

# Collaborative learning: Students' perceptions and experiences

---



THE UNIVERSITY  
*of* ADELAIDE

Abdulaziz Ali R Almajed

BDS (King Saud University), MSc (The University of Manchester), MOrth  
RCSEd (Edinburgh)

Thesis submitted for the Doctor of Philosophy  
School of Dentistry  
The University of Adelaide  
Adelaide, South Australia  
Australia

March 2015

---

# Table of contents

---

<b>Table of contents</b> .....	<b>ii</b>
<b>Tables</b> .....	<b>vi</b>
<b>Figures</b> .....	<b>vii</b>
<b>Appendices</b> .....	<b>viii</b>
<b>Abbreviations</b> .....	<b>ix</b>
<b>Abstract</b> .....	<b>x</b>
<b>Declaration</b> .....	<b>xii</b>
<b>Acknowledgments</b> .....	<b>xiii</b>
<b>Achievements during candidature</b> .....	<b>xv</b>
<b>Chapter 1 Introduction</b> .....	<b>1</b>
1.1 Introduction .....	1
1.2 Structure of the thesis .....	4
<b>Chapter 2 Collaborative learning: Theory and practice</b> .....	<b>8</b>
2.1 Introduction .....	8
2.2 Theoretical background .....	8
2.3 Implementing collaborative learning: issues and outcomes .....	15
<b>Chapter 3 Methods of Study One: The comprehensive systematic review</b> .....	<b>23</b>
3.1 Objectives .....	23
3.2 Inclusion criteria .....	23
3.2.1 Types of participants .....	23
3.2.2 Phenomena of interest .....	24
3.2.3 Types of studies .....	24
3.3 Search strategy .....	24
3.3.1 Setting the search terms for each electronic database .....	26
3.3.2 Initial database searching results .....	26
3.3.3 Scanning and coding retrieved papers .....	27
3.4 Method of the review .....	27
3.4.1 Assessment of methodological quality .....	27
3.4.2 Data collection .....	28
3.4.3 Data synthesis .....	28
3.5 Results of the search .....	28
3.5.1 Description of studies .....	28
3.5.2 Description of included studies .....	31
3.5.3 Qualitative component .....	31
3.5.4 Quantitative component .....	31
3.5.5 Description of excluded studies .....	32
3.6 Methodological quality .....	32
3.6.1 Qualitative component .....	32
3.6.2 Quantitative component .....	36
<b>Chapter 4 Results of Study One: qualitative component</b> .....	<b>40</b>
4.1 Results of qualitative research findings .....	40
4.2 Meta-synthesis 1: Learning: Positive interactions and tensions .....	40
4.2.1 Category 1: Comparing and debating .....	42
4.2.2 Category 2: Diversity of ideas .....	43
4.2.3 Category 3: Tensions .....	45
4.2.4 Category 4: Sharing and structuring of information .....	47

4.2.5	Category 5: Prior learning or preparation .....	48
4.3	Meta-synthesis 2: Factors that hindered learning .....	49
4.3.1	Category 6: Under or over participation .....	49
4.3.2	Category 7: Tutor guidance and monitoring .....	50
4.4	Meta-synthesis 3: Factors that hindered group cohesion .....	52
4.4.1	Category 8: Heterogeneous groups .....	53
4.4.2	Category 9: Inadequate preparation .....	54
4.4.3	Category 10: Organisational factors .....	55
4.5	Meta-synthesis 4: Students' input and control .....	56
4.5.1	Category 11: Role of tutor .....	56
4.5.2	Category 12: Content and direction .....	57
4.6	Meta-synthesis 5: Positive outcomes.....	58
4.6.1	Category 13: Motivation and responsibility .....	59
4.6.2	Category 14: Training for the real work environment .....	62
4.6.3	Category 15: Emotional support .....	62
4.6.4	Category 16: Personal development.....	63
<b>Chapter 5</b>	<b>Results of Study One: quantitative component .....</b>	<b>65</b>
5.1	Results of the quantitative research findings.....	65
5.2	Students' perceptions of collaborative learning activities: Frequency and relationships between interactions and learning .....	65
5.3	Students' perceptions of factors that facilitate/inhibit collaborative learning .....	68
5.3.1	Factors that support/facilitate group cohesion .....	68
5.3.2	Factors important for learning course content .....	69
5.3.3	Frequency and impact of individual and group behaviours that hindered learning.....	70
5.3.4	Role of the tutor in group learning and group process .....	74
5.4	Student's perceptions of the other outcomes of collaborative learning .....	74
5.5	Students' understandings of the core elements of learning in collaborative learning .....	76
<b>Chapter 6</b>	<b>Discussion of Study One: The comprehensive systematic review .....</b>	<b>77</b>
6.1	Discussion.....	77
6.2	Limitations of the review .....	84
6.3	Conclusions .....	84
6.4	Implications for practice .....	85
6.5	Implications for research .....	87
<b>Chapter 7</b>	<b>Introduction to Study Two: Dental students' perceptions of learning collaboratively .....</b>	<b>88</b>
7.1	Introduction .....	88
7.2	Study aims.....	89
7.3	The research context and curriculum structure .....	89
<b>Chapter 8</b>	<b>Methods of Study Two .....</b>	<b>92</b>
8.1	Study design .....	92
8.1.1	Introduction .....	92
8.1.2	Methodological approach .....	92
8.1.3	The role of the researcher in Study Two .....	93
8.1.4	Ethical considerations .....	94
8.2	Sampling process .....	95
8.2.1	Participants.....	95
8.2.2	Recruitment process.....	96
8.3	Data collection.....	97

8.3.1	Focus group question development .....	97
8.3.2	Pilot testing focus group and question modification .....	98
8.3.3	Participant characteristics and focus group process .....	99
8.3.4	Transcription .....	101
8.3.5	Developing analysis and the parallel modification of the questions .....	101
8.3.6	Follow-up emails .....	106
8.4	Analysis .....	106
8.4.1	Coding process and formation of coding framework .....	107
8.4.2	Initial result .....	109
<b>Chapter 9</b>	<b>Results of Study Two .....</b>	<b>112</b>
9.1	Introduction .....	112
9.2	Final/latent thematic analysis .....	113
9.3	Context (Situation) .....	114
9.3.1	Difference .....	114
9.3.2	Facilitating factors .....	115
9.3.3	Inhibiting factors .....	121
9.4	Group/learning interactions (Interactions) .....	125
9.4.1	“Sharing” .....	125
9.4.2	Questioning each other and explaining .....	126
9.4.3	Confirming and challenging knowledge and filling the gaps .....	127
9.5	Group and learning processes .....	129
9.5.1	Knowledge conflicts .....	129
9.5.2	Active thinking and processing .....	134
9.5.3	Visualising, organising and linking information .....	135
9.5.4	Comparing and linking different information .....	136
9.6	Outcomes (Effects) .....	138
9.6.1	Benefits and positive outcomes of knowledge conflicts .....	138
9.6.2	Learning outcomes of questioning and explaining to each other .....	140
9.6.3	Value of learning in groups .....	142
9.6.4	Negative effects of learning in groups .....	145
<b>Chapter 10</b>	<b>Discussion of Study Two: Dental students’ perceptions of learning collaboratively .....</b>	<b>150</b>
10.1	Introduction .....	150
10.2	Context .....	150
10.2.1	Group .....	151
10.2.1.1	<i>Heterogeneity: group member background and experiences .....</i>	<i>151</i>
10.2.1.2	<i>Homogeneity: group member attributes .....</i>	<i>154</i>
10.2.1.3	<i>Other features: group size and workload .....</i>	<i>158</i>
10.2.2	Content .....	160
10.2.3	Tutor .....	161
10.3	Interactions .....	162
10.4	Processes .....	165
10.5	Effects .....	169
10.6	Limitations of Study Two .....	171
10.7	Conclusion of Study Two .....	173
<b>Chapter 11</b>	<b>Conclusions .....</b>	<b>177</b>
11.1	Introduction .....	177
11.2	Study One – The comprehensive systematic review .....	177
11.2.1	What Study One adds to our understanding .....	178
11.3	Study Two – Dental students’ perceptions of learning collaboratively .....	178
11.3.1	What Study Two adds to our understanding about collaborative learning practice in dental education .....	179
11.4	Implications for practice .....	180

11.4.1	Implications for educational practice.....	180
11.4.2	Implications for research practice .....	183
11.5	Future research .....	184
<b>References.....</b>		<b>186</b>
<b>Appendices.....</b>		<b>194</b>

## Tables

---

Table 3.1 The keywords used to generate database search strategies .....	25
Table 3.2 Results for the critical appraisal of included qualitative studies using the JBI-QARI critical appraisal instrument .....	34
Table 3.3 Results for the critical appraisal of included quantitative studies using the JBI-MAStARI critical appraisal instrument .....	38
Table 5.1 Occurrence and desirability of learning-oriented interactions and the difference between occurrence and desirability - Adapted from Visschers-Pleijers et al. (2006a, p. 28) .....	66
Table 5.2 Ratings of perceived occurrence, inhibition of learning and expectation of the tutor in managing success inhibitors for group learning - Adapted from De Grave et al. (2002, p. 205). .....	71
Table 8.1 Demographics of the first- and fourth-year student cohorts .....	96
Table 8.2 Demographics of the first- and fourth-year participating students.....	100
Table 8.3 Sequence of the focus groups and details of participating students .....	101
Table 8.4 A comparison between the initial and final key questions and related sub-questions.....	104
Table 8.5 Examples of initial themes, related codes and illustration of participant comments .....	110
Table 9.1 Students' strategies to manage conflicts of knowledge .....	130

## Figures

---

Figure 3.1 Flowchart of search results and study selection process.....	30
Figure 4.1 Illustration of the process of synthesising meta-synthesis 1 with study findings 1-40 .....	41
Figure 4.2 Illustration of the process of synthesising meta-synthesis 2 with study findings 41-56 .....	49
Figure 4.3 Illustration of the process of synthesising meta-synthesis 3 with study findings 57-67 .....	53
Figure 4.4 Illustration of the process of synthesising meta-synthesis 4 with study findings 68-76 .....	56
Figure 4.5 Illustration of the process of synthesising meta-synthesis 5 with study findings 77-98 .....	59
Figure 5.1 Summary of the identified relationships between students' interactions, learning and satisfaction - Adapted from Draskovic et al. (2004).....	68
Figure 5.2 Frequency of occurrence and degree of hindrance of group problems in relation to group learning as ranked and rated by students - Adapted from Hendry et al. (2003, p. 611). .....	73

## Appendices

---

Appendix I	Search strategy of Study One .....	194
Appendix II for Study One	Coding keywords to support decision of inclusion/exclusion of studies .....	199
Appendix III	Appraisal instruments .....	200
Appendix IV	Data extraction instruments.....	202
Appendix V	JBI levels of credibility for findings .....	206
Appendix VI	Summary details of qualitative studies included in the review .....	207
Appendix VII	Summary details of quantitative studies included in the review .....	220
Appendix VIII	List of excluded studies from Study One.....	226
Appendix IX	JBI levels of evidence for qualitative studies .....	228
Appendix X	JBI levels of evidence for quantitative studies .....	229
Appendix XI	List of qualitative study findings of Study One .....	230
Appendix XII	Assessment form of the small group tutorial component of the ILAs ...	245
Appendix XIII	Consent and recruitment documents for Study Two .....	248
Appendix XIV	Version 1 of focus group questions – used in the pilot session .....	254
Appendix XV session	Version 2 of focus group questions – modification after the pilot .....	255
Appendix XVI group 7	Version 3 of focus group questions – modification after focus .....	256
Appendix XVII	The first follow-up email.....	257
Appendix XVIII	The second follow-up email.....	258
Appendix XIX	The full list of the initial themes, codes, and sub-codes of Study Two ..	259
Appendix XX Study Two	List of themes, codes, sub-codes and other illustrations of .....	261

## Abbreviations

---

BDS	Bachelor of Dental Surgery
CL	collaborative learning
CBL	case-based learning
CSCCL	computer-supported collaborative learning
ILA	integrated learning activities
JBI	Joanna Briggs Institute
PBL	problem-based learning
MAStARI	Meta Analysis of Statistics, Assessment and Review Instrument
QARI	Qualitative Assessment and Review Instrument
TBL	team-based learning

## Abstract

---

Learning collaboratively has been used to develop attributes and skills needed by dental graduates in the 21<sup>st</sup> century and is suggested to have a number of advantages. However, it can be challenging for students in terms of self-directed learning and group cooperation. To design effective collaborative learning (CL) activities, we need to explore students' perceptions of the core features of effective CL as students' learning outcomes are influenced by their perceptions of their learning context. Therefore, the aim was to identify evidence about dental students' perceptions and experiences of CL to optimise CL approaches and outcomes for the education of dental and health professionals.

This aim was addressed through two studies. **Study One** was a comprehensive systematic review of the best available qualitative and quantitative evidence about dental and medical students' experiences of CL. **Study Two** aimed to explore students' understandings of the core elements necessary for learning collaboratively

Following methods and tools recommended by the Joanna Briggs Institute for systematic reviews, 19 papers of acceptable quality were included in the systematic review. The review identified students' perspectives regarding positive and negative factors that influenced their learning. Positive factors included maintaining group cohesion, intra-group relationships, and relevant and balanced collaborative interactions to facilitate student learning. A lack of motivation, elaboration, and/or cohesion hindered student learning. Gaps were identified in the current evidence base regarding students' collaborative learning. These gaps included students' perceptions about how learning occurs (or doesn't), their goals when learning in a CL setting, and their understandings of the role and management of conflicting knowledge. This review also identified a need for more focused studies to add to the current evidence. Therefore, the second part of this thesis aimed to address these gaps.

**Study Two** explored students' understandings of collaborative learning from a constructionist interpretive methodological perspective. Using a purposeful sampling strategy, first-year (n=14) and fourth-year (n=14) students at the Adelaide School of Dentistry (Ethics Approval: HS-2013-001) participated in focus groups and subsequent

email communication to contribute data on group learning. Each focus group was audio-recorded and professionally transcribed.

Consistent with the literature, students perceived that various features of the group made their learning a positive experience, and that a range of contextual factors facilitated or inhibited learning in their group. In addition, students acknowledged that the group learning experience provided them with key academic and social support.

Concerning the gaps identified in Study One, students' perceived that their learning was enhanced through sharing and researching their different opinions, and their learning was strongly mediated by questioning and explaining to each other, which helped them clarify doubts, improve their understanding, and reinforce their knowledge. Learning processes involved visualising, linking and comparing prior learning with new information, thinking about its relevance, and reorganising it to create a simplified story: key theoretical elements of CL.

This thesis contributes to dental education by addressing the limited research evidence about students' understanding of the elements necessary to learn collaboratively. Assisting students to understand the role of these learning processes and to develop key skills of questioning and explaining to each other, and the consequent positive contribution of their group interactions on learning could improve their CL experiences and outcomes.

## Declaration

---

I certify that this work contains no material which has been accepted for the award of any other degree or diploma in my name 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. In addition, I certify that no part of this work will, in the future, be used in a submission in my name for any other degree or diploma in any university or other tertiary institution without the prior approval of the University of Adelaide and, where applicable, any partner institution responsible for the joint award of this degree.

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.

The author acknowledges that copyright of published works contained within this thesis resides with the copyright holder(s) of those works.

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 Search and also through web search engines, unless permission has been granted by the University to restrict access for a period of time.

## Acknowledgments

---

First and foremost I wish to thank and express my sincerest gratitude to my principal supervisor, Associate Professor Tracey Winning, whose expertise, understanding, and patience added considerably to my PhD experience; without her commitment and guidance, this project would not have been possible. I appreciate her vast knowledge and skills in many areas, and the assistance, moral support and freedom she provided that allowed me to move on. She has nurtured my academic curiosity and provided her full support and inspiration for which I am truly grateful.

I would like to express a heartfelt thank you to my co-supervisors, Dr Vicki Skinner and Associate Professor Ray Peterson, for the assistance and advice they provided at all levels of the research project. They constantly supported and encouraged me throughout my candidature, providing guidance and sharing their knowledge, and I am forever indebted to them for their motivation and understanding.

I would like to express my gratitude to Dr Catalin Tufanaru, my supervisor at the Joanna Briggs Institute, for his assistance and advice throughout the conduct of the comprehensive systematic review. I must also acknowledge the University librarian, Mr Mick Draper, for his assistance during the database searches for the comprehensive systematic review.

I would like to thank Miss Karen Squires for all the support she provided in recruiting participants, conducting focus groups, and making other arrangements during my PhD course. I would also like to thank Mrs Lucy Hatch for her assistance in the recruitment process.

I would also like to thank my friends Dr Mohammed Elkishawi, Dr Akram Qutob, Dr Abdulrahman Al Azri, Eng Abdulrahman Elkishawi, Captain Abdullah Alhariri and their families for the sincere friendship and social support they provided to me and my family that helped in venting our stresses.

My heartfelt thanks go to my wife and best friend, Dur. Without her endless love, energy, encouragement and absolute patience; I would not have finished this thesis. I

would also like to thank my family for the support they provided me through my entire life. Also, I would like to acknowledge my sons, Faisal and Faris, who helped me to forget how tired I felt during this chapter of our lives.

Finally, I wish to thank my mother, Haya, who is sadly no longer with us. She saw me through every achievement and provided endless care and unconditional love throughout my life. Without her support and diligence my life would have been much more difficult and my achievements would have been impossible. I also thank my father, Ali, who we sadly lost a long time ago.

### **Editorial acknowledgment**

I would like to acknowledge Helen Jeays for providing copy editing and proofreading of this thesis including checking for clarity, consistency, typographical and spelling errors and accuracy of cross references following the guidelines of the Institute of Professional Editors (IPEd).

### **Funding acknowledgment**

I would like to thank the Australian Dental Research Foundation for their support of this work by providing a research grant, which helped me in conducting Study Two of my PhD.

In conclusion, I recognise that this work would not have been possible without the sponsorship of my country, Saudi Arabia, represented by the Medical Services Department, Ministry of Defence.

# Achievements during candidature

---

## Refereed publications

The contents of Chapters 2–6 have been published in the Joanna Briggs Institute database of systematic reviews and implementation reports as follows:

*Almajed, A. A., Skinner, V. J., Peterson, R. F., & Winning, T. A. (2014). Perceptions and experiences of collaborative learning by dental and medical students: A comprehensive systematic review. The JBI Database of Systematic Reviews and Implementation Reports, 12(6), 120-250.*

DOI: <http://dx.doi.org/10.11124/jbisrir-2014-1373>

## Published abstracts

*Almajed, A., Skinner, V., Peterson, R., & Winning, T. (2014) Collaborative learning: Understanding dental students' perceptions and experiences. Australian Dental Journal (in press).*

*Almajed A, Skinner V, Peterson R, Winning T (2013) Students' perceptions about the importance of group cohesion and interactions in relation to their learning in collaborative learning environment: A comprehensive systematic review. Colgate Australian Clinical Research Centre Research Day, Adelaide, August 2013.*

## Conference presentations

### Oral presentations

*Almajed A, Skinner V, Peterson R, Winning T (2013) Students' perceptions about the importance of group cohesion and interactions in relation to their learning in collaborative learning environment: A comprehensive systematic review. Colgate Australian Clinical Research Centre Research Day, Adelaide, August 16, 2013.*

### Poster presentations

*Almajed A, Skinner V, Peterson R, Winning T (2014) Dental students' perceptions of learning in groups. The 2014 Florey International Postgraduate Research Conference, Adelaide, September 25, 2014.*

*Almajed A, Skinner V, Peterson R, Tufanaru C, Winning T (2014) Medical and dental students' perceptions and experiences of collaborative learning: A comprehensive systematic review. The University of Adelaide School of Dentistry Research Day, Adelaide, July 11, 2014.*

*Almajed A, Skinner V, Peterson R, Tufanaru C, Winning T (2013)  
Medical and dental students' perceptions and experiences of  
collaborative learning: A comprehensive systematic review.  
The 7th Annual Faculty of Health Sciences Postgraduate Research  
Conference, Adelaide, August 29, 2013.*

### **Grant funding**

Australian Dental Research Foundation (ADRF) grant of \$3,240 awarded for the Study

Two of my thesis:

Collaborative learning: Understanding dental students' perceptions and experiences.

AA Almajed, TA Winning, VJ Skinner, RF Peterson.