The Interpreted Curriculum: Students’ Constructions of Problem-Based Learning Groups

Vicki Skinner

School of Dentistry
The University of Adelaide

Submitted as a requirement for the degree of
Doctor of Philosophy in Dentistry

2010
# Table of Contents

Supervisors .................................................................................................................................................. xi
Declaration .................................................................................................................................................... xi
Acknowledgements ........................................................................................................................................ xiii
Abstract ........................................................................................................................................................ xv
List of Tables ................................................................................................................................................ xvii

Chapter 1. Introduction ................................................................................................................................. 1

Chapter 2. Conceptions of PBL: *What is an ideal group?* ................................................................. 7

Chapter 3. Research in PBL: *What do we know about groups?* ......................................................... 29

Chapter 4. Methodology ............................................................................................................................. 59

Chapter 5. Group structure and function: *Finding a niche* ................................................................. 89

Chapter 6. Group dynamics and function: *Getting on with each other* ........................................... 111

Chapter 7. Groups and work: *Assembling knowledge* ......................................................................... 131

Chapter 8. Groups and learning: *Transmitting knowledge* ................................................................. 155

Chapter 9. PBL groups in Dublin: *PBL groups in another School* .................................................... 175

Chapter 10. The interpreted curriculum: *The students’ ideal group* ............................................... 201

Chapter 11. Conclusion .............................................................................................................................. 235

References .................................................................................................................................................. 245

Appendices ................................................................................................................................................ 257
Table of Contents (detailed)

Supervisors ................................................................................................................................. xi
Declaration ..................................................................................................................................... xi
Acknowledgements ...................................................................................................................... xiii
Abstract ......................................................................................................................................... xv
List of Tables .................................................................................................................................. xvii

Chapter 1. Introduction .................................................................................................................. 1

Chapter 2. Conceptions of PBL: What is an ideal group? ............................................................... 7
  2.1 Introduction .......................................................................................................................... 7
  2.2 Defining PBL: Positioning the group .................................................................................. 8
    2.2.1 PBL at McMaster: The multi-potential group ............................................................... 8
    2.2.2 PBL in other places and times: Context vs. means of learning .................................. 10
    2.2.3 Defining PBL: Summary ......................................................................................... 15
  2.3 Theorising PBL: Explaining the group .............................................................................. 16
    2.3.1 The McMaster explanation: Justifying outcomes ...................................................... 17
    2.3.2 Constructivist learning theories: Locating learning ................................................... 18
    2.3.3 Constructivist explanations of PBL: From individuals to groups ............................ 20
    2.3.4 Collaboration in PBL: Adding a social dimension ..................................................... 22
    2.3.5 Theorising PBL: Summary ..................................................................................... 25
  2.4 Conceptions of PBL: Summary and conclusions ................................................................. 25

Chapter 3. Research in PBL: What do we know about groups? ..................................................... 29
  3.1 Introduction .......................................................................................................................... 29
  3.2 PBL as curriculum innovation: Implementing and evaluating PBL .................................... 29
    3.2.1 Student outcomes: Does PBL work? ....................................................................... 30
    3.2.2 Tutor selection: Does expertise matter? ................................................................... 30
  3.3 PBL as a constructivist learning environment: How does PBL work? .............................. 33
    3.3.1 Facilitating group function: What makes an effective tutor? ................................. 33
    3.3.2 Constructivist learning: How do students learn in PBL? ......................................... 37
      3.3.2.1 Group as background: How does individual knowledge develop? .................... 38
      3.3.2.2 Group as context: How does shared knowledge develop? ................................. 39
      3.3.2.3 Group as learning team: How does scaffolded learning occur? ......................... 45
    3.3.3 Group dynamics: What underpins group function? ............................................... 48
3.3.4 PBL as a constructivist learning environment: Summary.........................52
3.4 PBL as interpreted curriculum: How do students implement PBL? ................52
3.5 Research in PBL: Summary and Conclusion .................................................55

Chapter 4. Methodology ....................................................................................59

Part 1: Planning and doing research ....................................................................59
4.1 Introduction ........................................................................................................59
4.2 Quality and reflexivity .......................................................................................59
4.3 Genesis of a research question ..........................................................................62
4.4 Planning research ..............................................................................................63
   4.4.1 Methodology and methods .........................................................................63
   4.4.2 Research plan ............................................................................................65
   4.4.3 Participants ...............................................................................................66
   4.4.4 Ethical considerations ...............................................................................67
4.5 Putting plans into action ..................................................................................69
   4.5.1 Recruiting participants .............................................................................69
   4.5.2 Observing in Adelaide ..............................................................................70
   4.5.3 Interviewing .............................................................................................73
   4.5.4 Analysis ....................................................................................................77
   4.5.5 Dublin .......................................................................................................79
   4.5.6 Writing .......................................................................................................81
4.6 Planning and doing research: Summary and conclusion ..................................82

Part 2: The research context ...............................................................................83
4.7 Curriculum structure .........................................................................................83
   4.7.2 PBL format ..............................................................................................85
   4.7.3 Group format ...........................................................................................86
   4.7.4 Student orientation to PBL ......................................................................87
   4.7.5 PBL problem content ..............................................................................87
   4.7.6 Assessment format ..................................................................................88

Chapter 5. Group structure and function: Finding a niche .........................89

5.1 Introduction .......................................................................................................89
5.2 Group development: We didn”t set specific roles to people .......................89
5.3 Group roles: Official and Unofficial roles ......................................................90
5.4 Leaders: We definitely had a leader ...............................................................92
Chapter 7. Groups and work: Assembling knowledge ......................... 131

7.1 Introduction .......................................................................................... 131
7.2 Stage 1: In the group .............................................................................. 132
  7.2.1 Group purpose: We’re supposed to know something ....................... 132
  7.2.2 Group activities: Stuff we did as a group ......................................... 134
  7.2.3 Group advantage: See all of the problem ......................................... 135
  7.2.4 Group disadvantage: Different ideas .............................................. 136
  7.2.4 Stage 1: Summary ........................................................................... 137
7.3 Stage 2: Doing the work ........................................................................ 137
  7.3.1 Group purpose: The group summary .............................................. 138
  7.3.2 Group activities: Subdivide and allocate work ................................. 141
  7.3.3 Group advantage: More information more easily ......................... 142
  7.3.4 Group disadvantage: Wasting time ............................................... 144
  7.3.5 Stage 2: Summary ........................................................................... 148
7.4 Stage 3: The mixed group ..................................................................... 148
  7.4.1 Group purpose and activity: Exchange knowledge, present summaries 149
  7.4.2 Group advantage: Don’t all have to research it .............................. 150
  7.4.3 Group disadvantage: Solo collaboration ........................................ 151
  7.4.4 Stage 3: Summary ........................................................................... 152
7.5 Groups and work: Summary and conclusion ..................................... 152

Chapter 8. Groups and learning: Transmitting knowledge .................. 155

8.1 Introduction .......................................................................................... 155
8.2 Stage 1: Pick up information ................................................................. 155
  8.2.1 Knowledge gains ........................................................................... 155
  8.2.2 Stage 1 Learning: Summary ............................................................ 158
8.3 Stage 2: Only know your bit ................................................................. 158
  8.3.1 Knowledge gains ........................................................................... 158
  8.3.2 Stage 2 Learning: Summary ............................................................ 160
8.4 Stage 3: Not 100% reliable ................................................................... 161
  8.4.1 Knowledge gains ........................................................................... 161
  8.4.2 Stage 3: Learning: Summary ............................................................ 163
8.5 Other views on PBL learning ............................................................... 163
8.6 The value of the group: It frees me up ............................................... 165
8.6.1 Assessment and priorities .............................................................. 166
8.7 Other group outcomes: It’s about group skills ........................................ 169
  8.7.1 Group skills ................................................................................. 170
  8.7.2 Other group outcomes: Summary ............................................... 172
8.8 Groups and learning: Summary and conclusion .................................... 173

Chapter 9. PBL groups in Dublin: PBL groups in another School ........ 175

9.1 Introduction .................................................................................... 175
9.2 Dublin methodology ......................................................................... 175
9.3 Dublin curriculum differences .......................................................... 176
  9.3.1 PBL format .................................................................................. 176
  9.3.2 Group format ................................................................................ 176
  9.3.3 Problem content .......................................................................... 177
  9.3.4 Assessment format ........................................................................ 177
9.4 Dublin group structure and function: Niche-finding ............................. 177
  9.4.1 Group development and roles ...................................................... 178
  9.4.2 Leaders and leadership ............................................................... 179
    9.4.2.1 The chair ................................................................................. 179
    9.4.2.2 The dominant people ............................................................. 182
  9.4.3 Other group roles ........................................................................ 184
  9.4.4 Group structure and function: Summary ...................................... 184
9.5 Dublin group dynamics and function: Being comfortable ..................... 185
  9.5.1 Green group ................................................................................ 185
  9.5.2 Purple group ................................................................................ 187
  9.5.4 Group dynamics and function: Summary .................................... 188
9.6 Dublin groups and work: Assembling knowledge ................................ 188
  9.6.1 Group purpose and activity ......................................................... 188
  9.6.2 Group advantage ........................................................................ 192
  9.6.3 Group disadvantage .................................................................... 193
  9.6.4 Groups and work: Summary ..................................................... 194
9.7 Dublin groups and learning: Transmitting knowledge ............................ 195
9.8 The value of the group: If you don’t pick up on something .................... 196
9.9 PBL groups in Dublin: Summary and conclusion .................................. 199
Chapter 10. The interpreted curriculum: The students’ ideal group..................201
10.1 Introduction ............................................................................................................ 201
10.2 Group climate ......................................................................................................... 202
    10.2.1 Group climate: Supporting and helping ......................................................... 202
    10.2.2 Group climate: Social bonding ........................................................................ 204
10.3 Team spirit .............................................................................................................. 207
    10.3.1 Team spirit: Belonging .................................................................................... 207
    10.3.2 Team spirit: Responsibility ............................................................................. 210
10.4 Participation ............................................................................................................ 212
    10.4.1 Participation: Roles .......................................................................................... 212
    10.4.2 Participation: Power and decision-making ...................................................... 215
    10.4.3 Participation: Competition and conflict ........................................................... 219
10.5 Work and learning .................................................................................................. 220
    10.5.1 Work and learning: Assembling and transmitting knowledge ......................... 220
    10.5.2 Work and learning: Collaboration ................................................................... 224
10.6 The students’ ideal group ....................................................................................... 226
10.7 The interpreted curriculum: Summary and conclusion ........................................ 233

Chapter 11. Conclusion .....................................................................................235

References .................................................................................................... 245

Appendices ................................................................................................... 257

Appendix 1. Adelaide observation schedule ............................................................ 257
Appendix 2. Dublin research schedule ...................................................................... 258
Appendix 3. Adelaide student invitation .................................................................... 259
Appendix 4. Adelaide project information sheet ....................................................... 260
Appendix 5. Dublin student invitation ....................................................................... 261
Appendix 6. Dublin project information sheet ............................................................ 262
Appendix 7. Adelaide first-year PBL packages (excerpt from yearbook) .................... 263
Appendix 8. Dublin first-year PBL packages, Michaelmas Term, 2005 ....................... 265
Appendix 9. Adelaide student PBL assessment criteria ............................................. 266
Appendix 10. Dublin student PBL self-assessment criteria ......................................... 267
Appendix 11. Adelaide pseudonym letter .................................................................... 268
Appendix 12. Observation notes, Week 8, Yellow (excerpt) ....................................... 269
Appendix 13. Group themes and codes (excerpt from NVivo) .................................. 271
Supervisors

Associate Professor Tracey Winning, School of Dentistry, Faculty of Health Sciences, The University of Adelaide

Professor Annette-Braunack Mayer, School of Population Health and Clinical Practice, Faculty of Health Sciences, The University of Adelaide

Adjunct Associate Professor Gerry Mullins, School of Mechanical Engineering, Faculty of Engineering, Computer and Mathematical Sciences, The University of Adelaide

Associate Professor Ray Peterson, Discipline of Medical Education, Mayne Medical School, The University of Queensland

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 give consent to this copy of my thesis, when deposited in the University Library, being made available for loan and photocopying, subject to the provisions of the Copyright Act 1968.

I also give permission for the digital version of my thesis to be made available on the web, via the University’s digital research repository, the Library catalogue, the Australasian Digital Theses Program (ADTP) and also through web search engines, unless permission has been granted by the University to restrict access for a period of time.

Vicki Skinner          Witness:

Date:               Date:
Acknowledgements

Undertaking a PhD and producing this thesis has been a developmental journey and I would sincerely like to thank all of my travelling companions and guides. At times I made great progress, charting my way forward confidently, at other times I felt lost or confused and could not see any clear path, sometimes I went down blind alleys, and sometimes I went around in circles. But travelling is always a learning experience, and, looking back, I can see how all the parts of my journey and my companions and guides have contributed to the researcher and person I am now.

I would sincerely like to thank the students and staff of the Adelaide and Dublin Dental Schools, whose willing participation made the project possible and enjoyable.

The journey would not have been possible without my supervisory panel, Tracey Winning, Annette Braunack-Mayer, Gerry Mullins, and Ray Peterson. They were a wonderful team of mentors, who provided their time, guidance, support, and humour in good measure. Just like the students in this thesis, I needed social, emotional, and academic support in the new world of being a post-graduate researcher. Many thanks to all of them for fulfilling this need so well. Each contributed their own expertise to this project. Thank you too for all the laughs and the occasional tissue.

As a novice researcher, I also had the companionship of others undertaking similar journeys. Having fellow PhD candidates was an important source of support; we constantly traded tips and resources. I would particularly like to thank my two close travelling companions: my colleague and friend Dimitra Lekkas, a fellow PhD student in Dentistry, and Anne-Marie Murray, also a friend and colleague in the Faculty of Health Sciences, both of whom were also doing research involving dental and medical students respectively.

Of course doing a PhD is not a 9.00-to 5.00 occupation; the thesis was a constant presence in my life whether I was actively working on it or having a break. Therefore, I’d like to thank all the people in my personal life who provided the love and support that made such a difference. Sincere thanks to my parents, Ruth and Bob Skinner, for the endless love, support and tactful avoidance of talking about “it” when “it” wasn’t going so well. You found so many ways to ease the burden, thank you especially for your gardening efforts: the view from my desk is much nicer. Thanks also to my brother Stuart and sister-in-law Heather, for your love and support.
My family at home, my partner Michael, and his sons Liam, Lachlan, and Hamish, and Liam’s partner Sebastian, have participated closely and supportively in the ups and downs of life with a PhD. Thanks to all of you and for all the hugs and laughs. Sebastian provided IT support that helped when things would not work for reasons that were beyond me. Liam’s cheerful assistance with the painstaking job of referencing and checking for typos and other errors was invaluable. Finally, Michael, my friend and partner, has been my closest travelling companion, having unwavering belief in me and my ability to complete the journey successfully. He has given me endless love, support, and encouragement, knowing when to push and when to be gentle to help me keep going. Thank you.

Editorial acknowledgement

I would like to thank Catherine Offler, from the School of Dentistry, for her editorial assistance. Catherine assisted with the formatting of the thesis. She compiled the separate chapter documents into a single document, paginated the document, applied styles to headings to construct the table of contents, formatted the appendices, and assisted me with formatting the text consistently.

Funding acknowledgements

Thank you to the School of Dentistry for providing postgraduate student funding. I would also like to sincerely thank the following organisations for their generous support of this work in the form of scholarships, research grants, and travel grants.

The University of Adelaide
- Faculty of Health Sciences Divisional Scholarship 2003-2006
- School of Dentistry JL Eustace Memorial Award 2004, 2005, 2006
- Faculty of Health Sciences Postgraduate Travelling Fellowship 2005
- Contribution to the Faculty of Health Sciences Postgraduate Travelling Fellowship 2005
- Research Abroad Scholarship 2005

The Australian Federation of University Women, South Australia
- Winifred E. Preedy Postgraduate Bursary, 2005

The Australian Dental Research Foundation Grant
- “The role of groups in a problem-based learning environment” 2004
- “A cross-site study of the role of groups in a problem-based learning environment” 2005
Abstract

In this thesis, I address the meaning of problem-based learning (PBL) groups for students. The group is generally a core element of PBL. Theoretical conceptions of the ideal PBL group have ranged from it being a setting for individual knowledge development to it being a site for students’ professional enculturation. However, PBL research from diverse theoretical perspectives has produced results about groups that are not consistent with theoretical conceptions of groups. Research has also demonstrated that students interpret PBL differently to theoretical and curriculum conceptions of PBL, hence the notion of „interpreted curriculum“. These findings raise the issue of how students interpret PBL groups and the implications this has for practice.

My study addressed this aspect of the interpreted curriculum via the following research questions: What is the nature of a PBL group for students? What is the purpose and value of a PBL group for students? Informed by social constructionist theory, the study was a qualitative investigation based on an ethnographic approach, employing observation and interviewing to collect data. The participants were volunteer first-year undergraduate dental students in Adelaide, Australia and Dublin, Ireland.

The thesis contributes to knowledge about PBL groups and provides recommendations for practice. It explains how students understood PBL group structure, dynamics and function, and how they understood work and learning in relation to PBL and the group. In response to the research questions, I found that, for students, the nature of the PBL group was primarily social, with its success related to the personality mix of group members and the subsequent roles and relationships. The group purpose in PBL was to do the work of gathering knowledge, which then supplemented the private learning efforts of individual members, which was constructed as taking in knowledge. In both Dental Schools, the value of the group was to provide social, emotional, and academic support to students, although learning support varied in each School according to the curriculum and assessment structure.

Based on students’ explanations, I describe a student ideal group and develop my account of the interpreted curriculum by comparing this group to a theoretical ideal group. While the student group was socially driven and separated work and learning, the theoretical group was primarily a work group that integrated work and learning. To
account for this, I explain that students constructed PBL groups with a conceptual framework that was inconsistent with the conceptual foundation of the theoretical PBL group.

The wider contribution of this thesis is to illustrate that students operated with explicit and implicit understandings that were counter to the theoretical principles on which PBL groups were based and designed, and that this had ramifications for group function. The recommendations for practice take account of these differences, and aim to help students to establish PBL groups that function on the model of a professional team. The recommendations are designed to assist students to develop their concepts of teams, knowledge, and learning, and to enhance students’ personal, professional, and academic development through participation in PBL groups.
List of Tables

Table 2.1 Constructivist learning theories 19

Table 4.1 Adelaide interview participants 75

Table 4.2 Dublin interview participants 80

Table 4.3 The relationship between Adelaide and Dublin PBL steps 86

Table 5.1 Summary of “unofficial” group roles and functions 91

Table 10.1 Parameters of the functional approach to groups 226