure inventory' from the perspective of the medical student. In other words, what exposures to radiology do medical students recall.
2. Using qualitative methodology to gain new insights into the experiences and perspectives of medical students in relation to radiology education.

Methods

| | |
|------------------------|---|
| Study period | September 2012- April 2013. |
| Study design | 4 semi-structured focus groups of medical students at UWO in each year of training. |
| Data collection | Audio transcriptions, field notes. |
| Data analysis | Modified thematic analysis. |

Characteristics of study cohort

Training Stage

| | |
|--------------|----|
| Preclerkship | 18 |
| Clerkship | 10 |

Sex

| | |
|--------|----|
| Female | 9 |
| Male | 19 |

Considering radiology

| | |
|--------|---|
| Female | 2 |
| Male | 6 |

Results: Major Finding #1

Performing a radiology exposure inventory from a medical student perspective is a useful way to explore how students receive and value radiology instruction.

Despite students reporting a perceived deficit of radiology exposure, this study revealed multiple opportunities both within and outside of the formal curriculum (Tables 1 and 2) throughout all 4 years of training.

Medical students value exposures differently depending on their year of training (Table 3).

Table 1:
Exposures
within the
formal
curriculum

| YR 1 | YR 2 | YR 3 | YR 4 |
|-------------|------------------------|--------------------------------------|-------------------------------------|
| Anatomy | | | |
| Lectures | | | |
| Assignments | | | |
| | Small group (PCCIA) | | |
| | | Clerkship rotations + lectures | |
| | | Selective (2week) | |
| | | | Elective |
| | | | Emergency radiology selective |

Table 2:
Exposures
outside
the formal
curriculum

| YR 1 | YR 2 | YR 3 | YR 4 |
|---|----------|------|------|
| Why Radiology talk | | | |
| Radiology interest group (RIG) | | | |
| Observerships | | | |
| | Research | | |
| Mentorship | | | |
| Prior education/online resources/media/family and friends/colleagues/other specialties | | | |

Table 3: Level of importance and interest of radiology exposures at different years for medical school training (Year 1-4)

| Exposure | YEAR 1 | YEAR 2 | YEAR 3 | YEAR 4 |
|---|---------------|---------------|---------------|---------------|
| 1. Radiology interest group 2. Why Radiology lecture 3. Department dinner | Very | Moderate | Low | Low |
| 1. Observerships 2. Research 3. Mentorship | Moderate | Very | Very | Moderate |
| 1. Lecture 2. Small group learning 3. Elective/selective 4. Emergency radiology course (selective) | Low | Moderate | Moderate | Very |

Results: Major Finding #2

Medical students value the role of radiology in health care, and want their radiology education to be comprehensive and high quality.

Unfortunately, the overall consensus in all 4 years is that the quality of radiology exposure and education is not where they would like it to be. One second year student said,

“ It [referring to how radiology is taught in the formal undergraduate medical curriculum] is one of the worst things, it’s pathetic, so it kind of needs to be changed”

Reasons for why radiology teaching through lectures is perceived as being poor quality includes:

- A. Imaging is interspersed throughout non-radiology lectures and often not given an appropriate amount of attention.
- B. Often content presented in lectures is superficial. Students want information “to be more specific or in-depth so [they can] actually take something from it”.
- C. Within lectures the diagnostic images are frequently poor resolution and not well described or explained.
- D. Radiology is often not testable material, which conveys a message that radiology is less valuable to other, more examined, areas of medicine.

Results: Major Finding #3

Medical students have constructive suggestions for improving quality of both formal and informal radiology exposures.

Students gave specific and attainable suggestions for improvement. Major suggestions for positive change identified by all years includes:

1. More teaching is needed on how to approach common imaging studies.
2. Students desire more meaningful interactions with radiologists and radiology residents.
3. Lectures, assignments, evaluations, as well as the selective and elective need quality improvement.

Discussion

To develop a more comprehensive radiology experience for medical students consider “The 5C’s of Radiology Education” framework

In an effort to rebrand radiology as the “crossroads of medicine”, the 5C’s are presented on a proposed crossroads logo (Figure 1).



Radiology

The Crossroads of Medicine

Derived from the data, the 5C’s reflect medical students’ desires to learn content that will support them in clinical practice, in their professional development, and in making informed career decisions.

5C's of Radiology Education

Curriculum encompasses the teaching of how to create and interpret diagnostic imaging.

Coaching includes programs, relationships and guidance to explore radiology and become a competitive applicant for residency programs.

Collaborating emphasizes the role of radiologists and diagnostic imaging in the health care system and on health care teams.

Career refers to sharing what a career in radiology entails.

Commitment is the dedication to invest time and energy in the betterment and education of medical students.

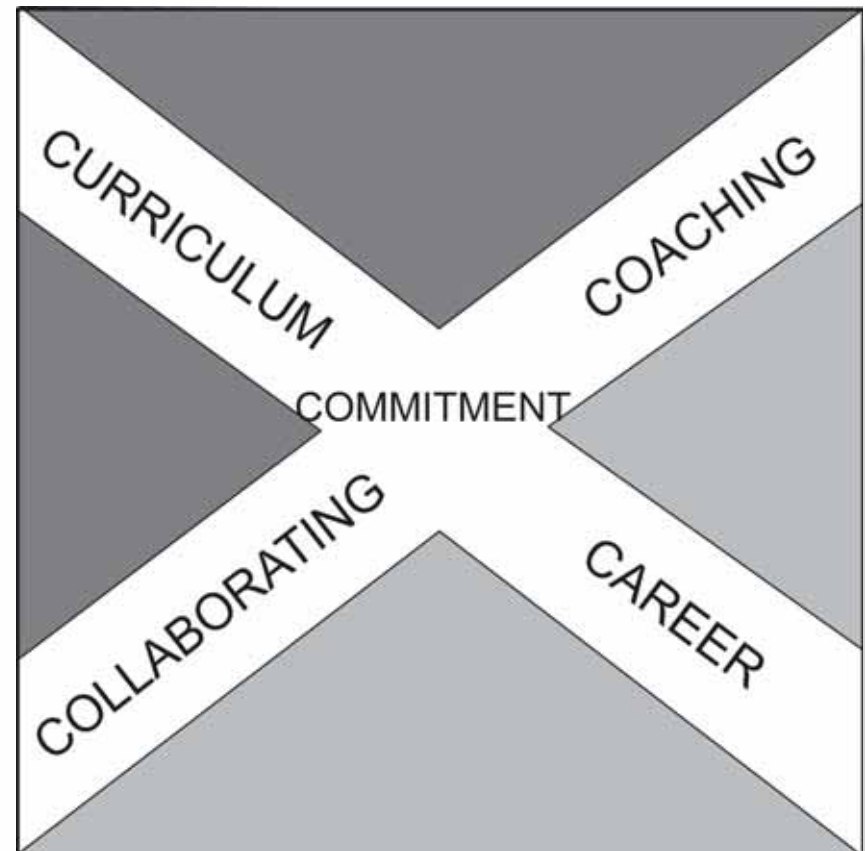


Figure 1

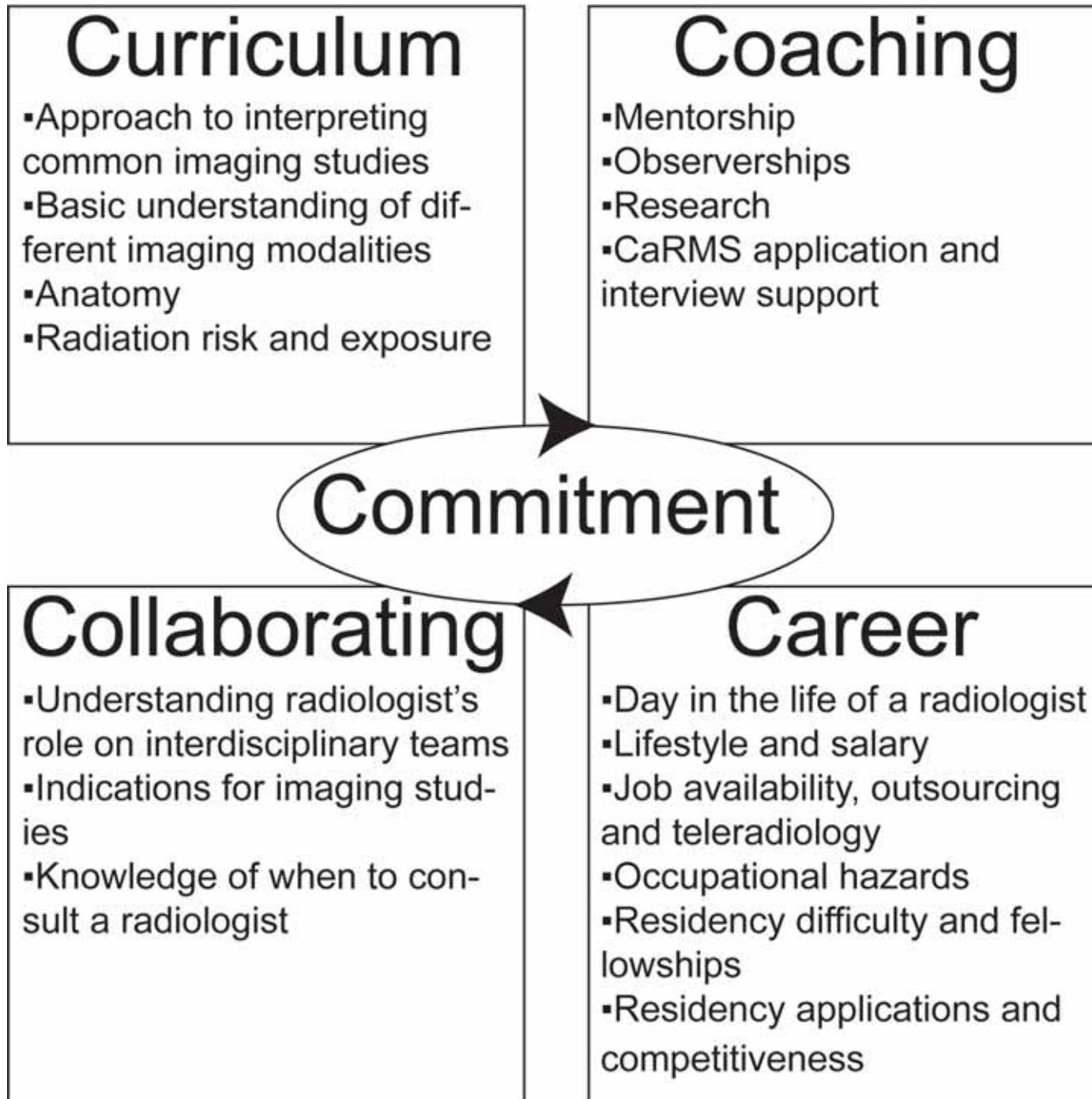
5C's of Radiology Education

For each of the 5C's, multiple specific objectives were identified by the medical students (Figure 2).

Conceptualizing radiology education in this way provides a framework on which to plan a comprehensive approach to quality improvement initiatives, and it creates a set of objectives that can be used as outcome measures.

This framework is a reminder that students have a variety of academic and professional development goals for their radiology education. Supporting students in meeting these goals is an opportunity to raise radiology's profile in medical schools and in the medical profession at large.

Figure 2



Conclusions

1. If all the findings were to be summarized into a simple statement it would be: **quality before quantity.**

Before time and effort is spent adding more lectures and programs, an alternative approach would be to first determine what exposures the students already have to radiology—an exposure inventory, then improve the quality of those exposures.

2. Derived from medical student feedback, the **5C's of Radiology Education framework** represents students' needs for a more comprehensive and student-centered approach to radiology education.

Thank you for your time and interest.

If you have any questions, comments or feedback please do not hesitate to contact me at:

Kari Visscher

Kari.Visscher@londonhospitals.ca