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# **PROBLEM BASED LEARNING USING AMBULATORY PATIENTS**

Thesis submitted by

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in August 2005

For the degree of Doctor of Philosophy  
in the School of Medicine  
James Cook University

## STATEMENT OF ACCESS

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## STATEMENT OF SOURCES

### DECLARATION

I declare that this thesis is my own work and has not been submitted in any form for another degree or diploma at any university or other institution of tertiary education.

Information derived from the published or unpublished work of others has been acknowledged in the text and a list of references is given.

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## STATEMENT ON THE CONTRIBUTION OF OTHERS

Colleagues at the North Queensland Clinical School provided general advice on the direction of this research and participated as tutors in the problem based learning process. My supervisors provided detailed advice on methodology and implementation, and critically reviewed drafts of this thesis. Limited assistance with data collection was provided by two research assistants as described in the text.

Support was provided by the following grants:

The University of Queensland Undergraduate Research Grant \$1354, to support evaluation and materials in the pilot phases.

The University of Queensland New Staff Research Grant \$16 576 to support standardization of tutor training for clinical problem based learning.

I also thank my colleagues who contributed to the following papers resulting from this work in which I was the principal investigator:

Sen Gupta TK, Hays RB, Jacobs HJ. Problem based learning using ambulatory patients. *Res Dev Problem Based Learning*. Australian Problem Based Learning Network. Newcastle, Australia: 1997;**4**:574-578.

Sen Gupta TK, Hays RB. "Problem-based learning using ambulatory patients. *Advances in Medical Education*. Scherpbier AJJA et al, editors. 1996, 525-527.

In addition the author was the principal investigator for five papers which have been presented at national and international conferences.

## DECLARATION ON ETHICS

The research presented and reported in this thesis was conducted within the guidelines for research ethics outlined in the *National Statement on Ethics Conduct in Research Involving Humans* (1999), the *Joint NHMRC AVCC Statement and Guidelines on Research Practice* (1997), the *James Cook University Policy on Experimentation Ethics, Standard Practices and Guidelines* (2001), and the *James Cook University Statement and Guidelines on Research Practice* (2001).

All human participation in this research project was conducted before the transfer of candidature to James Cook University and was covered by the Townsville General Hospital (now The Townsville Hospital) ethics approval (Appendix 3).

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Signature

August 26, 2005

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# ABSTRACT

## Introduction

Problem based learning (PBL) tutorials based on ambulatory patients were conducted for year 5 medical students undertaking their General Practice rotation. The students, who had little prior experience of PBL, participated in two sets of PBL tutorials over the four-week course, in addition to traditional seminars, tutorials, and practice-based teaching. Cases were constructed around real patients with ongoing problems which were often evolving or incompletely explored. Working in a PBL format students explored dimensions of the case, with access to the patient and other resources including health workers involved in the case, the medical record, and a house call. At the end of the week students presented the case and their recommendations for management and summarized this in a letter which formed part of the medical record.

## Methods

Sixteen PBL tutorials with eight groups of students were formally evaluated by a combination of student and tutor questionnaires, direct observation, and interviews with patients and tutors. All tutorials were observed by an experienced independent rater, using a validated instrument. Students completed questionnaires at the completion of each problem and participated in a focus group at the end of the rotation. Tutors completed a *Group Assessment Schedule* and were interviewed by a research assistant after each tutorial. The same research assistant interviewed the patient and the clinician responsible for the patient's care, probing their perception of the PBL process, the students' learning, and any positive or negative impacts on the patient's health care.



## **Results**

Students enjoyed the group work, but had mixed feelings about the PBL format. Groups struggled with the new approach but many saw the value of exploring a problem widely and holistically. Group characteristics such as leadership and prior experience of PBL, along with tutor factors had a major influence on the outcome. Groups and tutors adopted a variety of strategies to overcome problems with the new approach. Most groups undertook an appropriate range of PBL-related tasks, although self-evaluation occurred rarely, and groups did not make full use of available resources.

Students valued the real patient contact and authenticity of the case. The patient interview was seen as a key part of the process, providing students with rich information and immediate feedback. House calls, when undertaken, provided students with many insights which were often unexpected and only appreciated in retrospect. A standardized approach was developed to case design, tutor training, and implementation of tutorials. The most suitable cases were those that were evolving or incompletely explored, with a number of dimensions to investigate, and with a level of complexity appropriate to the students' prior knowledge. The use of real patients was seen as engaging, stimulating and contextually deep, providing immediate feedback and an opportunity to integrate and apply learning. Most students felt that this approach emphasised thinking, creativity and holistic care. The authenticity and opportunity to potentially contribute to patient care created an encouraging learning environment. Patients were willing to take part, with none reporting any adverse effects.

## **Discussion**

This approach appears to be consistent with the literature on PBL and the use of real patients, and extends the literature on clinical PBL by describing the added value of real patients and making specific recommendations on case selection, tutorial design and delivery and educational outcomes. There was an apparent mismatch between the educational innovation and student experiences, but tutors and groups worked together

to resolve these issues. This approach is consistent with trends towards community-based education, teaching holistic care, and the use of the patient's voice. It appears suitable for clinical teaching in a variety of settings providing suitable patients matched to the learning objectives can be identified, although further work is needed to address this question.

## TABLE OF CONTENTS

Title page	i
Statement of access	ii
Statement of sources	iii
Statement on the contribution of others	iv
Declaration on ethics	v
Acknowledgements	vi
Abstract	vii
Table of contents	x
List of tables	xv
<b>CHAPTER 1 – INTRODUCTION</b>	page 1
1.1 Background and experience	page 1
1.2 General Practice education in Australia	page 8
1.3 Undergraduate education in General Practice	page 10
1.4 Postgraduate education in General Practice	page 12
1.5 Education for rural practice	page 15
1.6 The North Queensland Clinical School	page 16
1.7 Research questions	page 21
1.8 Summary	page 22
<b>CHAPTER 2 - LITERATURE REVIEW</b>	page 23
2.1 Background	page 24
2.2 Overview of problem based learning	page 25
2.3 Rationale for problem based learning	page 30
2.4 Introduction and implementation of problem based learning	page 37
2.5 Problem based learning in clinical education	page 40
2.6 Outcomes from problem based learning	page 46
2.7 Developments in medical education	page 48

2.8 Research and evaluation in medical education	page 49
2.8.1 Evaluation in medical education	page 50
2.8.2 Research in medical education	page 53
2.8.3 Methodological approaches in medical education research	page 56
2.8.4 The distinction between research and evaluation	page 58
2.8.5 Research in problem based learning	page 60
2.8.6 Evaluation instruments	page 62
2.8.6.1 Approaches to studying	page 64
2.9 Summary	page 67
<b>CHAPTER 3 – METHODS</b>	page 69
3.1 Development of the <i>Problem of the Week</i> concept	page 69
3.1.1 Organisation of the term	page 72
3.1.2 Student selection and group allocation	page 73
3.1.3 Tutor selection and training	page 74
3.1.4 Patient selection and recruitment	page 75
3.1.5 Ethical clearance	page 78
3.1.6 Case design	page 78
Case Study 1	page 80
3.1.7 Allocation of cases and tutors to groups	page 81
3.1.8 Delivery and implementation of the <i>Problem of the Week</i>	page 83
3.2 Choice of methodology	page 89
3.3 Evaluation	page 92
3.3.1 Student perspectives	page 92
3.3.2 Tutor perspectives	page 94
3.3.3 Patient perspectives	page 95
3.3.4 General Practitioner perspectives	page 95
3.3.5 Direct observation of tutorials	page 96
3.3.6 Outputs from tutorials	page 98
3.4 Data collection and analysis	page 99
3.5 Generation of research findings	page 103
3.6 Summary	page 104

<b>CHAPTER 4</b>	
<b>RESULTS &amp; DISCUSSION: THE TUTORIAL PROCESS</b>	page 106
4.1 Group work	page 106
4.2 Problem based learning format	page 109
4.3 Approach to the problem based learning process	page 113
4.3.1 Direct observation of tutorials	page 115
4.4 Gender differences	page 121
4.5 Strategies to overcome problems	page 122
4.6 Group characteristics	page 126
4.6.1 Group Assessment Schedule	page 131
4.6.2 Approaches to studying	page 135
4.7 Tutor factors	page 137
4.8 Summary	page 142

<b>CHAPTER 5</b>	
<b>RESULTS &amp; DISCUSSION: EDUCATIONAL ISSUES</b>	page 143
5.1 Learning activities	page 143
5.1.1 Learning activities: Video trigger	page 144
5.1.2 Learning activities: Hypothesis generation	page 145
5.1.3 Learning activities: Patient interview	page 147
5.1.4 Learning activities: Chart review	page 151
5.1.5 Learning activities: House call	page 152
5.1.6 Learning activities: Resource people	page 155
5.1.7 Learning activities: Literature review	page 157
5.1.8 Learning activities: Final presentation	page 158
5.2 Case design and selection	page 159
Case Study 2	page 163



6.3.3.2 Practical applications	page 232
6.4 Limitations of the study	page 233
6.5 Further research questions	page 234
6.6 Summary	page 237
<b>BIBLIOGRAPHY</b>	page 239
<b>APPENDICES</b>	
Appendix 1: Summary of the <i>Problem of the Week</i> process for tutors	page 249
Appendix 2: Consent forms and information sheet for patients	page 251
Appendix 3: Ethics approval	page 254
Appendix 4: <i>Problem of the Week</i> case outline	page 255
Appendix 5: <i>Problem of the Week</i> detailed outline for students	page 258
Appendix 6: Student questionnaire	page 261
Appendix 7: Interview proformas – students, patients, tutors	page 262
Appendix 8: Approaches to Studying questionnaire	page 264
Appendix 9: Group Assessment Schedule	page 266
Appendix 10: Problem based learning tutorial observation guide	page 270
Appendix 11: Glossary	page 272

## LIST OF TABLES

Table 2.1: Criticisms of traditional medical teaching	page 24
Table 2.2: A paper-based PBL case from the University of Liverpool	page 26
Table 2.3: The seven steps used in PBL tutorials	page 27
Table 2.4: Principles of cognitive learning	page 34
Table 2.5: Educational objectives of PBL	page 36
Table 2.6: Objectives of PBL	page 37
Table 2.7a: What to evaluate	page 51
Table 2.7b: Methods of evaluation	page 52
Table 2.8: A hierarchy of levels of evaluation	page 53
Table 2.9: Differences between research and evaluation	page 58
Table 2.10: Indicators used in evaluating educational innovations	page 64
Table 2.11: Approaches to studying questionnaire	page 66
Table 3.1: Development of the <i>Problem of the Week</i>	page 71
Table 3.2: The Year 5 GP term (SM503), The University of Queensland, 1998	page 72
Table 3.3: Numbers of student groups and <i>Problem of the Week</i> cycles	page 74
Table 3.4: Demographic data of patients used	page 77
Table 3.5: Template of case outline	page 79
Table 3.6: Allocation of cases and tutors to groups	page 83
Table 3.7: Overhead transparencies used in the introduction to the <i>Problem of the Week</i>	page 85
Table 3.8: <i>Problem of the Week</i> : weekly cycle	page 86
Table 3.9: Problem Based Learning Tutorial Observation guide	page 98
Table 3.10: Data collection and instruments	page 101
Table 3.11: Perspectives used in discussion	page 102
Table 4.1: Summary of total observed activities by group	page 116
Table 4.2: Summary of frequency of observed activities by item	page 117
Table 4.3: Frequency and quality of activities observed	page 120
Table 4.4: Group Assessment Schedule summary	page 132



Table 4.5 Comparison of direct observation with Group Assessment Schedule	page 134
Table 4.6: Approaches to studying questionnaire	page 136
Table 5.1: Student questionnaire – usefulness of the <i>Problem of the Week</i>	page 182