

Radiology Education

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Radiology Education

The Scholarship of Teaching and Learning

 Springer

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Foreword

This is a book about scholarship in the broadest sense. The writing of this book has shown how through scholarship we can bring together academics, practitioners, scientists, radiologists, and administrators from around the world to begin the kinds of conversations that promise to move us to a new way of thinking about and enacting radiology education.

Over the past century, we have witnessed tremendous change in biomedical science and the scope of this change has demanded new approaches to medical education. The most significant of the changes in medical education has been a fundamental paradigm shift from a *teacher-centered approach* to a *student-centered approach*. This shift, combined with the explosion of knowledge, has pressed medical schools to undertake major curricular and institutional reform. At the same time, progress in medical education research methods has led to innovative approaches to support the improvement of learning methods and evaluation.

Over the past several years there has also been a shift toward thinking about and planning for medical education beyond the undergraduate level to include postgraduate and continuing medical education, but also to consider learning within the professional environment and the development of professional continuous education. Viewing medical education as a continuum that spans from the first year of medical school until retirement introduces new ways to conceptualize the teaching and learning needs that address lifelong learning demands that extend over 30 or 40 years.

To add complexity to the demands, we have to consider the changing role and function of radiology in the twenty-first century. Given the historic advancement of knowledge, coupled with technological development, radiology as a specialty has progressively reached a tremendous scope during its golden age. These advancements have called for a redefinition of the boundaries of this specialty. As a consequence, medical imaging has positioned itself as an important component at the core of any medical curriculum. It has also become a very popular specialty among medical students and consequently has led to innovative residency training and research program initiatives. These initiatives often serve as models for general medical education curriculum design and implementation. There is no question

that current medical students, residents, colleagues, and patients have benefited much more from this revised curriculum than the curriculum I experienced during my own training a couple of decades ago.

Although I am reassured by the quality of the current radiology education content, I remain worried and uncomfortable about some of the other professional competencies. For example, what is the best way to teach residents how to obtain informed consent from a patient before undertaking a complex interventional procedure? How can we help our medical students to develop the processes of self-assessment, communication, and collaboration with other health professionals even within our own radiology department? When I observe a general lack of respect for colleagues or a radiologist who takes refuge in the comfort of his/her subspecialty (thereby not offering general radiology services), I wonder, *Have I failed in my role as a teacher? Have I not been a good role model?* Clearly, accumulating radiological content knowledge and skills as a superb medical expert is not sufficient. To be accountable to our patients, and to society generally, requires more than diagnostic and therapeutic skills. Patients today are often much more sophisticated and informed about their own illness and expect to communicate as partners in their health care team. Patients want quick access to medical imaging facilities despite scarce health care resources. As taxpayers, they exercise their right to make demands on universities and teaching hospitals to meet their needs. Schools of medicine and continuous medical education providers should adopt mechanisms to accurately assess the characteristics and needs of the populations they serve. Economic, social, and demographic parameters should all be taken into consideration by medical curriculum designers in order to meet societal needs. These parameters include aging process, chronic disease, poverty, vulnerable population, multicultural society, system of beliefs, globalization and ecohealth system, scarce resources, and interprofessional collaboration.

Finally, zero tolerance for nonethical and irresponsible behavior should be assumed as the core value of medical education. Advances in technology and changing societal needs have meant that radiology has ceased to be a pure “contemplative” activity, and instead the radiologist’s role has evolved into that of an attending physician with full responsibility for the entire spectrum of patient management. Beyond the clinical role then, radiologists should be engaged in debate on the key issues that affect society. Increasingly, there is an expectation that a physician should embrace the role of community leader. The skills necessary to take up that role must be integrated as fundamental learning outcomes during the design of curriculum, at all levels of medical education.

This book calls upon radiologists to expand their role beyond limited understandings of themselves as simply a clinical service provider and to engage in dialogue, scholarship, and educational activities rooted in professional responsibility and accountability toward the community. Rethy Chhem, the senior editor of this collection, has demonstrated such a commitment to societal needs throughout his entire career. It is not surprising to see that he has taken up the challenge of producing a book that expands the understanding of the scholarship of teaching and learning in medicine, with a special focus on radiology education. The chapters included in this book highlight a path that has been taken by a few pioneers in radiology education, and also offer innovative ideas that may help medical educators in their commitment to train and educate radiologists equipped as “medical experts” with full social responsibility. Rethy Chhem and his coeditors Kathy Hibbert and

Teresa Van Deven are to be congratulated for having gathered leaders and experts in radiology education across the globe to come together to share their expertise in this exciting and promising field. This book promised to fill a void, as there is currently no book available that addresses radiology education from a scholarship of teaching and learning perspective. Let the dialogue begin!

Montreal, PQ, Canada
April 2008

Louise M. Samson

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Rethy Chhem

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Kathy Hibbert

I read a quote once that seems appropriate to include here: “Don’t ask yourself what the world needs. Ask yourself what makes you feel like you have come alive. And then go and do that. Because what the world needs is people who have come alive.” Thank you to my colleagues Rethy Chhem, Teresa Van Deven, Sharon Rich, Roz Stooke and Rachel Heydon, and to my family, Bill, Darren and Ali for their friendship and support—all things that make me feel like I have come alive. Thanks too, to all of the wonderful physicians and residents that we have worked with to complete this book.

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Introduction

Transforming Radiology Education Through Scholarship

C.P. Herbert, J. O'Sullivan

Clinical education for health professionals is an interesting division of adult education, undergoing both evolution and revolution, as it develops from traditional experiential and opinion-based approaches to encompass more evidence-informed educational practices. While traditional approaches to preceptor-based education remain dominant, there is increasing interest in engaging in the type of scholarly work necessary for establishing an evidence base to drive better educational practices. The ultimate goal is to ensure that health professionals are not only well trained but are also well prepared for lifelong learning, respectful and appreciative of colleagues from other health professions, knowledgeable about new technology, including simulation and Web-based learning opportunities, and broadly educated to enable participation in their community and leadership in health care. This book places radiology education squarely on the theory-driven, evidence-informed end of the continuum.

We understand the need for interdisciplinary approaches to address complex questions. We have fostered the development of the Centre for Scholarship in Radiology Education across our two faculties of medicine and dentistry and education, because of our commitment to ensuring that the expertise in education can inform health professional education, and in turn that the practical realities and needs of clinical learners can inform research in education and contribute to the advancement of knowledge in both fields. We are proud that the Centre is spearheading the discussion across disciplinary and geographical boundaries to create an overview of scholarship in radiology education with practical elements included to guide those who develop curriculum.

The first section of this book is a primer of educational theory and principles, emphasizing the essential need for scholarship in radiology education that will provide the evidence base necessary to inform effective practice. Convincing argument is made that leads the clinical educator-reader to the conclusion that today's radiology students are adult learners, who should be provided with learning opportunities that engage them fully in considering

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what should be learned, developing their individual learning objectives and goals, planning and monitoring their learning experiences, and demonstrating competency at appropriate intervals throughout their practice lifetime.

Interdisciplinary learning and mentoring are described from a historical perspective that emphasizes the context and relevance of both approaches. Mentoring is presented as complementary to formal educational content and described in practical terms, including, for example, the characteristics of successful mentors. Similarly, interdisciplinary learning is identified as a “rich” and active learning process that stimulates learners to reflect on or think about their practice, identify inconsistencies in their own knowledge base and between their and other learners’ knowledge, challenge their prior beliefs and assumptions, seek solutions, and reconstruct their knowledge.

In Part 2 the perspectives of radiology practitioners on professional development, ethics, evidence-based decision-making, and the application of technology to learning in practice are presented. In the chapters on radiology education and scholarship, the theoretical underpinnings are outlined along with a business perspective: “how to do it”. Similarly, the chapter on research in medical education reviews challenges and trends in clinical education scholarship generally, as well as detailing the characteristics of some successful educational research centres. The chapter on a radiology curriculum for a new medical school in Singapore brings theory to life, with description of how to educate radiologists but also, importantly, how imaging is an indispensable tool for teaching medicine.

In the “new” radiology, digital imaging is shown to transform clinical data into databases for research and teaching. Learners can use tabletop imaging instruments to learn medical physics, and to become familiar with radiography, computed tomography, and ultrasound images, free of the pressure of the clinical setting.

In Part 3 global approaches to radiology education are considered, with examples from Southeast Asia, China, French-speaking countries, Cambodia, Latin America, and Egypt. Included here are specific examples of tools for successful curriculum delivery to medical students, residents, radiologists, and other physicians. An interesting discussion of the use of the World Wide Web in distributive learning moves the discourse from the narrow perspective of individual curricula to the possibility of worldwide shared curriculum approaches. Similarly, we become aware of the role of professional organizations in leading change, by promoting and disseminating general competencies such as the CanMEDS roles as well as direct teaching of new techniques, with the example of ultrasound workshops.

Overall, this book achieves its goal of bridging theory and practice, by presenting theoretically driven practical approaches to educational scholarship and education in radiology. Importantly it offers encouragement, lessons learned, and evidence-informed advice to help others establish and sustain a culture of scholarship within their own particular domain.