Medical education:
the challenge of linking theory to practice

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A thesis submitted in fulfillment of the requirements for the
degree of Doctor of Philosophy (by prior publication)

November, 2004
Abstract

In the 1990s, despite empirical support for linking theory to practice in professional education, a theory-practice gap persisted in medical education. This dissertation presents three initiatives and their evaluation to address the theory-practice gap in medical education at an Australian medical school.

Case Based Teaching (CBT), a teaching and learning initiative, was designed and implemented in the Department of Physiology at the University of Adelaide. It aimed to introduce students to clinical skills in a way that built student confidence; to achieve integration of knowledge between medical and clinical sciences; and to strengthen the link between theory and clinical practice. Students and their tutors reported that CBT was beneficial in their development, and realised its three major aims. Greatest support came from students on the verge of their clinical training.

Few studies, with both internal and external validity, have demonstrated the potential of computer aided learning (CAL) in medical education. In the second initiative, a self-directed CAL resource linking theory to practice was designed in three different learning formats. A randomised controlled trial showed learning gains for CAL users (in terms of ability to retain and apply knowledge) compared to non-users, but the active CAL format did not prove superior to more passive ones. The study demonstrated the importance of using valid assessment tools to measure learning outcomes, and the difficulties
of conducting randomised controlled trials in the real world of medical education.

Finally, the utility of a novel integrated practical examination was evaluated, in terms of reliability, validity, acceptability, cost and educational impact. The large investment of time and effort that was required to reform assessment practice brought rewards. Good reliability was achieved, and validity was maximised by linking theory to practice, and an extensive item review process. Assessment reform was used to drive the integration of teaching and learning.

Basic science and professional knowledge consist of two different worlds, the former being analytic and general and the latter, holistic and particular. This dissertation has addressed the challenge of linking these two worlds, with initiatives that embedded these two knowledge structures within the other, fostering professional competence that is founded on procedural, propositional and personal knowledge.

**Key words**

Medical education; undergraduate; teaching and learning; computer-aided learning; assessment; integration; theory-practice link; evaluation
Declaration

This work contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institution and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text.

I consent to this copy of my thesis, when deposited in the University Library, being available for loan and photocopying.

J.N. Hudson (Candidate)

Signed……………………………………………………Date……………….

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Acknowledgements

In addition to previous acknowledgement of the contribution made by colleagues and students to the initiatives in each of the published papers, I wish to thank and acknowledge the following people for their support of this dissertation:

- Dr. Pat Buckley and Professor Caroline McMillen from the Discipline of Physiology, School of Molecular and Biomedical Sciences at the University of Adelaide, for their supervision and intellectual, administrative and personal encouragement to complete the PhD by publication

- Professor Nicky Britten from the Institute of Clinical Education at the Peninsula Medical School, Exeter, United Kingdom for her encouragement and intellectual support, particularly in relation to qualitative research methods

- Dr. Charlotte Rees from the Institute of Clinical Education at the Peninsula Medical School in the United Kingdom for her encouragement, intellectual discussions on medical education, and ideas for the thesis structure
• Dr. Keith Postlethwaite from the School of Education and Life Long Learning at the University of Exeter in the United Kingdom, for intellectual discussion on the theory-practice link in medical education, and ideas for further exploration of the use of science in the medical reasoning process

• My co-authors for some of the studies, Dr. Anne Tonkin, Co-director of the Medical Education Unit at the University of Adelaide, Dr. Pat Buckley and Professor Caroline McMillen (as above), for their permission to submit the published papers to fulfill the requirements of this dissertation

• Professors John Tooke and John Bligh from the Peninsula Medical School in the United Kingdom, for support and encouragement to complete the thesis while I was a senior academic at Peninsula Medical School from 2002-2004

• Dan McHolm for generous IT support during my appointment at the Department of Physiology, University of Adelaide, and in the final stages of my dissertation

• My husband Geoff and children, Sarah, Simon, Christina and Anna, for their continued support of my career and studies
Preface

The three initiatives described in this thesis were designed, implemented and submitted for publication while Nicky Hudson, the doctoral candidate, was employed as a Lecturer in Physiology in the then Faculty of Science at the University of Adelaide, from 1995 to 2002. After relocating to the United Kingdom in April 2002 to take up a position as a Senior Lecturer in Clinical Education (Academic Lead for Physiology) in the new Peninsula Medical School in the south west of England, Nicky was appointed as an Affiliate Lecturer in the Discipline of Physiology, School of Molecular and Biomedical Sciences at the University of Adelaide. The dissertation was completed under the auspices of the latter academic appointment, and at the time of submission of the thesis in mid-November, 2004, Nicky had returned to the University of Adelaide to take up a position as a Senior Lecturer in the Medical Education Unit in the Faculty of Health Sciences.

The initiatives presented in the dissertation have been published as below:


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