

~ 1 ~

DEVELOPING RATIONAL PRESCRIBING COMPETENCE IN MEDICAL SCHOOL: AN INVESTIGATION OF THE RELATION BETWEEN STUDENT PERCEPTIONS AND EXAMINATION PERFORMANCE

Shirra Moch



A research report submitted to the School of Education, Faculty of Humanities, University of the Witwatersrand in partial fulfilment of the requirements for the degree of Master of Education (Tertiary Teaching)

Johannesburg
November 2009

DECLARATION

I declare that this research report is my own unaided work. It is submitted for the degree of Master of Education (Tertiary Teaching) in the University of the Witwatersrand, Johannesburg. It has not been submitted before for any other degree or examination in any other University.

Shirra Leah Moch

November 2009

ABSTRACT

Prescribing medicines is the primary intervention that most doctors offer to influence their patients' health; however concerns have been expressed about the extent to which graduates are prepared by medical schools to assume prescribing responsibility. Both students and clinical teachers have identified a gap between workplace prescribing demands placed on newly qualified doctors and their preparation for this complex activity during undergraduate training. This study explored the exit-level prescribing performance of final-year students in the Graduate Entry Medical Programme at the University of the Witwatersrand compared with students' perceptions of their prescribing competence. The results indicated a disparity between students' competence and confidence. Examination marks showed that 83.6% of students were competent to prescribe according to the graduating standards of the University; however, questionnaire data revealed that 66% of students did **not** feel that their training had enabled them to prescribe rationally. This inconsistency was explored by analysis of the examination papers according to Bloom's Revised and the SOLO Taxonomies. It was concluded that students score well on questions which test recall and application of knowledge, but some do not manage questions involving evaluation. Since prescribing is a complex skill that requires evaluative competence, this may explain why, despite high examination scores, students remain insecure. Exploration of the structure of knowledge through a Bernsteinian lens revealed that curricular components including problem-based learning and horizontal integration constrain epistemic access to the structure of rational prescribing knowledge for some students. It is recommended that rational prescribing skills should be taught as a synchronous strand within the curriculum, rather than in the current integrated mode. Learning could also be improved by innovative pedagogies associated with active learning and improved feedback.

Key Words: Medical education, rational prescribing, curriculum, assessment, student perceptions

ACKNOWLEDGEMENTS

Undertaking mastery of an entirely new discourse has not been a lonely endeavour. For their contributions in assisting my neural plasticity I express my gratitude to

- Dr Dev Naidoo, the architect of the superannuated scaffold necessary to re-start my education explorations. Her ability to hone the focus and redirect my enthusiasms towards productive routes of enquiry attest to her supervisory skills. On a personal note, her quiet encouragement in the face of my frenzied schedule allowed me not to lose hope that this project could be completed.
- The inspiring group of educators who shared of themselves and their expertise in revealing a new dimension of the Universe to me: Professor Jane Castle, the late Mrs Irene Broekman, Professor Yael Shalem, Mrs Stella Granville, Ms Alison Button, Mrs Laura Dison, Dr Jenny Stacey, Ms Cheryl Chamberlain and Professor Karin Brodie. As co-ordinators and lecturers of the M.Ed coursework, each of them was instrumental in developing my understanding along different trajectories (and making explicit the links!)
- Dr Lionel Green-Thompson who, as the Clinical Course Coordinator of the GEMP, granted permission for the study to be conducted and graciously agreed to co-supervise this project in the face of innumerable other commitments.
- Mrs Mignon Coetzee (Operations Officer) and Mrs Natashya Bennett (Examinations Officer) of the Centre for Health Science Education both gave of their very valuable time to process the final examination papers to produce selected statistics for a “Prescribing Examination”.
- Dr Di Manning, GEMP Course Coordinator, one-time fellow M.Ed student, then torchbearer and inspiration – for constant encouragement through many a dark day.
- The lady with the megawatt smile, Mrs Lizette Manchest, Departmental secretary of the Division of Pharmacology, who zealously guarded my closed door the day before due assignments and shared her technical expertise with generosity and flair!
- Dr Leonie Harmse, friend and confidante- whose witchcraft in the DNA lab seriously tempted me to abandon qualitative studies.

- Dr Crystal Eaglestone, superstar student, pharmacist, and now medical doctor: For your invaluable input and insights into studying within the Faculty. Your encouragement and enthusiasm definitely spurred me on to complete this work!
- Ms Katie Harries, therapeutics researcher from UKZN, who encouraged me to undertake the study and generously shared her test structure for usage and comparison.
- Long-time colleagues in the Division of Pharmacology, Professor Ivan Havlik, Dr Robyn van Zyl and Dr Neil Butkow. For participating in extra MCQ adjudication meetings and reminding me that sometimes the old ways are best.
- The students in the GEMP graduating class of 2008, whose enthusiastic participation facilitated this research.
- My Magnificent Men: Moshe, Shim, Shmueli, Jonathan and Dad. For surviving Bernstein at supper-table discussions and allowing me the liberty of keeping a corner of my life for myself.

TABLE OF CONTENTS

Declaration	ii
Abstract	iii
Acknowledgements	iv

CHAPTER 1: INTRODUCTION

1.1	Problem Statement	1
1.2	Importance of the Research	3
1.3	Research Aims	5
1.4	Research Questions	6
1.5	Theoretical Framework	6
1.5.1	The Nature of Rational Prescribing Skills	6
1.5.2	Assessment of Rational Prescribing Skills	7
1.5.3	Factors Affecting Epistemic Access	9
1.6	Outline of Chapters	9

CHAPTER 2: RESEARCH CONTEXT

2.1	Changes in Approach to Medical Education	11
2.2	The New Medical Curriculum at the University of the Witwatersrand	11
2.3	Curricula for Developing Competence in Rational Prescribing Skills	13
2.3.1	International Policies.	13
2.3.2	Local Perspectives	18
2.3.3	The Prescribing Curriculum within the GEMP	18
2.3.3.1	<i>The Basic Pharmacology Curriculum</i>	19
2.3.3.2	<i>The Clinical Therapeutics Curriculum</i>	21
2.3.3.3	<i>Theories of Curricular Delivery</i>	22
2.3.3.4	<i>The Division of Pharmacology in the School Of Therapeutic Sciences</i>	27

CHAPTER 3: LITERATURE REVIEW

3.1	Prescribing Competence versus Professional Proficiency	30
3.2	Measuring Prescribing Competence	30
3.2.1	Single-best answer MCQs	32
3.2.2	Extended matching questions	33
3.3	Classification of MCQ Statements Within a Hierarchy of Educational Objectives	33
3.3.1	Bloom's Taxonomy	33
3.3.2	The SOLO Taxonomy	34
3.4	International Student Perceptions of Prescribing Competence	35
3.5	Prescribing Competence of South African Graduates	36

CHAPTER 4: RESEARCH DESIGN

4.1	Introduction	38
4.2	Methodology	38
4.3	Operationalization	39
4.3.1	Analysis of Student Examination Performance	39
4.3.2	Surveying the Perceptions of Students Questionnaire	39
4.3.3	Analysis of the Final Integrated Examinations	40
4.3.4	Statistical Analysis	41
4.4	Validity, Reliability and Trustworthiness	42
4.5	Ethical Considerations	43

CHAPTER 5: RESEARCH FINDINGS AND INTERPRETATIONS

5.1	Students' Prescribing Performance	45
5.1.1	Prescribing Marks	46
5.1.2	Analysis of MCQ Item Construction	48
5.1.3	Comparison of Prescribing Examination Marks with the Overall (FullExam) Marks.	51
5.2	Correlation Of Examination Performance With Students' Perceptions Of Competence	55
5.3	Analysis Of Assessment Of Rational Prescribing Competence In The Final Integrated Examinations	59
5.3.1	Classification According to the SOLO Taxonomy	59
5.3.2	Classification According to Bloom's Revised Taxonomy	61
5.3.3	Classification According to Prescribing Outcomes	63
5.3.4	Validity and Reliability of the Exam	64
5.4	Student Perceptions Of Curricular Delivery Of Rational Prescribing Skills	66
5.4.1	Quantity of Rational Prescribing Skills Delivered in the Curriculum	67
5.4.2	Sequencing of Pharmacology	70
5.5	Factors Which Students Identify As Influential In Their Learning Of Rational Prescribing Skills	75
5.5.1	Student Perceptions of Examinations	75
5.5.2	Situated Learning	79
5.6	A Perspective on Developing Rational Prescribing Skills in Medical School	85
5.6.1	Distributive Rules	85
5.6.2	Recontextualisation Rules	86
5.6.3	Evaluative Rules	87

CHAPTER 6: CONCLUSIONS AND RECOMMENDATIONS.

6.1	Conclusions	88
6.2	Limitations of the Study	89
6.3	Recommendations	90
6.4	Future Research	91
	 REFERENCES	 93
	 APPENDICES	
A	Clearance Certificate Human Ethics Research Committee	104
B	Types of Data and Percentage Response Rates for Perceptions Survey	105
C	Perceptions Questionnaire and Responses	107
D	Results of Analysis of Examination Questions According to Taxonomies	116
E	Guidelines for Application of the Taxonomies to Examination Questions	
	Levels Applied in Designation of the Responses Required for the SOLO Taxonomy	119
	Criteria Used In The Coding Of Exam Questions According To Bloom's Taxonomy: The Knowledge Dimension.	120
	Criteria Used In The Coding Of Exam Questions According To Bloom's Taxonomy: The Cognitive Process Dimension.	121
F	Sample Examination Papers (withheld from public copies)	122