

Leadership interaction in global virtual teams:
Roles, models and challenges

Averill Gordon

A thesis submitted to Auckland University of Technology in fulfilment of the
requirements for the degree of Doctor of Philosophy (PhD)

2017

School of Communication Studies

PREFACE

VIRTUAL TEAM INTERACTION: A PERSONAL JOURNEY

My journey to virtual team research started twenty years ago after a global team meeting in New York when I flew back overnight to an unusually warm London spring morning and caught a fast black cab from Gatwick, in time for an 8 a.m. international client presentation in our Covent Garden offices. I did last-minute meeting preparation in what seemed a fleeting ride, staving off nerves on the way by sipping – and spilling – hot coffee, then at the consultancy door greeting my colleagues arriving from Europe. We raced to the boardroom, flinging coats in our wake. The clients, fresh from Sweden, were quietly ushered in. We won that business but it was a tough negotiation, we had to have a global virtual team that would deliver worldwide, seamlessly. That wasn't new, we were doing it all the time, but we were asking each other how we could make these challenging programmes easier. How could our public relations (PR) practitioners around the world be motivated to deliver collaborative proposals on time, create global media events, deliver at cross-country meetings, brief spokespeople and address client crises, tailor our global material to nominated markets and sustain online relationships with each other? It was this challenge of leading virtual teams that kept me curious. Kept me learning.

Now, with communications technology, more information travels faster and further than ever before. Therefore, the reputation of a multinational organisation can be affected by both local issues and global issues and, consequently, there is a huge growth in worldwide public relations programmes (Sriramesh, 2009) communicating through technology (Archer, 2009). As a result, public relations consultancies have expanding global networks. For example, according to their websites Hill & Knowlton has 88 offices in 49 countries, Porter Novelli has 90 offices in 60 countries and WeberShandwick has a network of 126 offices in 81 cities. Their PR programmes address the demand for international expertise that is increasingly delivered by global virtual teams, that is, people dispersed in time, geography and culture who can work collaboratively.

This has motivated me to explore how PR education can include learning about global virtual teams. Furthermore, this journey has been encouraged by the growing emphasis on the need for global skills and socio-cultural awareness in public relations teaching

(Hodges, 2013; Sriramesh, 2009). Although students in management courses may be taught about leading teams, interactions, communication and decision-making, it seems that there is minimal classroom time spent on the study of virtual teams compared to face-to-face teams (Gilson, Maynard, & Bergiel, 2013). Yet there are some enthusiastic lecturers who have demonstrated that virtual collaboration opportunities can be created through structured online communication with other students (Brewer, Mitchell, Sanders, Wallace, & Wood, 2015; Flammia, Cleary, & Slattery, 2010; Gilson et al., 2013). There is a growing demand for universities to prepare students with global virtual team skills (Archer, 2009; Brewer et al., 2015; Gilson et al., 2013; Gordon & Picherit-Duthler, 2009).

Going forward we know that we need to prepare students with virtual team skills and that such a goal is best accomplished in authentic situations (Brewer et al., 2015, p. 222).

Therefore, when setting up a public relations degree in a UK university, I joined the board of an emerging global collaboration project, GlobCom, an educational initiative that gives senior PR students the opportunity to form competitive multinational teams and create global proposals from a live client brief. GlobCom involves a live industry brief that requires a PR strategy to be developed under real-time challenges by student global virtual teams, supervised by a virtual team of lecturers. The initiative prepares students to be practical and effective PR practitioners (Gordon & Picherit-Duthler, 2009) and addresses the increasing demand for PR graduates to have global capabilities (Archer, 2009; Gordon & Picherit-Duthler, 2009; Picherit-Duthler, 2011; Wolf & Archer, 2013).

GlobCom became part of the curriculum of the participating universities, including the Auckland University of Technology in New Zealand where I now work. It is this project on which the action research for this thesis is based and which provides the rare opportunity for a problem-based (Barrett & Moore, 2011) authentic learning experience (Lave, 1988). This thesis explores the dynamics of the virtual teams in GlobCom over several cycles. It has allowed me to engage with the communication within the supervisory virtual team of lecturers and the student team leaders, in order to build theory and provide practical interventions.

ABSTRACT

Despite the value of virtual teams in delivering global public relations programmes across geographical boundaries, accessing participants from diverse cultures and providing 24-hour work cycles, global virtual teams are fraught with problems. Their geographical isolation, technology, different time zones and lack of visual cues mean leaders struggle to ensure these teams reach their potential.

This longitudinal study explores leadership interactions in an annual public relations global virtual team learning project, GlobCom, which brings together an established supervisory team of lecturers and ad hoc teams of senior public relations students from 12 universities in 12 countries. The ongoing venture involves a live industry brief from an international client that requires competitive PR proposals to be developed by the student teams under real-time challenges.

The study analyses interactions among the established supervisory global virtual team of lecturers and the interactions among the student virtual team leaders and their team mentor. The action research uses empirical data and applied integrated leadership theory, including interpersonal, group and organisational analysis, within a public relations organisational paradigm, to understand how leaders could improve interaction within these global virtual teams.

The researcher is both a lecturer and team mentor to the student team leaders and has ongoing access to both the supervisory team and student team leaders. Action research is carried out within a pragmatic framework using empirically-derived data of team leader emails and online posts that are interpreted through a qualitative thematic analysis.

This analysis shows how leaders can elicit actions, adopt roles specific to virtual teams and improve team participation. It offers insights into how relational interaction, combined with a task-related approach, can help virtual teams achieve their goals. The research identifies six specific action-eliciting interactive leadership styles and their levels of efficacy in each team stage. A new leadership tool, called DEPIQA, which is created from the empirical data, can be used to develop and monitor the leadership styles and moves research beyond the current simple division of passive and constructive interaction styles.

The study shows the roles developed for face-to-face teams may not be transferrable to virtual teams and that delegated leadership roles are more effective than emerging functional roles. New team processes, leadership roles and team member roles that improve virtual team interaction are identified, along with a unique set of criteria for selecting a virtual team leader, which emphasises the need for empathy. Virtual team stages are clarified and the much needed research on later stages finds high team interaction in the later stage, as well as the initial stage.

This study provides foundational research and offers a theoretical and practical framework for emerging scholarship on virtual team leadership and online communication. The findings expand the PR body of knowledge to globalisation and leadership through its analysis of virtual teams carrying out PR programmes. How PR is implemented affects an organisation's reputation and the recommended interventions can empower practitioners, as part of the organisation's dominant coalition, to lead the virtual teams that are integral to global PR programmes.

CONTENTS

Preface Virtual Team Interaction: A Personal Journey.....	ii
Abstract	iv
List of Figures	x
List of Tables.....	xi
Attestation of Authorship.....	xii
Acknowledgements	xiii
Intellectual Property Rights	xiv
Chapter 1 Introduction	1
1.1 Virtual team leadership from a public relations perspective	3
1.2 Investigating leadership in face-to-face and virtual teams	5
1.3 Research approach	9
1.3.1 What do team leaders do to elicit actions?	10
1.3.2 How are face-to-face roles renegotiated in virtual teams?	10
1.3.3 How can team leaders encourage participation?	11
1.4 Researcher as participant	11
1.5 Structure of the thesis	12
Chapter 2 Looking back, Looking forward.....	14
2.1 The theoretical framework of public relations leadership	15
2.2 The development of leadership interaction in face-to-face teams	20
2.3 The need for socioemotional and task-related interactions	22
2.3.1 The competing values framework	25
2.4 The two dominant leadership interaction styles	29
2.4.1 Interaction between the leader, the situation and followers	31
2.4.2 The development of team stages	34
2.5 Virtual team leadership	35
2.5.1 The development of virtual team leadership	36
2.5.2 The dilemma of interactive styles in virtual teams.....	38
2.5.3 Deciding on leadership interaction styles.....	44
2.5.4 Cultural factors have an influence on interaction.....	48
2.5.5 Virtual team stages	49
2.6 Summary	51
Chapter 3 The GlobCom project	53
3.1.1 The student teams and the team leader forum	57
3.1.2 The researcher's GlobCom role.....	61
3.1.3 Virtual team research on student projects	62
Chapter 4 Research Design	68
4.1 Research Questions	68

4.2	The methodology of action research.....	71
4.2.1	Action research applied to this study.....	73
4.2.2	Participant observer.....	74
4.2.3	Ensuring academic rigour of the action research.....	76
4.2.4	Choosing action research over other methodologies.....	82
4.3	The epistemological approach of pragmatism.....	86
4.4	Research methods.....	88
4.4.1	Qualitative and quantitative content analysis.....	90
4.4.2	Data collection and selection.....	92
4.4.3	Data management.....	96
4.4.4	Summary of research design chapter.....	98
Chapter 5	Virtual teams mean never having to say you're sorry.....	101
5.1	The research context.....	101
5.2	Research overview and contribution.....	102
5.3	Research methods and data management.....	103
5.4	Identification of team stages.....	103
5.4.1	Developing the content analysis tool: DEPIQA.....	106
5.5	Results.....	109
5.5.1	Frequency of the DEPIQA functions.....	109
5.6	Discussion.....	111
5.6.1	When actions start.....	112
5.6.2	Generating actions and feedback in the later stage of a virtual team..	117
5.7	Reflection.....	120
5.7.1	Theoretical implications.....	121
5.7.2	Practical implications.....	125
Chapter 6	How face-to-face leadership roles can be renegotiated in virtual teams.....	128
6.1	The research context.....	128
6.2	The research overview and contribution.....	129
6.2.1	Leadership roles of the competing values framework (CVF).....	130
6.2.2	CVF leadership model applied to virtual teams.....	132
6.3	Research method and data management.....	134
6.3.1	Team stages and research participants.....	134
6.3.2	Applying the role criteria.....	136
6.4	Results.....	137
6.4.1	Most active stages and roles.....	137
6.4.2	Role activity within each stage and cycle.....	138
6.5	Discussion.....	140
6.5.1	Stages.....	140
6.5.2	High activity and low activity roles.....	142
6.5.3	The singular director role.....	144

6.5.4	The active and shared roles	144
6.5.5	How feedback led to change.....	145
6.5.6	Position roles and less active roles	146
6.5.7	Clarifying roles	147
6.5.8	Can interaction be in every role?.....	148
6.6	Reflection.....	152
6.6.1	Theoretical implications	153
6.6.2	Practical implications	161
Chapter 7	Great Expectations	162
7.1	Research context	162
7.2	Research overview and contribution.....	163
7.3	Research methods and data management	164
7.4	Results.....	166
7.4.1	Team stages and input output mode	166
7.4.2	Team leader interaction patterns including topics and frequency	168
7.5	Discussion	174
7.5.1	Early leadership interaction.....	175
7.5.2	Expectations and assessment of team participation.....	177
7.5.3	The forming of three different groups of leaders	183
7.6	Reflection.....	191
7.6.1	Theoretical implications	192
7.6.2	Practical implications	195
7.6.3	Supervisory team	198
Chapter 8	Conclusion.....	199
8.1	Recapitulation of purpose	199
8.2	Research questions and research findings	200
8.3	Implications of the research findings	203
8.3.1	RQ1 What do team leaders do to elicit actions?	204
8.3.2	RQ2 How are face-to-face roles renegotiated in virtual teams?.....	205
8.3.3	RQ3 How can team leaders encourage participation?.....	207
8.3.4	Stages in the team lifecycle	210
8.4	Significance	211
8.4.1	This research has several practical applications.....	212
8.5	Reflection on the action research methodology.....	213
8.6	Contribution	218
8.7	Limitations	220
8.8	Recommendations for further research work.....	222

References	224
Appendix A: Ethics approval letter.....	247
Appendix B: Tools	248
Appendix C: Sample of Coding and Thematic Analysis	250
Appendix D: Student Information Pack.....	268

LIST OF FIGURES

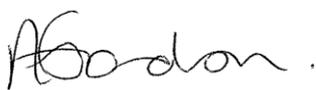
Figure 1 The key organisational conflicts creating the framework.....	26
Figure 2 The organisational model within each quadrant (Quinn, 1988)	27
Figure 3 The landing page of GlobCom (www.globcom.org).....	54
Figure 4. Showing the format of a student virtual team.....	58
Figure 5 The team mentoring introduction page (www.globcom.org)	59
Figure 6 Introduction to the student team leader forum (www.globcom.org)	60
Figure 7 Showing the shared communication between the student team leaders through the team forum.	61
Figure 8 Number of action-eliciting emails by team leaders in each stage	108
Figure 9 Showing frequency of the different DEPIQA functions during a cycle (2013)	110
Figure 10 The frequency of the interactive styles in the team stages, showing the most interactive styles in stages 1 & 4 each. See appendix for more details.....	111
Figure 11 Definitions of each CVF role and applied to this research.....	131
Figure 12 Team leader roles within the Competing Values Framework.	132
Figure 13 Comparing the leaders' activity in each stage over the two cycles.	138
Figure 14 Overall activity of roles in both cycles, 2013 and 2014	140
Figure 15 Comparing the role activity in 2013 to 2014.	142
Figure 16 Comparing the number of coded occurrences of each role in both cycles ...	143
Figure 17 Adapting the CVF for virtual teams - recommended CVF role activation against each stage.....	156
Figure 18 Pictorial representation of the varying level of role activation adapting the CVF to virtual teams.	156
Figure 19 Total emails and posts in each year.	170
Figure 20 Overall team leader emails and posts in each stage of 2012.	170
Figure 21 Overall team leader emails and posts in each stage of 2013.	171
Figure 22 Overall team leader emails and posts in each stage of 2014.	171
Figure 23 Team leaders' discussion on participation as a percentage of all topics over three cycles.....	173
Figure 24 Percentage of questions in all interactions from team leaders over the three cycles on team leader forum and to team mentor.	174
Figure 25 Contents page of a report (abridged) from a winning team leader.....	186
Figure 26 Final status report from a winning team leader	187

LIST OF TABLES

Table 1 A comparison of the virtual team stages formed by four virtual team scholars	49
Table 2 Leadership capabilities recommended for specific team stages	51
Table 3 Challenges in the GlobCom student teams presented at the GlobCom conference in Barcelona (Gordon, 2011a)	66
Table 4 Adaptation of dual goal model of action research by McKay and Marshall (2001) to GlobCom.....	78
Table 5 Adaptation of McKay and Marshall (2001) framework to ensure authenticity and rigour in research.....	79
Table 6 Action research applied to GlobCom.....	80
Table 7 Data collection for this study	81
Table 8 Participants and the data collected during the three GlobCom cycles.....	95
Table 9 Data from lecturers and students.....	96
Table 10 Summary of the research process, adapted from Weerakkody (2009)	98
Table 11 Research questions and data used in each chapter with student leader data used only for RQ3	99
Table 12 GlobCom team stages for supervisory team	105
Table 13 Functional stages and activities of the GlobCom project	106
Table 14 The content analysis tool DEPIQA, showing functions within the action-eliciting category derived from analysis of the empirical data	109
Table 15 Goal, strategy and actions which helped to define each team stage in the supervisory lecturers' team	135
Table 16 Team leader roles in 2013 and 2014	139
Table 17 The number of participants performing the most active and most inactive roles in each stage over the two cycles	154
Table 18 Recommended new positional roles for team leaders in the different team stages (work in progress)	160
Table 19 Stages and activities of the student team	167
Table 20 Input output model showing the student team stages	168
Table 21 Communication topics by team leaders	173
Table 22 The three levels of participation observed by team leaders in stage 1 using a sample of direct quotes.....	179
Table 23 Categorising of participation showing how team leaders reframed participation in stage 3, based on team members' productivity	180
Table 24 Team leader criteria using a grade of 1-5 (strongly disagree to strongly agree)	197

ATTESTATION OF AUTHORSHIP

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.

Signed:  .

Date: 24 August 2017

ACKNOWLEDGEMENTS

There are so many people who helped me on my journey to understanding global virtual teams. Firstly, I am so grateful to have had two inspirational and intellectually rigorous supervisors, Dr. Verica Rupar and Dr. Tony Clear. Their combined knowledge and expertise has been both stimulating and motivating which encouraged me to explore new horizons.

A big thank you to Dr. Volker Stoltz and Dr. Enric Ordeix, the founders of the educational PR initiative, GlobCom, who have not only supported this research but have also become great friends. I am so thankful to all the GlobCom lecturers for their support, collegiality and friendship. Their enthusiasm for this action research has helped us to expand GlobCom and ensure its sustainability. Equally, I am most grateful to the GlobCom students, particularly the team leaders whose communication forms part of this research. Their insights, perseverance and enthusiasm to lead their student virtual teams was both humbling and inspiring. Furthermore, I would like to thank all the participating universities, sponsors and trustees who recognized the value of GlobCom to the PR curriculum and industry.

Through the Auckland University of Technology, I was fortunate to receive the Vice Chancellor's Doctoral Scholarship which allowed me six months to focus on writing my thesis. I was also lucky enough to have had enormous support from my colleagues who were all so kind and caring.

In addition, I would like to thank all my friends who encouraged me even though I neglected them over this time. In particular, I owe a debt of gratitude to Anne Scott for her advice and voluntary editing. Also, I give huge thanks to my sister Briar for her encouragement and feedback. Lastly, and importantly, I want to say thank you to my teenage daughter Irena, for her understanding, patience and good humour while this thesis became part of her life.

I dedicate this thesis to my Mother and to my brother Max, who have both just passed away.

INTELLECTUAL PROPERTY RIGHTS

Parts of this thesis (the leadership tool, DEPIQA (chapter 5), and the team leader criteria (chapter 7), are licensed under the Creative Commons Attribution 4.0 International License. To view a copy of this license, visit <http://creativecommons.org/licenses/by/4.0/> or send a letter to Creative Commons, PO Box 1866, Mountain View, CA 94042, USA.

CHAPTER 1 INTRODUCTION

Despite the growing research on virtual teams there is very little direction on how to build the theoretical and practical understanding of virtual team leadership. More than a decade ago, scholars lamented the lack of guidance for virtual team leadership (Bell & Kozlowski, 2002; Pauleen, 2004b; Pauleen & Rajasinhham, 2004). To date, there has been very little agreement on the best virtual team leadership models or even criteria for these leadership positions (Avolio, Sosik, Kahai, & Baker, 2014; Iorio & Taylor, 2015). Yukl (2013), argues that virtual team leaders are expected to display a variety of leadership interactions, but which interactions are the most effective remains uncertain.

There are very few consistent guidelines on how to manage the lack of face-to-face interaction (Avolio et al., 2014; Mukherjee, Lahiri, Mukherjee, & Billing, 2012). Although virtual team leaders have the potential to create a higher standard of performance that can lead to organisational success (Avolio et al., 2014; Brahm & Kunze, 2012; Mukherjee, Lahiri, et al., 2012), current research into leadership of face-to-face teams does not extend to virtual teams and may be inadequate in addressing their specific issues (Avolio et al., 2014; Balthazard, Waldman, & Warren, 2009; Huffaker, 2010; Shriberg, 2009; Walvoord, Redden, Elliott, & Covert, 2008). Scholars are calling for more research that will lead virtual teams to better performance and organisational success (Avolio et al., 2014; Balthazard, Waldman, & Awater, 2008; Shriberg, 2009; Walvoord et al., 2008; Ziek & Smulowitz, 2014).

Owing to the rapid growth of virtual teams¹ reflecting the rise in global business, there is some urgency in predicting the leadership needed, yet current leadership research in virtual teams is largely retrospective, focusing on what has happened rather than being able to recommend how teams could improve (Avolio et al., 2014). However, the virtual team research does not always focus on improving performance but on gaining insights into how virtuality influences the team. Nevertheless, questions have been raised about the number of problems in virtual teams including poor team cohesion, not achieving goals and employee dissatisfaction (Avolio et al., 2014; Daim et al., 2012; Ferrazzi, 2014; Lee-Kelley & Sankey, 2008). A survey of multinationals identified that managing global virtual teams was the most common challenge for global chief information

¹ In 2014, the Harvard Business Review reported a survey showing that 79 per cent of employees worked in a virtual team (Ferrazzi, 2014).

officers (CIOs) (Weil, 2008). More recently, according to a Gartner survey², 30 per cent of CIOs identified communication as their greatest challenge when managing virtual projects (Radley, 2014).

A primary concern is whether geographical dispersion and the use of technology, elements that underpin the difference between face-to-face and virtual teams (Gilson, Maynard, Young, Vartiainen, & Hakonen, 2015), have an impact on the leadership process. Researchers are asking how virtual leaders can cope with the unique challenges brought on by technology, distance, structure and a lack of visual cues (Ziek & Smulowitz, 2014). This may mean that there need to be new ways to approach the traditional leadership skills of monitoring team performance, influencing members, developing team trust, and creating a collective identity (Yukl, 2013).

The research into recognising the ‘layer of complexity’ that makes virtual teams different from face-to-face teams (Hackman & Johnson, 2009, p. 228) has simply thrown up more questions.³ Some scholars argue that virtual team research to date is considered embryonic, undefined and contradictory (Avolio et al., 2014). However, Gilson et al. (2015) indicate, in their ten-year review of virtual team research, that theory is starting to become more relevant to practice. They have identified growing research on virtual teams in distinct professions, rather than student-based laboratory studies, as well as studies exploring abilities, tasks and relationships, also considered in this study. More longitudinal empirical studies of virtual teams are recommended in order to understand the complex nature of team interactions (Gilson et al., 2015; Malhotra, Majchrak, & Rosen, 2007; Mukherjee, Lahiri, et al., 2012).

A US survey of international businesses found more than two-thirds of organisations were likely to use virtual teams with the key benefits perceived as improving productivity, minimising travel costs and collaborating globally (Minton-Eversole, 2012). These virtual teams are formed easily and quickly to solve international issues or compete in the global marketplace (Brewer et al., 2015; Daim et al., 2012; Gilson et al., 2015; Hertel, Geister, & Konradt, 2005; Maynard, Mathieu, Rapp, & Gilson, 2012;

² A leading international information technology research and advisory company.

³ There are many scholars who recognise that virtual team leadership presents unanswered questions: (Avolio, Kahai, Dum Dum, & Sivasubramaniam, 2001; Avolio et al., 2014; Avolio, Walumbwa, & Weber, 2009; Bainbridge, 2011; Balthazard et al., 2008; Balthazard et al., 2009; Bell & Kozlowski, 2002; Connaughton, Williams, Linville, O’Connor, & Hayes, 2010; Cordery, Soo, Kirkman, Rosen, & Mathieu, 2009; Cramton, 2001; Duarte & Snyder, 2006; Ebrahim, Ahmed, & Taha, 2009b; Gilson et al., 2013; Gilson et al., 2015; Hackman & Johnson, 2009; Jarvenpaa & Leidner, 1999; Kayworth & Leidner, 2001; Krumm, Kanthak, Hartmann, & Hertel, 2016; Lee, 2013; Ocker, Huang, Benbunan-Fich, & Hiltz, 2011; Pauleen, 2004b; Potter & Balthazard, 2002; Wakefield, Leidner, & Garrison, 2008; Weisband, 2008; Yukl, 2013; Zaccaro, Rittman, & Marks, 2001; Zander, Zetting, & Makela, 2013; Ziek & Smulowitz, 2014; Zigurs, 2003; Zivick, 2012).

Ocker et al., 2011; Zander et al., 2013; Zivick, 2012). Companies can leverage large multi-skilled labour forces from lower-cost economies compared with those of the United States and Western Europe (Conchuir, Holmstron Olsson, Agerfalk, & Fitzgerald, 2009). It means that global enterprises are more competitive when staff can be selected to meet the needs of a particular situation regardless of their physical location (Ocker et al., 2011; Zivick, 2012). Moreover, the diversity of work experience within the team provides feedback and networking opportunities as well as enhancing problem solving (Siebdrat, Hoegl, & Ernst, 2009). Research and development enterprises can also benefit when they use virtual teams to cluster expertise and bridge time and distance so that innovation and knowledge can flourish (Ebrahim, Ahmed, & Taha, 2009a; Siebdrat et al., 2009).

In summary, research has still not identified any consistent theoretical models for approaching virtual team leadership (Avolio et al., 2014). Even in disciplines where there has been great emphasis on developing online collaboration competencies, such as engineering, there is limited empirical evidence of successful strategies for virtual teams and incomplete evidence of how team members work (Pazos, 2012). For example, engineering students in a virtual team study were found to collaborate throughout the project, instead of working individually and pooling resources at the end, as had been assumed. The findings also suggested that formalising responsibilities supports collaboration as well as enhancing team performance. However, more research was required to develop objective performance criteria for these teams (Pazos, 2012). These findings show that virtual teams may be operating within limited practical and theoretical guidelines and with variable and undefined levels of success. Therefore, it makes sense that building virtual team research needs to first understand the inner workings of a virtual team, as also argued by Gilson et al. (2015), so that the theory can have practical implications for these teams.

1.1 Virtual team leadership from a public relations perspective

The virtual teams explored in this study are within a public relations context of organisational behaviour theory and interpersonal communication. The teams themselves are situated within an ongoing public relations pedagogical project. A virtual team carrying out a global PR programme is an organisational activity that affects an organisation's reputation. It is therefore arguable that how organisations manage their virtual teams comes within their public relations strategy, but there is limited theoretical virtual team leadership research that can inform such practice.

Traditionally, public relations has been guided by the situational theory of publics (Grunig & Hunt, 1984), which draws on the organisational and interpersonal communication theories also applied to this study. These include the competing values framework, a model of leadership roles, which recognises that an organisation has internal and external influences, and must be both flexible and controlling while developing organisational plans and goals (Quinn & Rohrbaugh, 1983). The situational theory of publics identifies both dependent and independent variables that lead to problem recognition, constraint recognition and the publics' level of involvement within a situation (Grunig & Hunt, 1984). The theory also draws on the interpersonal theory of cognitive dissonance, which explains that people tend to seek information that reinforces their attitudes (Festinger, 1957). Although this relationship perspective suggests that public relations is about managing relationships with publics, Grunig (2006) argues public relations is a functional discipline as it is about managing the processes to influence outcomes, and cultivating relationships according to the situation.

An academic specialising in global PR, Sriramesh (2009), argues that academics need to be more aware of how globalisation is defining the 21st century. As L'Etang (2008) contends, there can be multiple perspectives in building PR theory, despite suggestions that there is only one framework. Gregory and Watson (2008) appeal for investigations into the gap between academics and practitioners and for academics to pursue areas in which practitioners are making progress. McKie and Munshi (2007) argue that PR needs to consider both the growth of technology and the global economy, and its current focus on the Excellence Study handicaps PR on a global level, making it (PR) 'intellectually insular and out of touch with other disciplines' (p.3). They argue that PR research needs to develop theory relevant to practice by harnessing the globalisation of business and engaging with practitioner initiatives. However, corporate PR practice across Europe is still largely unsupported by research, according to a Delphi study by Verčič, Zerfass, and Wiesenberg (2015) who call for a more solid international PR practice, with PR studies focusing on managerial, operational, reflective and educational strategies.

PR is also expected to be taking more responsibility for the organisation's overall communication, according to the Melbourne Mandate presented at the 2012 World Public Relations Forum (Global Alliance for Public Relations and Communication Management, 2012). The Mandate proposed that PR practitioners needed to ensure they

are part of the dominant coalition by contributing to the organisational processes that ensure good decision-making.

It is becoming increasingly evident that how PR is managed is an important function, affecting both the reaching of the organisation's PR goals as well as the reputation of the team. Additionally, the challenges of a virtual team mean that the managing of these teams in the global environment requires more attention than face-to-face teams. Equally, the online nature of global PR programmes initiated and developed by virtual PR teams can lead to more exposure of the team as well as of the PR project. This is especially significant in the seamless global environment where online communication can be particularly porous and have greater reach than face-to-face teams. It is recognised that virtual teams have more leadership challenges than face-to-face teams, which means PR academics and practitioners must be aware of them and develop appropriate strategies. Leadership can manifest differently in a virtual team and group members can behave differently with leadership having different effects.

1.2 Investigating leadership in face-to-face and virtual teams

A theoretical framework of organisational behaviour and interpersonal theory has been developed as a framework for this research to focus on leadership interaction. It is used to first examine traditional leadership interaction and then critically analyse it within virtual team leadership.

The focus on traditional leadership interaction is positioned within group theory which links group dynamics with the goals of the team. This perspective on groups was originated by Lewin (1944), an early psychologist and founder of action research in leadership. Another prominent US social psychologist who specialised in small group interaction, Bales (1950), argued that leaders performed either socioemotional or task-related interactions that developed as the team moved towards achieving its goals. This led to the recognition of leadership by Gibb (1958), a renowned socio-psychologist, as an interaction of personality traits and the social situation that established it as an interactional phenomenon. A leader was seen as someone who knew how to manage socioemotional and task interactions as the team forms in order to influence the team members towards the common goals (Gibb, 1958).

Current scholarship suggests leadership is an influence process that guides or facilitates interactions that lead to collective goals (Bass & Bass, 2008; Northouse, 2016; Yukl, 2013).

Leadership is the process of influencing others to understand and agree about what needs to be done and how to do it, and the process of facilitating individual and collective efforts to accomplish shared objectives (Yukl, 2013 p.23).

Yukl (2013) proposes different levels of leadership influence that are considered in this study as a systematic and holistic theoretical framework of leadership interaction. It incorporates the traditional trait, behaviour, power and situational leadership approaches that have become more integrated in recent studies. These include the intra-individual level, with its focus on traits and roles, the dyadic level on how leaders motivate and use influence tactics; the group-level approach with its focus on behaviour and how team members collaborate and how leaders motivate the team and improve performance; and the organisational level on how leaders influence others within the organisation and adapt to the situation (Yukl, 2013, pp. 30-31).

Interpersonal communication theories also help to understand leadership interaction as a mutual influence process between the leader and the team members and are applied to this study. These include the politeness theory, which argues that people want to be approved, whether asking for something or refusing a request, while also retaining their autonomy (Brown & Levinson, 1987; Goffman, 1972). Secondly, the uncertainty reduction theory explains that people need information about a situation in order to reduce their uncertainty and predict behaviour (Berger & Calabrese, 1975). This leads to the expectation violation theory (Burgoon, 1993; White & Burgoon, 2001), where people respond to unexpected interaction, that is, either more or less than expected, depending on the value they have given to the interaction. How individuals interact in teams can also be seen in terms of roles (Benne & Sheats, 1948; Blake & Mouton, 1964; Dill, 1982; Margerison, McCann, & Davies, 1986; Mintzberg, 1989; Quinn & Rohrbaugh, 1983). This study therefore examines team roles in virtual teams and also explores these alongside the leadership roles within the competing values framework (Quinn & Rohrbaugh, 1983).

Scholars recognise that very little is known about interpersonal behaviours and social identities that manifest in virtual collaboration (Yilmaz & Peña, 2015). Research on computer-mediated communication has adapted existing face-to-face leadership theories,

with a particular focus on interpersonal theories (Ledbetter et al., 2010). However, applying face-to-face leadership theories can create erroneous findings in virtual teams where leadership manifests differently or has different effects. For example, the socioemotional and task-related leadership, which has evolved into the dominant transactional and transformational leadership approaches (Bass, Avolio, Jung, & Berson, 2003; Weber, 1947), can present differently in virtual teams. Transformational leadership is more likely to present as linguistic diversity, rather than as a leader with an appealing and inspirational personality (Huffaker, 2010). Equally, if virtual team members have an existing cognitive schema of face-to-face teams it can lead to cognitive dissonance (Festinger, 1957) in a virtual team and affect how team members trust each other. Additionally, trust is thought to arise differently in a virtual team and scholars are uncertain how it can be developed and sustained (Brahm & Kunze, 2012; Crisp & Jarvenpaa, 2015; Joshi, Lazarova, & Liao, 2009; Wadsworth & Blanchard, 2015). Furthermore, the uncertainty of virtual teams and the difficulty in knowing what is going on within the team owing to the lack of visibility of work and people means team members can encounter high ambiguity which can undermine team trust (Avolio et al., 2014; Wadsworth & Blanchard, 2015). Team leaders may need to demonstrate socioemotional skills in helping team members know what is going on but research suggests that leaders may also find these relational skills too time consuming, or too difficult to implement in a virtual environment (Wadsworth & Blanchard, 2015; Walvoord et al., 2008).

The interpersonal theory of social penetration suggests a relationship gets deeper over time as people form bonds (Altman & Taylor, 1973). However, research has shown that virtual team leaders tend to be unable to form the online social skills that ensure the essential relationship building that encourages team effectiveness (Avolio et al., 2014; Joshi et al., 2009; Nauman, Khan, & Ehsan, 2010). Research suggests that virtual team leaders need to appear more visible online although it is not certain how this can be achieved (Zigurs, 2003). The media richness theory (Daft & Lengel, 1986) and the social presence theory (Short, Christie, & Williams, 1976) suggest that the lack of social cues in online teams means that satisfactory interactions may not occur which creates a challenge for team leaders. This may be further corroborated by research on team interaction that shows that virtual teams are more likely to develop a defensive interaction style as compared with a constructive style more commonly found in face-to-face teams (Balthazard et al., 2008). However, the social information processing

theory (Walther, 1996) suggests that virtual relationships just need more time. The interpersonal theory of attribution may also be considered a factor in virtual teams as team members may create negative impressions based on an over-reliance on minimal information (Jarvenpaa, Shaw, & Staples, 2004).

Studies that explore the influence of different situations have become particularly relevant to virtual team leadership. These studies use the situational theory of leadership which considers the influence of team members, the environment and the leader's own behaviour (Fiedler & Chemers, 1967; Hersey & Blanchard, 1969). This led to thinking about how the followers' relationships with the leader affected overall leadership (Graen & Uhl-Bien, 1995). With the focus on followers, leadership came to be seen as more fluid and shared (Pearce & Conger, 2002), with leaders acting as followers, and followers as leaders, at different times. In a virtual team, the leader is challenged by their distance from their team and the often overwhelming effects of technology, as well as keeping their team self-managing, focused and sharing roles (Bell & Kozlowski, 2002; Lee-Kelley & Sankey, 2008). A number of researchers have questioned whether leadership in virtual teams may be less hierarchical than it is in face-to-face teams and lead to emerging leadership, shared leadership or role confusion and even team disengagement (Hoch & Kozlowski, 2014; Lee-Kelley & Sankey, 2008; Nicol, Minty, & Sinclair, 2003). Leadership capabilities may also be required at different stages of the team lifecycle, each of which are believed to have distinct leadership requirements, although there is limited research in the later stages (Duarte & Snyder, 2006; Hertel et al., 2005; Mukherjee, Lahiri, et al., 2012; Zander et al., 2013).

A virtual team leader needs to ensure the organisation achieves the task goal by ensuring team cohesion and the meeting of individual needs. However, the research to date seems to have led to even more questions on how leaders can elicit actions, develop team roles and improve team participation. It is recognised that virtual team leaders need new ways of working and need to work harder to get their team's attention in order to influence them (Avolio et al., 2014; Powell, Piccoli, & Ives, 2004; Wadsworth & Blanchard, 2015; Zander et al., 2013; Ziek & Smulowitz, 2014). Therefore, it is understandable that virtual team leadership, as an interactional phenomenon, with its varying definitions and formations, may need its own scholarship (Balthazard et al., 2008; Brahm & Kunze, 2012; Huang, Kahai, & Jestice, 2010; Huffaker, 2010). The new style of leadership may be 'as different as leadership in the Roman Empire was from leadership in the hunter-gatherer band' (Malone, 2008 p. x).

1.3 Research approach

This study uses an integrated approach to leadership theory to explore the virtual leadership interactions within the global virtual teams and contributes to the request for leadership studies in authentic settings (Gilson et al., 2015; Hambley, O'Neill, & Kline, 2007) as the research is carried out on real-life tasks of the public relations projects. The study analyses leadership interactions among the established supervisory global virtual team of PR lecturers and among the PR student virtual team leaders and their team mentor, to understand how leaders could improve interaction within global virtual teams. This exploratory research is within the pragmatist epistemology that evaluates ideas according to their usefulness rather than by an absolute standard of truth (Crotty, 1998). The study is also longitudinal and empirical, as recommended by researchers in this field, and it explores the wider dimensions of virtual teams (Gilson et al., 2015; Konradt & Hoch, 2007; Malhotra et al., 2007).

The research forms an action research project using qualitative content analysis. Practical action research is a 'powerful tool for investigating 'the interplay between humans, technology, information and socio-cultural contexts' (McKay & Marshall, 2001 p. 48). Its use in this study is based on monitoring and evaluating the team dynamics in the GlobCom project in order to understand practice and evaluate actions during the project cycles. McKay and Marshall (2000) argue that action research happens in the real world, where there is no separation between research and practice. Such a view suggests that action research is suitable for this study of an authentic learning project in the 'real world'. Therefore, this thesis has both an academic and practical purpose with the dual aims of providing a mechanism for practical problem-solving in addition to generating new knowledge and testing theory. The research investigates how interactions can be improved in a virtual team to address the gap in both the theoretical and practical knowledge.

The study is based on three years of communication in the established authentic learning project, GlobCom. It applies a qualitative content analysis to analyse the data which consist of emails between the supervisory team of lecturers (including the researcher in her role as team mentor and lecturer) and emails and posts from student team leaders to the team mentor. This communication was less accessible to others in its entirety.

Although GlobCom is within an educational context it can serve as an example for virtual teams in organisations. The supervisory team of lecturers are professionals who sustain and develop the project and also guide their own students on the collaborative project. The annual group of seven-to-eight elected student team leaders have the responsibility of leading their own team of more than 20 students in an authentic project with real-life responsibilities. Although student virtual teams are not teams of professionals, student virtual team projects have nevertheless made significant contributions to the field of virtual team research.⁴

Interaction is used to mean a message that is communicated online, which is a broad sense of the meaning (Fairclough, 2001). The central question in this thesis is how leaders can improve virtual team interaction. There are three research questions that follow on from each other to get deeper views into developing interaction within a virtual team so that a team leader can achieve the team task, ensure individual needs are met and maintain team cohesion.

1.3.1 What do team leaders do to elicit actions?

The research first examines how the team leader progresses the team through its stages, which are defined by the crucial events within the project development. It then explores the team's interaction patterns and develops a unique content analysis tool to engage in the specific interactions which elicit actions, identify who is interacting, the frequency of their interaction and in which stages they occur. It questions which patterns of interaction are most effective in eliciting actions and builds on the transformational and transactional interactions as well as identifying the interaction patterns found in virtual teams.

1.3.2 How are face-to-face roles renegotiated in virtual teams?

This question explores how roles in face-to-face teams can be renegotiated in virtual teams. The research applies a face-to-face leadership model in order to identify the roles, their frequency and effect on interaction as well as the potential for roles unique to virtual teams.

⁴ Research has contributed to the understanding of virtual teams and includes research involving both students and student virtual team projects (Balthazard et al., 2009; Flammia et al., 2010; Gonzalez-Perez, Velez-Calle, Cathro, Caprar, & Taras, 2014; Hambley et al., 2007; Huang et al., 2010; Iorio & Taylor, 2015; Jarvenpaa & Leidner, 1999; Kahai, Jestire, & Huang, 2013; Kayworth & Leidner, 2001; Monzani, Ripoll, Peiró, & Van Dick, 2014; Ocker et al., 2011; Purvanova & Bono, 2009).

1.3.3 How can team leaders encourage participation?

This question explores both interaction and the development of roles to engage with the way student team leaders influence participation, a key manifestation of action in virtual teams. The research analyses the interactions for socioemotional and task-related content, and explores the attitudes of team leaders to participation as well as applying other leadership theory to identify the effect of different types of leaders on participation. It then draws on these research findings to develop theoretical implications for how leaders influence interaction in virtual teams and provides practical recommendations for the virtual teams and for more research.

1.4 Researcher as participant

As the researcher and lecturer, I was part of the GlobCom management team and also acted as the student team leaders' mentor. This meant that I had full access to all the emails, which allowed me to observe the progress of each team, as well as being able to influence changes in the teams. This posed a number of ethical questions such as whether I ought to be using this information to be influencing changes, how people would become aware that my analysis of their communication was influencing further changes, and that I would be sharing my observations of their communication in the research findings. This was explained to the student team leaders and the lecturers who agreed to the research and its use. Consequently, I was given ethics committee approval to access and use the information from the lecturers of the supervisory team, the webmaster and also, each year, the student team leaders. This allowed me to use the communication for the research, to share it among the team and include it in this thesis. Details of the ethics approval are included in Chapter Four, on the research design.

Previously, virtual team leaders' communication practices have not been widely studied (Sivunen, 2006) and this study attempts to address this. The thesis defines the team stages and analyses email posts, lecturer and student meeting reports, postings on the dedicated website as well as the researcher's diary notes to identify and understand issues as they arose in each cycle, how they were addressed over time and the impact of the changes on the project against the framework of leadership and group theory, particularly the task and socioemotional factors.

Changes to improve team functioning are also proposed and implemented by the student team leaders and the lecturers, based on a review of the presented research and experience within the team. These changes were made during any stage of the team

lifecycle or at the beginning of the next year's project and were subject to ongoing evaluation and adjustments to ensure they were effective in improving team function.

1.5 Structure of the thesis

The overall structure of the thesis takes the form of eight chapters, including this chapter (Chapter One). Chapter Two begins by outlining the theoretical dimensions of the study. It first presents the organisational theoretical framework of leadership interactions in traditional face-to-face teams. This is systematised through first focusing on group and interpersonal theories, then integrating trait, situational and behavioural leadership approaches. The differences between face-to-face teams and virtual teams are highlighted, which leads into a discussion on the specific challenges of the latter.

Chapter Three highlights the distinctive qualities of the international educational project, GlobCom, on which this research is based. Other pedagogical ventures involving international student virtual teams are compared to GlobCom along with their successes, challenges and research outcomes. Chapter Four is concerned with the research design of this study. It explains how the action research methodology with its practical and theoretical cycles is ideal for this study and is underpinned by a pragmatist epistemological approach. The flexible research method of a qualitative content analysis explores the data in different ways. It first analyses interaction styles, then the roles and finally identifies issues and socioemotional and task-related interactions.

The three research chapters (Chapters Five, Six and Seven) that apply the research methods described above focus on an individual research question and present the research and its findings using innovative adaptations of the qualitative content analysis. Each chapter contextualises its research question by highlighting the key findings of pertinent research as a departure point for its investigation. The first research chapter, Chapter Five, investigates how leaders elicit actions by exploring one cycle of interaction styles in the GlobCom supervisory team and assessing their frequency and effectiveness. It also introduces a unique content analysis tool, DEPIQA, which can be used for measuring and monitoring the different virtual team leadership interactions. Chapter Six maps face-to-face roles to two cycles of the supervisory team's interactions with each other in order to investigate whether these roles can be renegotiated to virtual teams. It shows that face-to-face roles cannot be easily transferred to virtual teams and outlines criteria for leadership roles and in which stage they should be implemented. In Chapter Seven a content analysis identifies the themes within the three years of student

team leader interactions with each other and the team leader in order to identify the issues and the social and task-related communication. Each of these three research chapters concludes with a discussion and reflection on the theoretical and practical implications of the action research, with guidelines for virtual teams. Therefore, the first two research chapters draw on the established supervisory team and the third research chapter draws on the ad hoc student teams which are newly formed each year.

The final chapter, Chapter Eight, summarises the whole study, bringing together the theoretical and practical outcomes of the action research. It presents the importance of the findings and reflects on the methodology used and provides recommendations for further research.

The next chapter, Chapter Two, focuses on the theoretical dimensions of this study. It outlines the current understanding of leadership interaction, first in face-to-face teams and then applying this, along with recent virtual team research, to leadership of virtual teams.

CHAPTER 2 LOOKING BACK, LOOKING FORWARD

The fast-growing phenomenon of global virtual teams offers significant leadership challenges. The exploration of virtual team leadership interaction requires an understanding of scholarship in both face-to-face and virtual team leadership. However, even face-to-face leadership theory is not a cohesive discipline that identifies the knowledge needed to understand how a team reaches its goals. Therefore, this chapter presents a systematic theoretical review of leadership interaction theory arising from a review of organisational behaviour and interpersonal theory. This integrated approach to leadership theory is applied to face-to-face teams and is then used to analyse the current understanding of virtual team leadership.

This study is positioned within the public relations organisational paradigm and thereby expands the public relations theoretical and practical framework. Therefore, this chapter first reviews the theoretical framework of Public Relations' approach to leadership. It then examines face-to-face teams where leadership has evolved from individual leaders, to traits, and interaction between the leader, the team and the situation. The study considers the four processes of leadership conceptualised by Yukl (2013). The first is the intra-individual process which focuses on roles, behaviours and traits of the leader and how they motivate the team. Second is the dyadic process which examines the relationships between the leader and the team members, how the leader directly influences each team member and how the individual changes. The group level approach investigates the overall team behaviour, how team members collaborate and trust each other and how team processes improve performance. Finally, the organisational process takes a more open systems approach and examines leadership by how it is adapting to the organisation, although it does not explore individual influence processes (Yukl, 2013, pp. 30-31). Leadership is also affected by the team lifecycle and the team stages are identified along with their specific leadership activities.

Following the review of face-to-face leadership theory, this chapter introduces the concept of virtual teams with their specific leadership interaction challenges, the uncertainty surrounding the leadership interactions and the difficulty of interpreting task-related and socioemotional interactions online. It analyses the research on whether a leader needs to be flexible or more hierarchical; more empathic, or more task-focused. The virtual team may also have a different structure so different capabilities may be

needed in each part of the team lifecycle. This section highlights the theoretical and practical gaps in current research and practice of virtual team leadership interaction.

This study refers to leaders, not managers, of the virtual teams although there is limited distinction in the research literature regarding leaders and managers. This may be because the concept of management only emerged in the twentieth century. In this newly-industrialised society managers were assigned to plan and organise production and reduce chaos in organisations, whereas leaders and leadership itself have been documented since Aristotle (Northouse, 2016). Therefore, this chapter first explains the theoretical development of the public relations discipline which is reflected in this research approach to virtual team leadership, before moving onto face-to-face teams.

2.1 The theoretical framework of public relations leadership

Public relations is seen as both an academic discipline and a practice. It is considered an applied social behavioural science which encompasses communication processes, attitudes and behavioural changes and is integrated into the overall management of the organisation (Gregory 2011). L'Etang (2013) describes PR as strategic management, public affairs, corporate communications, stakeholder relationships, risk communications and CSR. Overall, the public relations discipline is broad and can include diverse communication activities such as media and employee relations, brand positioning, reputation management, issues and crisis management and lobbying. It can be applied across a variety of fields such as public affairs, non-profit, commercial and corporate, and digital engagement (Gordon 2011).

PR scholarship first focused on the general systems theory and argued for adaptive processes of systems to the environment where organisations could get feedback and adapt, which meant that PR practitioners facilitated environmental scanning. This system's perspective of Luhman has been used by Holmstrom (2007) to show how public relations has moved towards a more reflective paradigm, which shows there are other worldviews.

In the 1970s, organizational theory was used to develop public relations scholarship. This focused on the role of publics in their relationship with an organisation and led to the situational theory of publics and later produced the four models of public relations which argued that organizations practice one or more of these models (Grunig and Hunt 1984). This Grunigian typology became the theoretical framework for PR, where the

Excellence Study (Grunig, 1992) showed that excellent PR was considered to be the two-way symmetrical communication. It incorporates the situational theory of publics and was positioned as the most effective way to achieve an organisation's goals and interact with its publics (L'Etang, 2008).

Since the Excellence Study in the 1980s, PR started to be recognised as having a more strategic role in managing reputation within the organizational strategy (Grunig & Grunig, 2008). However, this emphasis on the organizational perspective with the Excellence Study and its associated PR models as the theoretical foundation of PR has been disparaged for not critically examining PR in a diverse environment (McKie and Munshi (2007). The 21st century marked the realisation that PR theory had moved away from focusing on a functional role in an organization, which considers publics and communication as a tool or means to achieve the organization's goals, to a co-creational approach (Botan & Taylor, 2004). This is where publics are seen as partners in creating meanings and communication in organizations, making it possible to agree on shared meanings, interpretation and long-term orientation (Botan & Taylor, 2004).

However, a more distinctive dichotomy has been identified by Ihlen and van Ruler (2007) who claim that PR is generally studied from a managerial, instrumental perspective (organisational management) or a psychological, behavioural communication's perspective. Heath (2010) argues for a wider view to public relations and stresses a need to understand meaning, discourse, dialogue and rhetoric which have a social constructionist epistemology. Academics have called for a theoretical model that has a less Westernised focus and embraces global diversity of the organisation (Gregory & Halff, 2013; Ihlen & van Ruler, 2007; Watson, 2014) which Gregory (2011) contends requires an understanding of politics, sociology and economics.

Public relations scholars accept that contemporary PR theories are rooted in different disciplinary fields: mass communications, interpersonal communications, psychology, sociology, relationship management theory and relationship negotiation (Ihlen & van Ruler, 2007). However, it is argued that although the focus is largely on organizational management and publics, PR is more concerned with an organization's relationships with its publics rather than how an organization relates to the public arena and wider society.

A special issue of the Public Relations Review (2007) attempted to fit public relations into a sociological framework which created a more pluralistic approach (Ihlen & van

Ruler, 2007). Within this special issue, Bentele (2007) suggests that understanding and applying how social interaction continuously shapes relations inside and outside organizations can help to gain insights into PR theory and inspire more PR theory building. For example, Weber's concepts are applied to discuss PR's function in society and how it can influence legitimacy and legitimation of organizations and individuals (Wæraas, 2007). The work of Giddens is used to show PR communication is constructed by all of society and has the potential to transform as well as reproduce the organization's dominant ideology (Falkheimer, 2007). Equally, Goffman's interpersonal theories of social interaction, such as footing, face-to-face, impression management and framing, some of which are considered in this study in order to develop theory, are recommended by Johansson (2007) to analyse relationships where establishing mutual trust and confidence is important and can be used to develop PR theory.

More recently, L'Etang (2013) contends that PR has moved from an entirely functional position founded on organizational requirements to drawing from historical, sociological and cultural themes. This thesis reflects the view by L'Etang (2013), that the PR field is diversifying and delivering more varied methodological approaches and understandings from multiple perspectives within the dynamic global and multicultural contexts. Theorists argue that there is a need to apply holistic social theories and ask questions about communication and society in order to more strongly link PR to organizational theory (Wehmeier & Winkler, 2013). They recommend that organizational communications, which they argue is rooted in social constructivism and or critical theory, can move the focus of PR from methods and tools to a more expansive scholarship. In a study on Swedish PR, Falkheimer and Heide (2014) recommend applying the social constructivist understanding of organizations, where PR is not only a process for disseminating information but also for constructing and maintaining an organization. Therefore, it seems sensible to state that the leadership of an organization's global virtual teams is influential to the reputation of the organization, which is particularly relevant to this study of global virtual teams within a PR organizational setting.

Strategic communication has been proposed as a unifying paradigm and chance to stimulate the study of communications within organizational theories on how organisations promote themselves and interact with their publics (Hallahan, 2007). It is considered a multidimensional concept; where communication is at the centre of its research and explores what organizations do to create and exchange meaning with

others. Strategic communication research can focus on how organizations interact with publics; how an organization presents itself in society such as in forming public culture, public diplomacy and social marketing (Hallahan, 2007). Falkheimer and Heide (2014) build on this study and see strategic communications as the new framework for public relations arguing that it intersects communication and media theory, organizational management theory and social theory, reflecting the transboundary development occurring in society and organisations (Falkheimer & Heide, 2014).

Additionally, there is a need for PR theory to show an understanding of culture, both within the professional organisational and a global context (Hodge 2006). More recently, a study that explored the influence of digital communication on cross-cultural communication found that public relations practitioners must become cultural as well as content curators relevant to diverse audiences (Tombleson & Wolf, 2017). However, as Manly and Valin (2016) contend, there is no recognised PR body of knowledge. Therefore, the role of a practitioner within an organisation is unclear. Although there is a list created by the Global Alliance⁵ of knowledge, skills, abilities and behaviours for practitioners, organisations are unclear on the core role of the practitioner at a strategic level (Manly & Valin, 2016; Falkheimer et al., 2017). This may be because entry to the profession requires variable skills and has few professional boundaries (Manly & Valin, 2016).

This thesis reflects the views of McKie and Heath (2016) on the importance of new PR knowledge having global relevance and currency. They argue that although public relations has focused on collective insights and the creation of an insular body of knowledge based on past research, the discipline could become more useful by embracing studies which have both current and future relevance which also link to cross-disciplinary controversies (McKie & Heath, 2016).

This is further developed by Gregory and Halff (2017) who explore the development of PR knowledge through the lens of economic sociology and propose that PR does not have a gatekeeping role in the sharing economy and everyone has the potential to emerge as a proficient communicator. They propose that PR practitioners can become coaches and mentors on best practice and establish common meaning through agreed purpose, values and a shared culture therefore setting conditions and effective communications. In this situation, PR becomes a function about communication rather

⁵ Global Alliance - define

than doing the communication. This thesis is positioned within the context of such a framework, embracing divergence and extending PR theory by associating it with wider communication responsibility of the practitioner.

Although leadership is strategically important in PR, scholars Meng and Berger (2013) define PR leadership as exerting influence on the organisation and argue that studies have lagged because of the difficulty in conceptualising leadership in PR teams.

Leadership in public relations is a dynamic process that encompasses a complex mix of individual skills and personal attributes, values and behaviours that consistently produce ethical and effective communications practice. Such practice fuels and guides successful communication teams, helps organisations achieve their goals and legitimises organisations in society (Meng & Berger, 2013, p. 143).

The following shows a multilevel measurement model of PR leadership, (Meng & Berger, 2013) that recognises the PR responsibility to foster team collaboration and performance.

1. Self-dynamics
2. Team collaboration
3. Ethical orientation
4. Relationship building (internal and external)
5. Strategic decision-making capability
6. Communications knowledge management

This model suggests that PR requires complex leadership capabilities which encompass ethics, relationship building qualities, acquisition of knowledge and expertise, involvement with strategic decision-making and influence in the organisation (Meng, Berger, Gower & Heyman, 2012). Also practitioners are seen to improve their practice when they understand how leadership influences their own individual achievements and the organisational communication objectives.

McKie and Willis (2015) explore 20 years of literature on PR leadership and recommend a reorientation in PR leadership by looking at successful and innovative leadership in other more positively recognised industries and having a better understanding of leadership in order to transform PR leadership learning and practice. They argue that relying on the Excellence Study to offer guidance on leadership is ill-advised as it is management focused. They also contend that it does not consider the PR

leadership challenges arising from current developments such as globalisation, and the uncertain, faster and unpredictable pace of PR which is driven by technological innovation.

The following section discusses the theoretical framework of leadership interaction and how it developed over time.

2.2 The development of leadership interaction in face-to-face teams

Originally, scholars referred to the 'great man theory' of leadership where leaders were assumed to have intrinsic qualities that enabled them to take control of the situation (Carlyle, 1840; Galton, 1883).

He, as every man that can be great, or have victory in this world, sees, through all entanglements, the practical heart of the matter; drives straight towards that. (Carlyle, 1840, p. 283).

Early attempts at a scientific study of leadership argued that leadership qualities were associated with high energy and inherited qualities seen in 'men of a high type', an argument associated with the benefit of eugenics (Galton, 1883, p. 44).

A more academic approach emerged around the 1930s with a focus on identifying a leader's inherent attributes such as gender, height, physical energy and appearance as well as psychological attributes and authority (Bass & Bass, 2008). Early psychologists, Allport and Odbert (1936) suggested traits were descriptions, and manifested differently depending on the individual and the situation. This psychological approach to leadership was dominated by the selection and testing of specific abilities which led to the trait theory (Drake, 1944; House & Aditya, 1997). A study of leadership by Drake (1944) argued for the trait concept and identified 30 leadership traits among high school students. He found that these traits were similar and consistent in both genders except that his research identified 'sociability' and the 'desire to express will' were more evident in females (p. 25).

Leadership theory shows a move from a focus on trait theory to the increasing awareness of the interaction between the person and their environment, emphasised by Lewin and Heider (1936), the early US social psychologists. Lewin (1944) argued that a leader's abilities, inclination and motivation were a process of interaction with the social environment and the team. He identified leadership as linking group dynamics

with team goals and this has since become the basis of leadership research and includes the leader's influence, the team's cooperative behaviour, and an individual's own status (Lewin, 1946). Although the pioneering leadership academic, Stogdill (1948), observed specific behavioural traits in leaders and followers he did not find them consistent and also started to consider the team's situation, goals, and members. He then redefined leadership to be an interaction with followers, and this confirmed the departure from the trait approach⁶ (Stogdill, 1950).

The emerging disciplines of sociology and psychology in the early twentieth century led to an understanding of how social interaction influenced cognition, behaviour and the environment (Littlejohn & Foss, 2010). Scholars no longer saw leadership as an isolated process but an interactive team process, where all team members were responsible for the team's growth and production. Preliminary work was carried out on behavioural patterns that emerged spontaneously and became sustained interactions believed to be responsible for the team tasks, team maintenance and individual needs within the team (Benne & Sheats, 1948). These social interactions were grouped into 27 roles that were classified into three categories: group-task roles, which moved matters forward; socioemotional group-building, which created team cohesiveness, and individual roles, which did not help the group (Benne & Sheats, 1948). An example of a group-task role was the information-giver who gave facts and opinions and relevant personal knowledge to the situation. A socioemotional group-building role included an encourager, who supported and commended the team. An individual role, which could have a positive or negative influence on the group, included the aggressor role, which could deflate others or show envy (pp. 43-44).

The improvement of research methods within sociopsychology, such as surveys, content analysis and statistical analysis, were used to identify and measure expression, interaction and influence in communication (Lindesmith, Strauss, & Denzin, 1975). For example, Sewell (1989) observes that the interaction process analysis (IPA) developed by the US social psychologist (Bales, 1950), has been the foundation of extensive socio-psychological research and provides a tool to observe and rate leadership behaviours of members of small groups. The IPA was the first systematic study of interaction within groups. Bales identified 12 categories of interaction occurring in groups and divided these into socioemotional and task-related needs that must be achieved and balanced to

⁶ However, the trait approach was regenerated in the 1980s, drawing more on personality theories based on psychology (Zaccaro et al., 2001).

achieve satisfaction. These leadership interactions helped to identify those who worked towards task-related and team cohesion goals (Bales, 1950). Relational interactions were about expressing agreement or releasing tension and could be either positive (seems friendly, dramatizes and agrees) or negative (disagrees, shows tension and seems unfriendly). Equally, task-related interactions were about giving or receiving information, and could be positive (gives suggestions, gives opinion, gives information) and negative (asks for information, asks for opinion and asks for suggestion) (Bales, 1950).

A broader perspective on how people worked together was explored by a pioneer of group dynamics, Thelen (1954), who studied groups in a diverse range of areas from the rebuilding of communities in Chicago after WWII to technicians working in laboratories. He presented leadership as a group activity that created change through a coordination of individual efforts. Gibb (1958), a recognised sociopsychologist, developed this further by conceptualizing leadership interaction as occurring as the group forms and as the leader influences team members to achieve common goals. The sociology and psychology disciplines were both linked to explore the connection between personality traits and the social situation. Gibb argued that groups were mechanisms for achieving individual satisfactions, where people interacted to achieve this satisfaction and formed roles that met the task goals and individual needs within the team. This interaction of the leader and team to achieve mutual and individual goals was seen to lead to different types of leadership (Gibb, 1958). However, Gibb argued that someone who more frequently influenced others to achieve the group goals was more likely to be considered a leader. This meant there could be more than one leader at any one time; a single leader could emerge; a leader may also emerge later out of interaction with the group depending on the group's needs, and be perceived as someone who had leadership attributes; or a leader could also be influenced by how followers react to the leader. The recognition of leadership as interacting with personality traits and the social situation established it as an interactional phenomenon (Gibb, 1958).

2.3 The need for socioemotional and task-related interactions

By drawing on the concepts of leadership interaction, scholars began to question which interactions ensured the team maintenance, individual needs and the task itself (Blake & Mouton, 1964). This led to mapping of the socioemotional variable to the task-related variable onto a managerial grid that formed five leadership styles based on a 'concern for production' versus a 'concern for people' (p. 9). Although the most satisfactory

leadership was when the concerns for production and concerns for people were both equal and midway on the graph, the highest score for both task and relational behaviour represented the ultimate situation, showing commitment and interdependence (Blake & Mouton, 1964).

The recognition of interaction⁷ as a mutual influence process among team members was developed further by the US sociologist, Goffman (1972), who researched people's social interactions in society. Goffman argued that the communication of one individual was directed toward and dependent upon the nature of another individual, and this became a focus for interaction studies. In particular, people were recognised as having a self-image or 'face' (p. 5), which represented their own positive social value. People were also believed to have expectations about how others would act towards them and that others will perform their obligations and usually assist each other so everyone can save face (Goffman, 1972).

The individual must not only maintain proper involvement himself but also act so as to ensure others will maintain theirs (Goffman, 1972, p. 113).

This face-saving sociology theory was expanded into politeness theory to explain that people want to have their actions approved but also have a desire to maintain their autonomy and sense of freedom (Brown & Levinson, 1987). The theory contends that people risk 'face' by asking for a favour or requesting something be done, which is defined as a 'face-threatening attack' (p. 25). They could use very polite communication to least polite communication, depending on the situation and their own feeling of power. These were measured as 'going off record' (p. 60), which is hinting (most polite); 'negative politeness', which is more direct but appeals to the receiver and is often apologetic; 'positive politeness' that can be ingratiating, and 'bald on record', which is the most direct and least polite (Brown & Levinson, 1987, p. 60). Equally, to restore face people were believed to use strategies such as avoidance, humour, apologies, accounts or explanations. However, people may not interact as expected because they are preoccupied with external events, self-conscious or become distracted (Goffman, 1972). These can lead to them becoming a 'faulty interactant' where they no longer become spontaneously involved, which has been categorised as the 'alienation from interaction' theory (Goffman, 1972, p. 113).

⁷ Interaction is how people communicate with each other either as individuals or a group within social contexts (Lindesmith et al., 1975, p. 17).

These team interactions were not always predictable and the uncertainty arising within a team was found to have a negative effect on team cohesion (Berger & Calabrese, 1975). For example, increased questioning at the beginning of a team cycle is a sign of uncertainty and therefore a leader needs to be able to respond and help people understand their environment (Berger & Calabrese, 1975). This led to research on how a team leader can reduce uncertainty by knowing the best ways to respond to interactions and predicting what people are likely to do (Burgoon, Dillman, & Stern, 1993). However, leaders' and followers' expectations are not always known. Expectations are considered to be an ongoing pattern of anticipated behaviour, which guide and shape interactions, remaining relatively stable once activated (Burgoon, 1993). The expectation violation theory has suggested that when someone (the interactant) doesn't act as expected, the other party adapts to that communication, depending on how much they valued the expected behaviour. The theory was developed further into the interaction adaptation theory which attempts to predict how people will react based on how much the communication was valued (Burgoon, Stern, & Dillman, 1995). It contends that if the interactant responds weakly when the behaviour was more valued by the sender, the more likely the sender will overcompensate in their communication response. However, if the sender does not adjust to the level of reciprocity, this is called 'accommodation'; if they adopt similar behaviour to the interactant, this is called 'convergence' and a different style of interaction is 'divergent' (Burgoon, 1993, p. 302). However, later studies identified that different patterns of behaviour were found to occur within an interaction over time (Burgoon, Stern, & Dillman, 2007).

As explained in the public relations situational theory of publics, when people face an issue, the degree to which they feel they can do something about it is affected by their recognition of constraint in the situation (Grunig & Hunt, 1984). This theory contends that when people reduce their recognition of constraint they are more able to deal with a situation they are facing, and more likely to participate and become more involved. A leader therefore needs to know how people are feeling in order to clarify the situation and reduce their recognition of constraints (Grunig & Hunt, 1984). This knowledge of others suggests that understanding the team constraints and how to lower them may be linked to empathy. Empathy was first defined by the US psychotherapist, Carl Rogers, as comprehending the feelings of others and seeing things from their point of view (Rogers, 1942). The communication scientists, Rogers and Bhowmik (1970), developed this further, arguing that communication between two people is more effective when the

sender has greater empathy than the receiver as they can adapt the message to connect to the receiver, or ensure the receiver will be influenced to do what they want.

The ongoing growth of management research created questions on how expectations fulfilled roles and affected team performance. For example, people who do not fulfil team expectations, such as by not participating or by inadequately performing their role, are likely to be treated negatively and discredited (Grover, Hasel, Manville, & Serrano-Archimi, 2014). Equally, followers have expectations of their leader and inconsistent decision-making by team leaders is likely to cause disappointment and frustration among followers and gradually lead to a loss of trust in their leader (Grover et al., 2014).

Together these early studies provide important insights into how leadership interaction has evolved with the development of psychology and social sciences which have provided both theories and measurement tools. Group research studies focused on the interaction between followers, the environment and the task, and identified the socioemotional and task-related differences in leadership interaction, further influenced by advances in interpersonal communication. These interaction styles, or sustained patterns of communication, became more formalised functions or roles, which are discussed in the following section.

2.3.1 The competing values framework

The question of what people did in a team was part of the emergent organisational and management research which also matched an individual's profile to a team's activities. Roles were linked to performance through grouping traits and behaviour into people-oriented, cerebral and action-oriented groups, forming nine roles, but these did not consider leadership (Belbin, 1985). The psychological studies into profile development led to a mapping of work preferences to types of work and forming quadrants of advising, exploring, organizing and controlling containing eight role preferences, plus a higher role with skills that all team members could develop (Margerison et al., 1986). A later model developed by Mintzberg (1989) focused less on planning and scheduling and more on relationships, transfer of information and decision-making. The model presented ten managerial roles within interpersonal, informational and decisional categories. However, there was no one model that considered the internal and external demands of an organization and encompassed interpersonal relationships, organizational dynamics, performance and leadership.

The dilemma of leadership exercising both control and flexibility as well as the competing demands of the external and internal needs of an organisation became a growing field of organisational research (Quinn & Rohrbaugh, 1983). This led to the development of a widely-accepted management model of leadership roles called the competing values framework (CVF) (Quinn, 1988; Quinn & Rohrbaugh, 1983), which has been refined more recently in order to recommend leadership competencies for organizational change (Cameron, Quinn, DeGraff, & Thakor, 2014b). It organises sets of leadership activities into four quadrants within existing leadership and organisational theory (Wakefield et al., 2008). It combines the intrapersonal leadership processes with the organisation process level described by Yukl (2013). As seen below, the framework is divided into quadrants by the organisation's internal and external focus and need for a flexible to controlling leadership (Quinn, 1988, ch. 6).

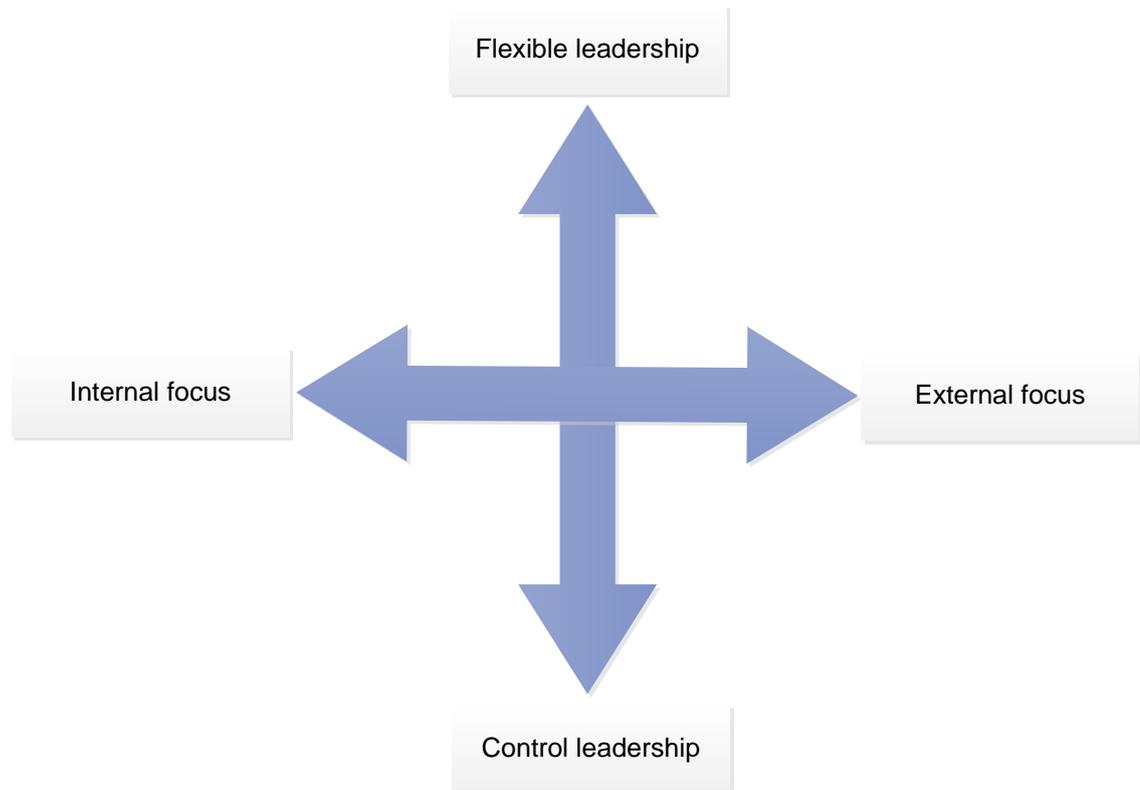


Figure 1 The key organisational conflicts creating the framework (Quinn, 1988, p. 146)

The second figure shows the four organisational models that represent these dilemmas. They include the human relations model situated between the need for organisational flexibility and an internal focus; the open systems situated between the need for organisation flexibility and an external focus; the internal process model situated between the need for organisational control and an internal focus; and the rational goal model situated between the need for organisational control and an external focus.

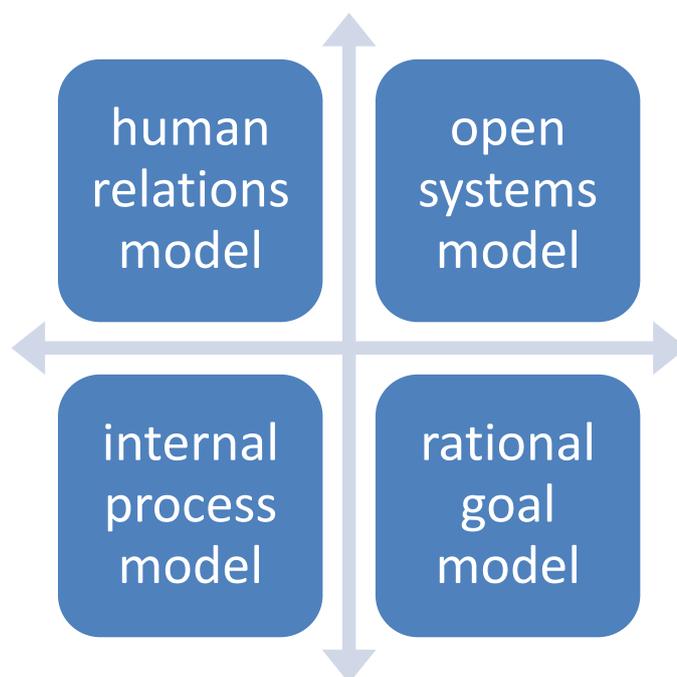


Figure 2 The organisational model within each quadrant (Quinn, 1988)

There are two roles situated within each quadrant which are the most likely to achieve the needs of each model. To achieve the organisation's demands, it is argued that leaders need to be able to manifest any of the roles as required (Quinn, 1988). The specific criteria of these roles are listed in Chapter Six where this framework is applied to the virtual team research. The origins of this framework, the multi-systems theory of organizational communication (Quinn & Rohrbaugh, 1983), were also drawn on to form the situational theory of public relations (Grunig & Hunt, 1984).

The framework has become a leadership tool recognised in dynamic organisations for dealing with company processes, resources and people management (Belasen & Frank, 2010; Cameron et al., 2014b; van Assen, van den Berg, & Pietersma, 2009; Yukl, 2013) and is referred to as one of the forty most important business frameworks (Belasen & Frank, 2010). Leadership scholars recommend the CVF to help understand the overall pattern of leadership behaviour and analyse how leadership changes as the situation changes (Yukl, 2013).

Although roles were developed in line with an organisation's internal and external needs, leadership scholars questioned how leaders used interaction styles to influence the team members and achieve the team goals. A study by leadership scholars (Yukl & Falbe, 1990) identified nine specific leadership tactics used to influence people to commit to collaborating on achieving a task. These can be classified as a 'dyadic' leadership process which focuses on the relationship between a leader and an individual

where the leader attempts to motivate the subordinate to reach the team goals (Yukl, 2013, p. 30).

The nine influence tactics were defined as ‘rational persuasion’ (explaining), ‘consultation’ (participation), ‘inspirational appeals’ (enthusiasm), ‘personal appeals’ (loyalty), ‘ingratiation’ (compliment), exchange’, ‘pressure’ (demands, threats, checking), ‘legitimizing’ (authority) and ‘coalition’ (persuade target person to do something or use support of others) (Yukl & Falbe, 1990, p. 133). Later, ‘collaboration’ and ‘apprising’ were added (Yukl, Chavez, & Seifert, 2005, p. 26). The most effective tactics used were rational persuasion, which involves the use of explanations about the importance of the task, followed by the tactics of collaboration and apprising. However, leaders in the study did not always choose the best influence tactic for the different objectives (Yukl et al., 2005), which suggests that the most effective leadership interaction is still elusive.

Despite roles becoming an integral guiding tool for leadership, their categorisation in terms of attitude and activity was unclear. Turner (2002), the role theorist, assessed how a ‘cluster of behaviours’ (p. 234) and attitudes could belong together, be performed differently by each individual and be affected by the team’s expectations. This created four categories of roles:

1. Basic roles that modify content and control access to other roles and are about basic aspects such as gender, age and class.
2. Position or status roles that are the formal behaviours associated with structural theories, e.g., associated with particular jobs and levels, and linked to organisational roles.
3. Functional roles that are non-formalised behaviour patterns that emerge spontaneously during sustained interactions in a group setting, e.g., leader, counsellor, follower, and are similar to those identified by Benne and Sheats (1948). These arise from a division of work towards collaborative goals and are differentiated by skills, knowledge and disposition.
4. Value roles that emerge spontaneously but are attached to negative or valued identities, e.g., hero or villain (Turner, 2002, p. 237).

Despite this classification, Turner (2002) argues that roles are continually forming and reforming through interaction, and only become consistent if they are effective, can interact with other roles and meet team expectations.

2.4 The two dominant leadership interaction styles

Growing evidence that leadership roles focus on being task-related or relational-focused in terms of how they influence the group processes is reflected in the two dominant leadership styles of transactional and transformational leadership combination which is often considered important to follower success (Bass et al., 2003). The transactional leadership approach that was first described in 1947 is more task-related and focuses on the organisation and gains compliance through rewards and punishment (Weber, 1947). It motivates and directs team members through appealing to their self-interest, which involves leaders exchanging things of value with subordinates to advance their own and their team members' agenda (Bass et al., 2003). Transactional leadership shows that effort is exchanged by payoffs; and the leader takes corrective action or intervenes after the standards have not been met (Northouse, 2016). However, transactional leadership may not be effective if leaders cannot provide the rewards expected, if team members are still treated well, despite poor performance, and if quality of work is not monitored (Bass et al., 2003).

Laissez-faire leadership is considered a version of transactional leadership and is seen as an indifference to the task and the team, that is, ignoring problems and the team members' needs (Yukl, 2013, p. 32). It is considered to be a more hands-off style of leadership. (Northouse, 2016). These types of leaders are considered to be inactive and ineffective and likely to be replaced by followers (Bass & Bass, 2008). However, the perception of a leader's passivity may be affected by the motivation of their followers, for example, more self-directed followers saw their leader as less active and those with more affiliative needs saw them as more active. Laissez-faire leaders, in contrast with successful leaders who exhibit energy, motivation and activity, are likely to have negative team outcomes and fewer social and communication abilities (Bass & Bass, 2008).

The other interaction style, transformational leadership, arose as a way to boost transactional leadership. It was first identified by Burns (1978) and developed further by Bass et al. (2003), and emphasised the importance of relationships in leadership and argued that leaders can create a connection to subordinates by inspiring and empowering people. Transformational leadership was identified as leaders having strong internal values and concerned with improving the performance of followers so they would go beyond what is expected, whereas transactional leadership resulted in expected outcomes (Northouse, 2016). The four transformational factors, identified by

Bass and Avolio (1994), include leaders showing charisma or idealized influence which is how much the leader behaves in admirable ways that cause followers to identify with the leader; inspirational motivation is when a leader is appealing and inspiring to followers; intellectual stimulation that stimulates beliefs and values and creativity among followers; and individualized consideration or providing a supportive environment Individualized consideration is the degree to which the leader attends to each follower's concerns and needs. However, transformational and transactional leadership styles were considered to be distinct concepts but not mutually exclusive processes suggesting that leaders need to perform both styles. These two leadership interaction styles are considered to have benefits and limitations depending on the leader, the followers and the situation (Bass et al., 2003).

A popular and practical transformational leadership model, based on large empirical research of successful leadership identified how leaders mobilise others and create a climate which overcomes challenges. The researchers believe that although circumstances and contexts vary, the process of leadership remains relatively constant (Kouzes & Posner, 2017). However, this does not reflect the situational leadership model where different situations demand different kinds of leadership (Northouse 2016).

For more than three decades the two leadership scholars, Kouzes & Posner, have identified and refined, through successive book editions, the behaviour and actions which leaders described using when performing at their very best. These capabilities were subsequently defined as five practices which each had specific leadership commitments:

- 1) Model the Way - Clarify values by finding your voice and affirming shared values. Set the example by aligning actions with shared values.
- 2) Inspire a Shared Vision - Envision the future by imagining exciting and ennobling possibilities. Enlist others in a common vision by appealing to shared aspirations.
- 3) Challenge the Process - Search for opportunities by seizing the initiative and looking outward for innovative ways to improve. Experiment and take risks by consistently generating small wins and learning from experience.
- 4) Enable Others to Act - Foster collaboration by building trust and facilitating relationships. Strengthen others by increasing self-determination and developing competence.

- 5) Encourage the Heart - Recognize contributions by showing appreciation for individual excellence. Celebrate the values and victories by creating a spirit of community. (Kouzes & Posner, 2017, p.1297)

These principles became guidelines for leadership behaviour and led to a leadership assessment tool leadership practices Inventory (LPI) to measure these practices. The LPI became a popular leadership assessment tool used in leadership training and development (Northouse 2016). However, transformational leadership is not clearly defined, and scholars argue that its measurement suggests the four factors of transformational leadership identified by Bass and Avolio (1994) are not distinct. In addition, although transformational leadership shows positive outcomes there is no definitive research suggesting that it creates changes in followers or organisations. It also focuses on the leader and is therefore a heroic leadership style and risks being manipulative or coercive (Northouse, 2016).

2.4.1 Interaction between the leader, the situation and followers

Although transactional and transformational leadership approaches recognised the need for both task-related and socioemotional interactions there was still the question of how much the situation affected the leader or how the leader could manage different situations. This introduced the influence of the organisation on leadership and considers organisation processes, a level of leadership described by Yukl (2013). Leadership research in the 70s and 80s led with the view that no one leadership style was best in all situations. Effective leadership was considered to be contingent on matching a leader's style to the situation (Bass & Bass, 2008). Studies focused on the interaction between the leader and the team members, the degree of task structure, and the leader's power and authority (Fiedler & Chemers, 1967). Leadership became recognised as a combination of personal and situational factors and depended on the circumstances of the group and that either task-oriented or relationship-oriented leaders were effective if their style suited the situation. This formed the contingency theory. A favourable situation was considered to exist when there was a good leader-member relationship, a highly structured task, or the leader had high power (Fiedler & Chemers, 1967).

Although the contingency theory showed that different leadership styles ought to be matched to each different situation, it revealed some inflexibility as it did not ask for change from the leader. Scholars argued that leaders needed to be flexible and adapt to the situation, which led to the situational leadership theory (Hersey & Blanchard, 1969).

For example, team leaders may need to be more task-orientated and show more structuring behaviour at certain times and be more relationship-orientated at other times, depending upon the demands imposed by the situation (Northouse, 2016).⁸ This is in contradiction to the transformation model proposed by Kouzes and Posner (2017) who believe that although circumstances and contexts vary, the process of leadership remains relatively constant. Further development of the situational theory recognised that a leader needed a leadership style that met the team members' motivational needs and directed team members to their goals. This led to the path-goal theory which suggested that employee performance and fulfilment could be improved when leaders adapted to the level of the team members and focused on motivating factors, e.g., presenting clear goals and rewards (House & Aditya, 1997). The theory maintains that followers in a team are more motivated to be productive when they believe that successful task completion will provide a path to a valuable goal (Hackman & Johnson, 2009, ch. 2).

Leaders were expected to motivate their employees towards a goal but attention started to focus on the different relationships that a leader had with each follower whose activity and power varied over time (Graen, 1976). Further research mapped the interaction between the leader, the followers and the relationship against the trait, attitudes, power and influence within a situation which led to the leader-member exchange theory (LMX). The team came to be seen as interdependent dyads, comprising the leader and a follower, forming networks of relationships based on mutual dependence interacting with their own traits, the situation and the task (Graen, 1976). By the 1990s, it was how followers and leaders interacted which became the focal point of leadership studies where leaders were found to relate differently to each follower and formed partnerships with individual followers (Graen & Uhl-Bien, 1995). The LMX is still being actively developed as a theory, especially looking at how interdependent dyads form networks of relationships based on mutual dependence and relationship quality within the leadership structure depending on task performance.

Leadership research became more focused on the team and a fluidity between leaders and followers meant followers were being recognised as creating influence and leadership (Pearce & Conger, 2002).

⁸ This links to the competing values framework developed by Quinn (1988), where leaders are expected to adapt their roles or behaviour, depending on the situation.

A dynamic, interactive influence process among individuals in groups for which the objective is to lead one another to the achievement of group or organisational goals, or both (Pearce & Conger, 2002, p. 1).

These interactions between leaders and followers are a dyadic leadership process and create an awareness of a power-influence approach which could result in shared leadership (Jackson & Parry, 2011; Yukl, 2013), which Avolio et al. (2014) refer to as collaborative leadership. Team members were viewed as taking responsibility as leaders and implementing work as followers (Hackman & Johnson, 2009). Shared leadership was seen to be more likely with an unstructured task which is believed to generate more socioemotional behaviour (positive and negative) from leaders; routine tasks were associated with less participative leadership or a more directive leadership (even it is not needed); and when tasks are highly structured participative leadership is irrelevant (Bass & Bass, 2008).

Therefore, emergent leaders were recognised as arising in teams and enabled the group to accomplish its tasks, as well as arouse expectations that they could help the group reach its objectives (Bass & Bass, 2008). An emerging leader was defined as someone who takes an active role in discussion through setting goals, giving direction, managing conflict and summarising deliberations (Hackman & Johnson, 2009). A meta-analysis has shown that the amount of time a leader spends communicating has been indicative of emergent leadership, although the talk has to be relevant to the task (Schmid Mast, Jonas, & Hall, 2009).

The evidence presented in this section suggests that group research has led to the understanding that if behaviours emerge which are consistent, effective and meet expectations, they form roles. Overall, there seems to be some evidence that leadership interaction results in different types of leadership, as it is an interplay between the situation, the individuals and the team leader (Bass & Bass, 2008; Northouse, 2016; Yukl, 2013). The transformational and transactional interaction styles show the development of leadership becoming focused on socioemotional or task-related behaviours. Leadership interaction came to be seen as being mutually affected by the followers, the situation and the move towards their goals. How this occurred at different times during the team lifecycle is discussed in the next section.

2.4.2 The development of team stages

Researchers have found that a team matures as it works to create a balance between the task and relational interactions (Bales, 1950). How it progresses to maturity is through stages which may be progressive, cyclical or non-sequential (Mennecke, Hoffer, & Wynne, 1992, p. 526). The interaction process analysis (Bales, 1950) showed that a leader guided the team through a problem-driven process of team stages. The first stage dealt with the problem of orientation, a time of information seeking and receiving. This time involved more task interaction than socioemotional interaction. The following stage was a struggle for individual status and role development and required socioemotional communication; and the final stage meant the leader acted with control over team activities (Bales & Strodtbeck, 1951).

A later and well-recognised four-stage team model proposed by Tuckman (1965) was developed from a meta review of team lifecycles. It starts with forming the group and tasks, moves to a stage of storming, or interpersonal conflict; to norming with task cohesion and delegating roles and then performing where issues are resolved. A later model added the adjournment stage of disbanding cooperatively (Tuckman & Jensen, 1977). The type of task also affects team development. Team members may not need to interact as much with a disjunctive task where they can operate sequentially. (Mennecke et al., 1992). Teams which face a conjunctive task show an ongoing cyclical development of renewal and termination (Mennecke et al., 1992).

Other non-sequential models arise as they address the contingencies of the tasks, relational issues and the situation. For example, a team leadership model based on the team's socioemotional and task-related interactions was developed by McGrath (1991). This showed a time, interaction and performance matrix which mapped production, wellbeing and member support against the task performance stages. Teams may skip a phase or give it less emphasis if the activity required by that stage has been achieved. The model showed how progress was dependent on the team, tasks, technology, time and other environmental variables so each activity is not necessarily simultaneous or sequential. Although projects start with inception and end with execution the modes of technical problem solving and conflict resolution were required at different levels and at different times to follow a workable path, rather than a direct path (McGrath, 1991). Another sequence of events was shown as the punctuated team management model which suggested a half-way transition point may arise, if triggered, and showed that people panic as deadlines approach and rush to finish (Gersick, 1988).

It is recognised that all teams evolve and develop in progressive stages which have particular leadership requirements (DuFrene & Lehman, 2012; Hackman & Johnson, 2009; Mennecke et al., 1992). Despite the different pathways, the following stages are suggested by Mennecke et al. (1992, p. 543) as common to all teams:

1. Orientation, when the team develops a purpose.
2. Exploration, which involves status building and power.
3. Normalisation, where individual roles and rules are identified.
4. Production, where team cohesion occurs and roles are modified, tasks are directed and behaviour maintained.
5. Termination, where there is the end of task-related behaviours.

Identification of stages is important as leadership scholars agree that when a leader understands the stages they know when it is best to propose ideas, what to expect as the team becomes cohesive and committed and how they can help ensure effective interaction (Hackman & Johnson, 2009).

Researchers argue that team development is influenced by group cohesion, conflict, performance and communication and this team behaviour can depend on the characters involved, the task type, structure of meetings, type of technology used and the team's history (Mennecke et al., 1992). Furthermore, group performance and behaviour has been observed to vary with the amount of time the team has existed and will exist (Mennecke et al., 1992). This is important in virtual teams that are quickly set up as ad hoc teams to deal with immediate issues, and in established teams that have habitual actions.

The following section reviews the fast growth of virtual teams and the challenges of virtual team leadership. It explores how they differ from face-to-face teams and highlights the research gaps that need to be addressed in order to develop models of theory in virtual team leadership.

2.5 Virtual team leadership

Virtual team leaders face the additional challenges of distance between the team members, lack of social context cues and communication through technology. Leaders also face the challenge that their face-to-face leadership capabilities may manifest differently in a virtual team, or be interpreted differently. This section of the theoretical framework starts by first defining virtual teams and comparing them with face-to-face

teams. It then reviews the research progress on the practical and theoretical challenges of virtual team leadership and identifies research gaps which this study aims to address.

Virtual teams emerged in the 1980s where mainframe computers communicated with each other (Kock, 2005). By the 90s people were able to collaborate through the internet which led to the growth and accessibility of free online collaboration tools. These now include emails, virtual platforms such as wiggio and trello; cross-platform mobile messaging apps such as Slack, viber and WhatsApp, as well as online meeting tools such as Skype and Google hangouts. A catalogue of names was given to this computer-to-computer communication, including computer-supported cooperative work, groupware, group support systems, collaboration technologies and knowledge management (Kock, 2005). Global virtual teams started to be recognised and were defined in an early seminal paper on electronic leadership:

Temporary, culturally diverse, geographically dispersed, electronically communicating work-group of members who think and act in concert within the diversity of the global environment (Jarvenpaa & Leidner, 1999, p. 792).

The word ‘eleadership’ was used by Avolio et al., (2001, p. 617) to define a social influence process, mediated by advanced information technology, which produced a change in the thinking, emotions and behaviour of associated individuals, groups and organisations. Avolio et al., (2014) now recognise that this has been replaced with the term ‘virtual team leadership’ (p. 107).

2.5.1 The development of virtual team leadership

A global virtual team came to be seen as a ‘culturally diverse, geographically dispersed and electronically connected workgroup’ (Daim et al., 2012, p. 202). A more comprehensive definition encompasses the challenges of diverse individuals collaborating digitally, within different time zones and geographical distance:

A group of individuals dispersed in time, geography or culture that collectively produce a deliverable via inter-dependent work tasks and primarily use computer and telecommunication technology for individual and team communication (Zivick, 2012, p. 19).

For the purpose of this thesis, global virtual teams are defined as groups of people who collaborate online and across countries and time zones to achieve a joint project.

The fast rise in the number of virtual teams reflects the growth of global business but these teams often do not reach their goals due to their poor team cohesion and employee

dissatisfaction (Avolio et al., 2014; Ferrazzi, 2014; Lee-Kelley & Sankey, 2008). An intercultural US training consultancy that specialises in creating online learning reported that a survey of organisations revealed that virtual teams differ from face-to-face teams in managing conflict, making decisions and expressing opinions ("The Challenges of Working in Virtual Teams," 2010). Researchers warn that leaders need to recognise the diverse and numerous challenges in virtual teams compared to face-to-face teams, otherwise they will not have the fundamental knowledge to be able to cope with issues as they arise (Jarvenpaa & Leidner, 1999).

Most researchers recognise that virtual teams and face-to-face teams are very different, which means that leadership models based on face-to-face interactions may not be relevant (Avolio et al., 2014; Mukherjee, Lahiri, et al., 2012). For example, a study based on four simulated virtual teams found that traditional leadership training did not transfer to virtual teams in terms of modifying behaviour to improve team engagement. The researchers recommended that prior experience, or training, in a virtual team is essential before leading a virtual team (Iorio & Taylor, 2015). However, there is an increasing amount of literature on the difficulties of ascertaining what leadership is needed, how it can be identified and where it can be learnt (Hertel et al., 2005; Iorio & Taylor, 2015; Malhotra et al., 2007; Mukherjee, Lahiri, et al., 2012; Shriberg, 2009; Tong & Clear, 2013; Wakefield et al., 2008).

Some scholars have suggested that leaders need to use skills that go beyond the project-related tasks of face-to-face teams in order to create a common cause and enhance relationships among virtual team members (Mukherjee, Lahiri, et al., 2012). Others are task focused and recommend more specific expertise such as developing trust and monitoring team progress through technology; creating specific communication skills that show an appreciation of diversity; developing schedules regarding the virtual life cycle, and enhancing the visibility of team members⁹(Malhotra et al., 2007). In summary, scholars recognise that new leadership skills are needed for these teams. They also recognise that these teams need to be explored in more depth to build a theoretical base which can lead to appropriate virtual team leadership capabilities being adopted (Avolio et al., 2014; Balthazard et al., 2008; Branson, Clausen, & Sung, 2008; Malhotra et al., 2007; Mukherjee, Lahiri, et al., 2012).

⁹ More specific practices included developing a common set of procedures, discussion threads and reward systems which help develop a sense of team belonging and this study builds on these.

The following section highlights the theoretical gaps in the leadership interaction of virtual teams, with some comparison to face-to-face teams regarding the complex interplay of the virtual environment, the team leader interaction and capabilities.

2.5.2 The dilemma of interactive styles in virtual teams

In a face-to-face team there are spontaneous encounters, connections and casual observations. This contrasts with the lack of communication and timely updates in a virtual team along with the slow response, absence of visual cues, time zone differences and the use of technology that make it more difficult to coordinate, collaborate and build mutual support than in a face-to-face team (Avolio et al., 2001; Huang et al., 2010; Jang, 2009; Lee-Kelley & Sankey, 2008; Malhotra et al., 2007; Walvoord et al., 2008; Yukl, 2013). A virtual team leader faces the significant challenge of finding out what the team is doing in order to work collaboratively and avoid the uncertainty which can lead to poor team cohesion (Bjørn & Ngwenyama, 2009; Brewer et al., 2015; Jang, 2013).

Leaders themselves may feel less empowered as they are unable to rely on communicating their seniority through traditional social indicators (Lee-Kelley & Sankey, 2008; Zigurs, 2003). Researchers have found that leaders who are more visible online, that is, they have higher telepresence,¹⁰ are more influential in having their goals accepted by team members (Joshi et al., 2009). However, many leaders are unable to convey a social presence online, which can lead to team uncertainty (Biocca, Harms, & Burgoon, 2003; Joshi et al., 2009; Zigurs, 2003).¹¹ Some researchers have found that telepresence may be increased through high interaction, creating ways to be noticed, sending and replying to messages with encouraging conversation (Zigurs, 2003) and using technology which is rich but not overwhelming (Wickham & Walther, 2009).

Studies on team interaction styles, which affect team cohesion and reaching of task goals, show a distinct difference between virtual teams and face-to-face teams (Balthazard et al., 2008; Branson et al., 2008).¹² A study comparing more than 40 virtual teams with face-to-face teams found the virtual teams had a more defensive interaction style with low-information sharing, less questioning and a more forceful

¹⁰ Telepresence was first coined by Minsky in 1980 in reference to teleoperation systems and later used to define virtual reality as vividness, i.e., the ability of technology to create a rich environment, and interactivity, which is how much users influence the mediated environment (Steuer, 1992, p.76).

¹¹ The sense of being with another (Biocca et al., 2003).

¹² Team interactive styles have been explored in the light of team communication patterns dealing with the task and member relationships and their effect on team cohesion and the task goals (Balthazard et al., 2008).

approach to tasks, which can inhibit team cohesion (Balthazard et al., 2008). In contrast, the preferred constructive interaction style, which shows balanced concern for personal and group outcomes, cooperation, creativity and respect for others' views, was more evident in the face-to-face teams (Balthazard et al., 2008). A similar study that compared 32 virtual teams with face-to-face teams showed virtual teams had superficial interactions, were more passive or defensive, and found it harder to build trusting relationships (Branson et al., 2008).

Researchers are faced with diverse explanations for the defensive interaction styles in virtual teams. It could be that the group processes in the virtual teams prevent effective teaming and lead to inferior decisions, with team members more concerned about their own position than making good overall team decisions (Branson et al., 2008).

Alternatively, poor interaction may be situational as was identified in a study that looked at the causes of underlying team dissension and variable team participation in virtual teams of professionals in a global banking corporation. It found interaction issues resulted from a lack of face-to-face opportunities from management which led to poor communication, unclear team roles and variable team processes (Lee-Kelley & Sankey, 2008). Scholars argue that team interactions may improve the longer a team has existed and the amount of time it is expected to exist (Avolio et al., 2001; Bell & Kozlowski, 2002; Wilson, Straus, & McEvily, 2006).¹³ This may be because over time people are more likely to identify with a group, share group norms and cooperate with the group and its members (Sproull, Conley & Moon, 2005). Established teams may have also developed the trust, structured work environment, predictable communication routines, standardised practices, identified as some of the contributing factors for successful virtual teams (Ziek & Smulowitz, 2014).¹⁴

The interpersonal theory of cognitive dissonance (Festinger, 1957) also addresses the issue of poor interaction in these teams. Virtual team members who have an existing cognitive schema of face-to-face teams may find that being in a virtual team does not match their traditional team experience. This can lead to cognitive dissonance where they are wrestling with two conflicting thoughts at one time and can create uncertainty and negativity (Festinger, 1957). According to the social presence theory (Short et al., 1976), the absence of social context cues in the online environment means relationships are slower to develop as they are not sure how to react. This is also reflected in the

¹³ Additionally, Wilson (2006) found that time is an important factor in developing cooperative attitudes and eliciting cooperative behaviours in virtual teams.

media richness theory (Daft & Lengel, 1986) which suggests that uncertainty arises where there is an absence of information and can be addressed if explicit information is communicated. When the information is unclear, ambiguity arises and information is needed to clarify the situation. However, the lack of social information and reliance on minimal social cues in online text-based communication risks people over-attributing where they may build stereotypical impressions without qualifying the strength of these impressions (Jarvenpaa et al., 2004). How individuals approach uncertainty varies, and scholars found that people in virtual teams tried to reduce this through information-seeking strategies which had either interactive, active, extractive or passive interaction styles (Ramirez, Walther, Burgoon, & Sunnafrank, 2002).

There may also be unexpected emotional interactions in a virtual team, according to a theoretical framework developed by Sproull and Kiesler (1986). The researchers applied the social presence theory developed by Short et al. (1976) to understand email interactions among employees of a Fortune 500 company. They found that communicators were more likely to exhibit self-absorbed behaviour, display little differentiation among people of different status and to act more uninhibitedly because of weak social cues. Although this can foster independence it can also lead to the flouting of social standards and uninhibited expressions, or 'flaming', which describes irresponsible language that creates a negative climate (Sproull & Kiesler, 1986, p. 1501). A later study on virtual teams using text-based communication found that emotions such as anger and happiness spread quickly via text-based communication (Cheshin, Rafaeli, & Bos, 2011). This suggests that leaders may be able to maintain a positive environment through affirmative communication, and can easily create negative situations.

Relationship-led leadership

Despite the unpredictability of leadership interactions in virtual teams, studies have shown that a relationship-oriented leadership is valued in virtual teams (Huang et al., 2010; Kayworth & Leidner, 2001; Walther, 2010). Early virtual team leadership research found that leaders who were attentive in both relational as well as task-related skills were perceived as effective (Kayworth & Leidner, 2001). Equally, a caring approach by a virtual team leader is thought to prevent participants from having a lonely experience, and ensuring that each member feels valued enables shared leadership

(Avolio et al., 2009; Kirschner, Strijbos, Kreijns, & Beers, 2004).¹⁵ Similarly, a mentor or caretaker who ensured role clarity and shared information after the initial management of the team was formed was found to be effective (Powell et al., 2004).

A study by Nauman et al. (2010) investigated social skills in teams with variable virtuality across five countries and confirmed that virtual teams require a greater focus on relational skills. It was also argued that there is a greater need for social intelligence in teams with more virtuality. However, there were also indications that professionals involved in virtual teams had high social intelligence which may have developed during their virtual teamwork (Nauman et al., 2010). On the other hand, there remains the question of why relational skills have a low activity in virtual teams (Cordery et al., 2009; Wadsworth & Blanchard, 2015). It may be that these skills are hard to define in a virtual environment. For example, the ability to overcome problems through assuming the role of motivator, followed by communicating efficiently and mentoring were ranked important, but poorly differentiated, in a virtual team study (Cordery et al., 2009).

In face-to-face teams, the social penetration theory (Altman & Taylor, 1973) explains that people need time to communicate and get to know each other on a deeper level. Walther (1996) applied this to the online environment by developing the social information processing theory and argues that more time is necessary for creating the same effects online as in face-to-face teams. However, a virtual team is more likely to be task focused because of its limited timeframe although the likelihood of future interaction prompts people to be more positive towards building relationships (Walther, 1996). Further development of this theory by Walther and Bazarova (2008) focuses on online social closeness (propinquity) and argues that a high level of communication skills addresses challenges and increases closeness. The research also found that when the task is difficult it reduces social closeness. Therefore, the demands of a task may exacerbate the communication delays already existing in the virtual team (Cramton, 2001; Walther & Bazarova, 2008). Conversely, the high coordination required to achieve these tasks can also mean there is less opportunity to change actions or exchange immediate ideas with participants which may lead to process losses and weaker team performance (Hertel et al., 2005).

¹⁵ An earlier study of virtual teams in a student project spanning two countries found that a mentor with a supportive style and clear, concise and assertive communication improved the tenuous interaction process (Vogel et al., 2001).

Recent research shows that there may be a stronger link between team trust and performance in virtual teams than in face-to-face teams (Breuer, Hüffmeier, & Hertel, 2016). The basic attributes fundamental to the concept of trust are recognised in the literature as competence, benevolence, predictability and integrity (Mayer, Davis, & Schoorman, 1995). Trust may reduce the uncertainty which affects performance in virtual teams (Jarvenpaa & Leidner, 1999) but is recognised as developing differently in virtual teams than in face-to-face teams (Avolio et al., 2014; Jarvenpaa & Leidner, 1999). It may be more influential when there is a weak structure and when there is greater uncertainty as it may have a buffering effect (Jarvenpaa et al., 2004). Leaders who encourage socialised relationships have more team effectiveness and team cohesion, which may be associated with trust (Jang, 2009; Joshi et al., 2009). Trust is also positively linked to the setting of virtual team goals and the subsequent team cohesion, according to a three-month study of 50 virtual teams in a German telecommunication company (Brahm & Kunze, 2012).

In traditional teams, team members who have not worked together before and do not have time to form expectations of each other build trust on expectations or assumed trust. This concept of swift trust is fragile and fleeting with a need to be reinforced (Meyerson, Wieck, & Kramer, 1996). Swift trust has been seen in virtual teams as occurring as an initial early trust that is based on assumptions of others or the sharing of a project but may not be lasting. It is facilitated when social and task-oriented communication about the project occurs early in the project, thereby building on the initial trust (Jarvenpaa & Leidner, 1999). Later, Crisp and Jarvenpaa (2015) found that it was the action carried out following the communication that developed this initial trust. High enthusiasm, early trusting beliefs and early social exchange all help to develop this trust which in turn helps deal with technology and task uncertainty. It is also necessary to develop the normative actions which regulate behaviour, reinforce later trusting beliefs and encourage team performance (Crisp & Jarvenpaa, 2015).

Trust may also be affected by different levels of virtuality. For example, an exploratory study on 12 partially and variably distributed teams found that teams with greater distance from members suffered increasingly less trust, less shared identity and more conflict and this affected team performance negatively (Ocker et al., 2011). However, research on how tasks affect online collaboration and team trust offers conflicting results, although this has not been researched in depth. Increasing task interdependence from the beginning may initiate early team interaction and team cohesiveness (Hertel et

al., 2005). This also increases team awareness which may lead to improved trust (Jang, 2013).

Research by Liu, Magjuka, and Lee (2008) shows that trust is important to virtual team satisfaction and team collaboration. Shared meaning, awareness and accountability, which also indicate trust, were shown to be important needs for virtual team members collaborating within a global transportation company with 100,000 employees located in Asia, Europe, Canada and the US (Bjørn & Ngwenyama, 2009).

A study which explored how a leader can build trust found that empathy has a positive effect on trust and consequently on team performance. Empathy is when the leader understands the emotions of the team, makes the team feel they are understood, shares feelings with the team and encourages the team to express their own feelings (Guinalú & Jordán, 2016). Lowering ambiguity, which can be through using empathy to understand what is needed to reduce the team members' feelings of confusion and improve team performance, is identified as a leadership influence tactic, specific to virtual teams, as it reduces the confusion of the complex virtual team environment (Wadsworth & Blanchard, 2015). Avolio et al. (2014) recommend a more technical approach to reduce ambiguity by using visible team planning tools, although these would depend on the technology available and the capability and willingness of the team to use it. Although ambiguity can affect some people in face-to-face teams, it is argued that everyone in virtual teams is affected because of the slower exchange of communication cues leading to less communication (Wadsworth & Blanchard, 2015).

Hesitation or non-participation?

However, it may be a challenge for leaders to determine why some team members are less communicative (Malhotra et al., 2007). Although participant disengagement in a virtual team is a leadership challenge that affects team performance, there is limited understanding on how it can be addressed or even identified (Lee-Kelley & Sankey, 2008). Poor participation, a consistent issue in small group leadership research (Hackman & Johnson, 2009), has become a growing issue in virtual teams, despite the team expectation that an individual has an obligation to participate (Lee-Kelley & Sankey, 2008; Malhotra et al., 2007; Nicol et al., 2003). Virtual team members may choose to participate only when needed as an ongoing presence is not evident, and this can weaken team motivation and team cohesion (Hertel et al., 2005; Monzani et al.,

2014; Zigurs, 2003) and overall team performance (Morgan, Paucar-Caceres, & Wright, 2014).

More effective leadership interaction is needed to improve participation and collaboration so that team members establish group norms, identify with their team and share common goals (Mukherjee, Lahiri, et al., 2012; Sivunen, 2006; Sproull, 2005). A large-scale study of 55 virtual teams found that leaders who were unable to physically observe the team to assess its energy and interest, felt less able to monitor and motivate members from a distance and ensure information sharing (Malhotra et al., 2007). Similar issues were observed in an international project involving Sino-Swedish student teams and different leadership skills from those used in traditional teams were believed to be needed to engage teams (Tong & Clear, 2013). Withholding information can be a critical issue in virtual teams, as this can also be used to validate someone's argument and leaders are advised to find ways to share information (Hollingshead, 1998). A failure to establish and maintain mutual knowledge is seen by Cramton (2001) as the central problem in virtual teams. She identifies five reasons for this lack of information sharing: a failure to communicate and retain information, an uneven distribution of information, difficulties in communicating and understanding the value of information, uncertainties in interpreting silence in a team and slow access to information.

A lack of information sharing may also be explained by there being less pressure to contribute online compared to face-to-face situations, according to an online teaching course across institutions in remote parts of Scotland (Nicol et al., 2003). A reliance on writing made it easier to hide or 'lurk' (p. 274) without interacting. Team members claimed they did not interact online or submit written work because they felt they had nothing to say, or the low media richness did not allow meaningful discussions. Furthermore, delayed responses dampened enthusiasm as there were no gestures or voice tones to encourage conversational reciprocity, and team members lost interest when online discussions lacked focus (Nicol et al., 2003). However, some research has suggested that when leaders give regular and frequent feedback which creates interaction, virtual teams make headway (Davis & Khazanchi, 2007; Hertel et al., 2005; Iorio & Taylor, 2015; Mukherjee, Lahiri, et al., 2012; Zivick, 2012).

2.5.3 Deciding on leadership interaction styles

Scholars have found that leadership influence tactics may also work in different and unexpected ways in virtual teams (Wadsworth & Blanchard, 2015). Although face-to-

face influence tactics (Yukl et al., 2005; Yukl & Falbe, 1990), are also found in virtual teams, with some amendments, different interactions are more evident. In face-to-face teams, rational persuasion and consultation are found to be the most prevalent influence tactics (Yukl et al., 2005). However, the influence tactics most prevalent in virtual teams are found to be pressure, legitimising, rational persuasion and consultation (Wadsworth & Blanchard, 2015). The two former are more assertive than those used in face-to-face teams which suggests that these may help to avoid being ignored which can easily happen in virtual teams (Wadsworth & Blanchard, 2015).

Virtuality can also change the effect of leadership and may even weaken hierarchical leadership, although some research has shown it may have no effect on shared leadership (Hoch & Kozlowski, 2014). Furthermore, an earlier study showed that the flattening of hierarchy seen in a virtual team means that a team leader has less influence on the team and is less able to get information about the team members, and the shared effort may need a strong leader (Konradt & Hoch, 2007). However, a shared leadership can also cause ambiguous expectations in virtual teams especially around roles and goals, thereby leading to weak leadership, competing lines of authority and poor delegation (Lee-Kelley & Sankey, 2008). Conversely, other scholars recommend a shared leadership as opposed to the hierarchical management common to face-to-face teams (Daim et al., 2012; Yukl, 2013; Zigurs, 2003).

Leadership is believed to be directed by cognitive schema; fragments of knowledge that may influence perceptions, attitudes and behaviour so that a role will be performed and evaluated based on this prior understanding (Hackman & Johnson, 2009). This may explain why virtual team leaders resorted to adopting roles based on familiar face-to-face teams, according to a study which applied the CVF to a global company of 97 managers in virtual teams (Konradt & Hoch, 2007). The study also indicated that leaders are less likely to take risks as they choose a lower repertoire of roles than in face-to-face teams and prefer consensual control-related roles, rather than the more assertive positions. The control-related and lack of risk-taking roles of the CVF model were more linked to virtual team success and performance than non-control roles and leaders were seen to be more task-focused than people-oriented (Konradt & Hoch, 2007). However, a further study suggests that although virtual team leaders need to have strong coordination skills, successful leaders are more people-oriented and flexible than in face-to-face teams (Nauman et al., 2010; Zaccaro et al., 2001).

Performing an appropriate role can help people achieve their own personal needs which is important for team satisfaction and effectiveness (Morgeson, DeRue, & Karam, 2010). Although virtual team roles are not clear, role criteria may reduce the inherent ambiguity of virtual teams, improve structure and management and allow for overall task interdependence and consequently shared leadership (Hertel et al., 2005; Malhotra et al., 2007; Sproull, 2005; Wadsworth & Blanchard, 2015).

There is also the dilemma of whether the combination of transformational and transactional leadership interaction styles, described earlier in this chapter as effective in face-to-face teams, is also true for virtual teams (Hambley et al., 2007; Huang et al., 2010; Mukherjee, Lahiri, et al., 2012). However, generalising these interactions to virtual teams is problematic (Balthazard et al., 2009; Purvanova & Bono, 2009). Comparative studies of virtual and face-to-face teams found that transformational leadership had a more positive effect on virtual team performance than it did in traditional teams (Purvanova & Bono, 2009). This may have been because the leadership developed a common mission which helped followers in virtual teams identify with the team task and goals and strengthened team cohesion.

Transformational and transactional leadership may manifest differently in virtual teams. For example, in face-to-face teams the personality styles of extraversion and emotional stability have suggested the emergence of transformational leadership. In contrast, virtual team studies found the clear and compelling writing, high talkativeness, quick replies, with lengthier but understandable messages of written communication that indicate transformational leadership (Balthazard et al., 2009; Huffaker, 2010). This may be explained by a study which found that as media richness decreases, the attractive personality characteristics, such as charm and physical appeal, are filtered out (Monzani et al., 2014). Another study found that transactional leadership is better than transformational leadership at improving task cohesion when media richness is low. However, transformational leadership is also seen to create a cooperative environment which is important in achieving task cohesion and team interaction (Huang et al., 2010; Kahai et al., 2013). Conversely, when media richness is high these effects are less noticeable (Huang et al., 2010).

Transactional and transformational leadership may also have different effects on the cognitive efforts of virtual team members. Researchers found that transactional leadership can reduce the cognitive effort by shortening the discussion time (Huang et

al., 2010; Kahai et al., 2013). This may be an advantage for virtual team members whose processing capacity may already be overloaded (Huang et al., 2010; Kahai et al., 2013). On the other hand, transformational leadership was found to improve the decision quality but also lengthened discussions, which meant an increase in cognitive effort which reduced satisfaction (Kahai et al., 2013). Similarly, team members defined transformational virtual team leaders as focusing on relationships, originality, creativity and being concerned about the team, whereas a transactional leader was seen as task-focused and authoritative, with high self-esteem (Ruggieri, 2009). Inspirational leadership may also be important in virtual teams, based on the results of a study of 91 virtual teams which worked to common goals in a multinational company (Joshi et al., 2009). The inspirational leadership interaction was seen to enhance engagement and overall team performance, although the study did not identify when this style is most effective (Joshi et al., 2009). There is some evidence to suggest that the effectiveness of transformational and transactional interactions may depend on timing and this is discussed further in the following section on virtual team stages.

It may also be that emerging leaders can improve team performance. For example, emerging leaders have been found to be highly interactive and send longer messages (Hambley et al., 2007; Huffaker, 2010; Yoo & Alavi, 2004; Ziek & Smulowitz, 2014). Emerging leaders are also seen to initiate the scheduling of meetings and other team communication, which is influential in coordinating the team's activities (Yoo & Alavi, 2004). Another study found that emerging leaders ask more questions, set a vision and show cognitive and creative ability which move a project forward (Ziek & Smulowitz, 2014).

A leader's technological capabilities may even improve socioemotional leadership, according to a study by Mukherjee, Lahiri, et al. (2012). Virtual leaders with high technological capabilities may achieve better team performance because they use technology for relationship building, whereas leaders with poor technological capabilities use technology for achieving tasks (Mukherjee, Lahiri, et al., 2012). Furthermore, leaders who create an attitude of team experimentation with technology encourage team members to be open about their own ability to use it which helps it evolve with their needs (Malhotra et al., 2007). Nevertheless, with more reliance on technology and its rapid development, technology may fulfil a leadership role, or substitute the need for a leadership role, when it creates its own demands and operating rules (Avolio et al., 2014).

Although technology offers more ways of communicating and more formats and platforms, these can become overwhelming and present too many diverse online tools. Virtual team members have been challenged with having to focus on familiarising themselves with the technology as well as with each other (Lee-Kelley & Sankey, 2008; Wadsworth & Blanchard, 2015). This may explain why the application of new technologies in virtual teams was found to be irregular, even when team members were familiar with them (Lee-Kelley & Sankey, 2008). However, the use of virtual platforms means team members can plan and integrate team operations and spend more time on preparation activities whereas face-to-face interactions may actually be counterproductive for some planning activities (Maynard et al., 2012).

2.5.4 Cultural factors have an influence on interaction

This study draws on an integrated theoretical framework of leadership interaction focusing on intra-individual, dyadic, group and organisational behaviour. Although cultural factors might have an influence on interaction, and are deserving of further research to understand virtual teams, they are outside the scope of this study. Furthermore, the GlobCom cultural makeup was not defined. For example, the supervisory lecturer team and student teams were comprised of diverse cultures, representing each university. However, some students and lecturers were working outside of their own country and representing their host country. The topic of culture is outlined here to highlight its ramifications, and the recognition that it may affect a virtual team. More study in this area would add to these findings although as Clear (2010) notes, 'the definition of culture is elusive' (p. 62). Research of cultural differences can also illuminate how virtual teams working across time zones can cause conflicts and loss of trust depending on members' cultural empathy regarding the issues, such as reaching deadlines and meeting punctually (Lee-Kelley & Sankey, 2008). Cultural differences and a lack of social sensitivities can also create challenges leading to a shallow collaboration (Tong & Clear, 2013). Some scholars have suggested that team members who are from a collective culture and experience low uncertainty avoidance, may be the best virtual team members (Mukherjee, Hanlon, Kedia, & Srivastava, 2012).

Virtual team research has focused on equating culture to nationality and may not reflect the mobile nature of contemporary and diverse populations (Connaughton & Shuffler, 2007). A team culture can emerge, and may be more significant than nationality, race or gender (Connaughton & Shuffler, 2007). Ferguson and Mansbach (2012) argue in their

text on globalisation that culture may include most of the areas considered as human affairs. The shared culture in face-to-face teams has assumptions about how participants will communicate and function, whereas in virtual teams these need to be made explicit through developing norms for cooperative teamwork as team members may have very different expectations from one another (Malhotra et al., 2007; Zigurs, 2003).

2.5.5 Virtual team stages

This final section of situating the concept of virtual team leadership within the existing scholarship on both face-to-face and virtual leadership emphasises that team stages are intrinsic to understanding traditional and virtual team development. A virtual team is considered to perform differently in each stage (Hertel et al., 2005), and leaders may therefore need to adapt their leadership skills.

Scholars have proposed different virtual team stages and the following table for this study compares four models and examines how they might work for this study.

Table 1 A comparison of the virtual team stages formed by four virtual team scholars

Hertel et al. (2005) team stages x5	Salmon (2004) team stages x5	Duarte and Snyder (2006) team stages x4	Zander, Mockaitis, and Butler (2012) team stages x3
1. Preparation	Access and motivation	Inception	Welcoming phase
2. Launch	Online	Problem solving	Working phase
3. Performance management	Information exchange	Conflict resolution	Working phase
4. Team development	Knowledge construction	Execution perform tasks	Wrapping up phase
5. Disbanding	Development		

Earlier, this chapter outlined the progressive, cyclical and non-sequential models (Mennecke et al., 1992) evident in face-to-face teams and the above researchers show virtual teams in a progressive model, except for Duarte and Snyder (2006) who recognise the need for interaction and suggest the virtual team may not be sequential. The virtual team models also focus on the leadership demands of each stage which suggests they are more task-oriented than face-to-face teams, and this may be because virtual teams were more likely to be operating as productive teams. Nevertheless, the stages still show a desire to balance task and socioemotional needs, although Hertel et al. (2005) focus on tasks in the first half of the team cycle and leadership and relationships

in the latter half. However, this may be a natural occurrence as the team develops rather than being the most effective way to lead a team.

The models have a broad framework and it is questionable whether they can be applied to a management project which has distinct deliverables. Researchers admit they are not sure when in the team lifecycle changes to leadership would be effective (Huffaker, 2010; Iorio & Taylor, 2015; Konradt & Hoch, 2007; Malhotra et al., 2007; Ziek & Smulowitz, 2014).

Transformational and transactional leadership may also have different effects at different times in the team lifecycle (Huang et al., 2010). For example, a transactional approach may be more effective at the beginning of a team when planning takes place (Ocker et al., 2011). Structure and goal setting is thought to be more important in the early stages of a team's development so that shared values, norms and practices can be established (Weisband, 2008). Directive leadership in a virtual team, which is part of a transactional approach, is also considered to be better at establishing team processes, communicating a clear vision and reducing cognitive overload (Avolio et al., 2014). This may be because the early stage is characterised by anxiety where group members are uncertain of procedures, according to Tuckman's analysis of team stages for face-to-face teams (Tuckman & Jensen, 1977). Scholars agree that planning, communicating a vision, establishing practices and ensuring team involvement are needed in the early stages of a virtual team to foster trust and create team cohesion (Avolio et al., 2014; Hambley et al., 2007; Hertel et al., 2005; Malhotra et al., 2007; Salmon, 2004, 2011; Zander et al., 2013) but other behaviours may be more important in the later team stages (Joshi et al., 2009).

Conversely, a transformational leadership style may be more relevant in the middle stage where there is more team collaboration and a need for motivation (Mukherjee, Lahiri, et al., 2012; Ocker et al., 2011). As relationships develop and higher levels of trust emerge through the team lifecycle, leaders may be able to shift to a more participatory and transformational style (Weisband, 2008).

Equally, Mukherjee, Lahiri, et al. (2012) contend that different cognitive, social and behavioural capabilities are required at different times in the team lifecycle although these have not been empirically tested (see table 2). They apply the team stages defined by Hertel et al. (2005) and suggest cognitive skills are needed in stage 1, social capabilities in stage 2, social and behavioural capabilities in stage 3; cognitive and

behavioural capabilities in stage 4 and cognitive and social capabilities in the final disbanding stage (Mukherjee, Lahiri, et al., 2012). This bears some similarity to the early face-to-face model by Bales and Strodtbeck (1951) who found that in the first stage, team development was more task-related and the third stage required more socioemotional-related skills. Although scholars recognise that specific capabilities are required at the beginning of a team, there is a lack of consensus and research regarding the later team stages (Hertel et al., 2005; Mukherjee, Lahiri, et al., 2012) which this study addresses.

Table 2 Leadership capabilities recommended for specific team stages

Lifecycle stage in a virtual team (Hertel et al., 2005)	Actions	Leadership capabilities needed most strongly
1. Team preparation or team development to start a GVT	Selection of team members, tasks and making decisions	Cognitive
2. Launch	Relationship building, build trust and cohesiveness, identify roles and encourage interaction and teamwork and use of technology	Social
3. Performance management	Maintain motivation and communication, less directive leadership	Social and behavioural
4. Team development	Evaluate activities, team training and integrate new members	Cognitive and behavioural
5. Disbanding	Maintain morale and recognise achievements in preparation for reforming	Cognitive and social

Source: Mukherjee, Lahiri, et al. (2012)

The studies presented suggest that team stages are an important aspect of virtual teams as they help to structure the work and identify the need for different leadership capabilities. They may also determine the need for socioemotional and task-related leadership; although there is debate about when in the team lifecycle these are most relevant. Although stage 1 is seen as active there is limited research regarding the other stages.

2.6 Summary

Together, the studies in this chapter show that virtual teams can be liberating in that they enable sharing global knowledge and understanding (Davis & Khazanchi, 2007) but they also have distinct challenges. The literature highlights that there are no

theoretically-based guidelines to improve virtual leadership in order to reach the task goals. There is also a lack of theory on the specific interactions or roles to improve team cohesion, task and leadership presence, even though telepresence is recognised as essential for a leader. Although a combination of socioemotional and task-related interactions is recognised as essential to improving participation, there is no distinct recognition of how these are defined in a virtual team, or when they are most effective.

Research is still wrestling with how leadership interaction in a virtual team manifests differently from face-to-face teams, and some studies are contradictory. However, interactions in a virtual team are generally seen to be less constructive and less relational with poor decision-making, uncertain roles and a diminished leadership presence. It is still not clear how team leaders engage their teams, or can ensure the team is cohesive and reach its goals. A leader needs to cope with these obstacles if the team is to reach its potential (DuFrene & Lehman, 2012) and it may be reasonable for virtual team leadership to be classified as a 'black box' (Huang et al., 2010, p. 1099), which this research expects to illuminate. In summary, virtual team leadership needs to be different from face-to-face leadership, although there are no consistent guidelines or models.

This study draws on leadership interaction theory, which shares the multidisciplinary theoretical framework of PR, drawing on organisational behaviour and interpersonal theories. Although conceptualising PR leadership may have lagged behind other studies (Meng & Berger, 2013), this research provides practical and theoretical applications which can be used to expand PR scholarship and lead the virtual teams which are integral to the implementation of global PR programmes

The following chapter will elaborate further on the live educational PR project, GlobCom, used for this research. It then follows with an outline of studies that bear some comparison to GlobCom and emphasise its unique contribution to this research project.

CHAPTER 3 THE GLOBCOM PROJECT

The previous chapter outlined the lack of understanding of virtual team leadership. In an effort to prepare students to deliver international PR programmes a group of ex-PR practitioners working in academia created GlobCom. The venture involves a live industry brief from an international client which requires a competitive and creative communications solution that could be applied to the current world market, developed under real-time challenges by student global virtual teams. The students form multinational virtual teams guided by the lecturers in a supervisory virtual team.

GlobCom brings together more than 100 senior public relations students from 12 universities in 12 countries across five continents (Australia, Germany, Italy, India, New Zealand, Portugal, Russia, South Africa, Spain, UK, United Arab Emirates and the US). This ongoing project started in 2003 and has been set up to work during a three-month-long semester (mid-February to mid-May). The GlobCom project provides a unique opportunity to carry on a longitudinal study that explores leadership of both the student teams and the supervisory lecturer team and incorporates changes as the research progresses. It is an example of situated learning, where learning happens through developing relationships in an informal setting so students connect their previous knowledge to new contexts (Lave, 1988). GlobCom also provides experiential learning, where students learn unknown situations at first-hand (Humphrey, 2002).¹⁶ Experiential learning has been proven as effective by Kolb (2014), who drew on the learning theories of John Dewey and Kurt Lewin and linked it to action research cycles. It focuses on an emerging process of learning, with ideas forming and adapting to experience, rather than behavioural outcomes. ‘Learning is the process whereby knowledge is created through the transformation of experience’ (Kolb, 2014, p. 38).

The GlobCom project is a problem-based learning project, in the sense that students form their own learning through independent study and use the project’s problems to increase their knowledge while working in small groups with tutors (Barrett & Moore, 2011).

¹⁶ The educationalist, Race (2001) identified the five factors of learning as wanting to learn, needing to learn, learning by doing, getting feedback and digesting what had been learned. Experiential learning, according to Donna Humphrey (2002), encourages learners to observe at first-hand unknown situations, learn directly from other cultures and reflect on that experience. Kolb (1984) argues that experiential learning must engage cognitive, affective and behavioural factors to be effective.

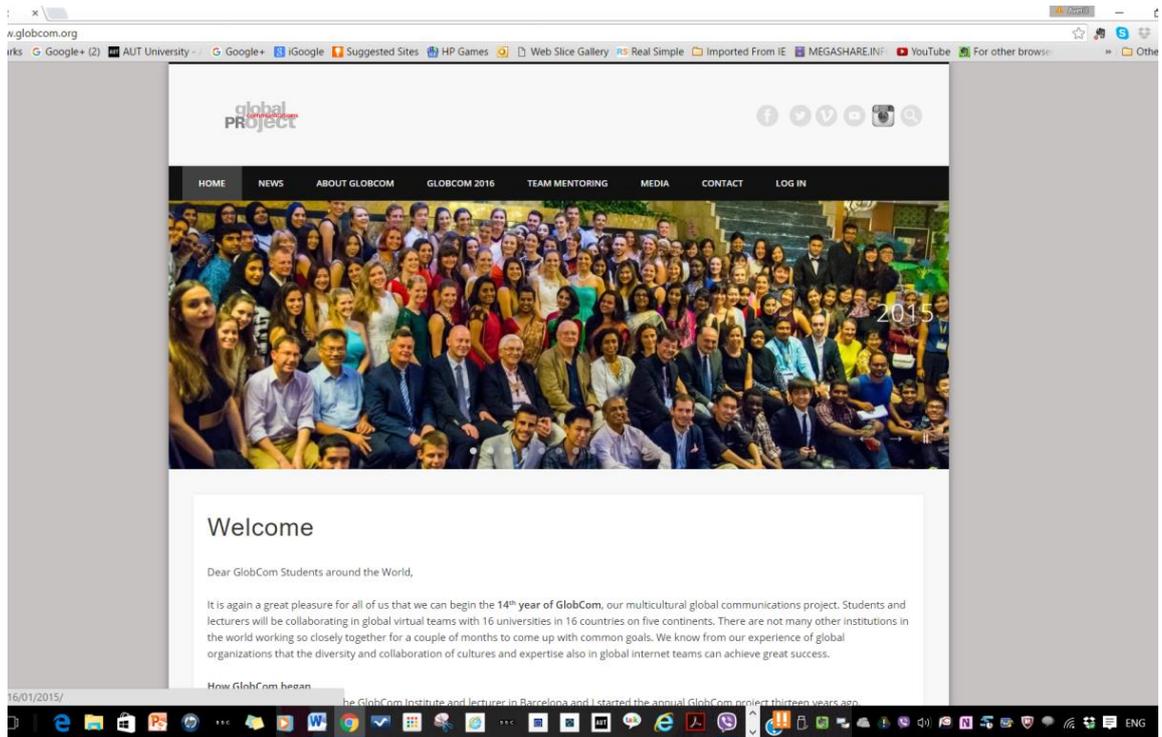


Figure 3 The landing page of GlobCom (www.globcom.org)

The objectives of GlobCom, as outlined on the website (www.globcom.org), are as follows:

1. To work in an international team
2. To collaborate online
3. To solve a global PR problem as an international agency
4. To overcome cultural barriers
5. To recognize cultural diversity as a strength
6. To learn that a global strategy has to be implemented locally
7. To persuade through a presentation (Stoltz, 2016)

The annual project

Students are challenged by the project. The different time zones in particular are responsible for communication difficulties, such as arranging meeting times when it is 8am in Auckland, 8pm in London, and 2pm in Boston the previous day. Additionally, the variable standards of theoretical knowledge as well as written English means that proposals often need more discussion and more editing than the students anticipated. Also there are organisational challenges as universities have different academic weeks and holidays which can create erroneous perceptions regarding participation. For example, some students may be absent owing to longer holidays in their country, such as during Easter and Eid. Additionally, the constraints of online communication create

more challenges as some students have variable internet connections as well as less data availability which can affect team communication. Furthermore, some students are consistently on Smart phones and therefore communicating quickly and regularly through WhatsApp and Viber, whereas others do not have the technology access, which can lead to communication lags and even perceptions of non-participation.

Eight competitive virtual teams are formed every year with each team comprising at least two students from each university so that teams are multinational and work across different geographical locations. Each virtual team has the challenge of innovative problem-solving, a skill which has received very little attention in virtual team research (Malhotra et al., 2007). The eight competitive proposals are submitted online and marked collaboratively following specific marking criteria by all the lecturers. At the end of each 12-week project students and lecturers attend a bespoke conference hosted by one of the participating universities. Additionally, the three most highly-scored teams make a presentation to the conference delegates, who comprise the client, industry professionals, lecturers, conference speakers, lecturers and the students. A winner is selected and the client gives feedback and announces how the proposal will be implemented by their organisation. In addition, as part of the conference programme, all student teams present to industry professionals before the finalists are announced. In this way the students receive feedback from the industry and the finalists have a chance to prepare their presentation.

The supervisory virtual team is comprised of academics from the participating universities who are enthusiasts for global PR projects. The webmaster is included in this team as he is responsible for the initial organisation and allocation of teams. The lecturers guide their own student teams and also collaborate with each other to supervise the student teams. Despite some new lecturers joining, the supervisory team has remained essentially stable since 2004, whereas the student teams comprise new students each year.

The president directs the project and the 12 lecturers monitor their own students throughout and liaise with the other lecturers in an informal process. In addition, explicit positions are delegated and their responsibilities announced at the beginning of each cycle as follows:

- The president of GlobCom secured the client, obtained sponsorship, worked with the conference organiser, helped write the client brief and delegated and

announced roles, welcomed lecturers and students and presented the project schedule.

- The vice-president who worked with the president on the above.
- The team mentor (this researcher) worked with the president and vice-president on the above and also liaised with the student team leaders and the lecturers to monitor and guide student progress.
- The webmaster was not a lecturer but set up the website, was responsible for technological issues and arranged the online student registration where students formed teams.
- The conference organiser changed each year, often depending on where the client was based, and the conference was held at the associated university.

All conferences have an academic programme, the students present their PR proposals, following coaching by local PR agencies, followed by a day-long cultural event and a gala dinner. There are also additional activities depending on the University. Before the project starts, the managing board secures the client and funding, and collaborates on developing the brief. The following presents the PR objectives of each project and the conference topics over the three years to which this study refers:

2012: AGEDI (Abu Dhabi Global Environmental Data Initiative)

The PR objective of this project was to promote the worldwide initiatives and strengthen the network of AGEDI (Abu Dhabi Global Environmental Data Initiative), an organisation that curates quality environmental data for policy-makers. The conference in Abu Dhabi was hosted by the University of Zayed and included a mosque visit, lunch with Sheik Zayed and a visit to the desert.

2013: City of Stellenbosch

This project aimed to raise the awareness of the South African city of Stellenbosch as an international tourist destination focusing on its sports, cultural heritage, viticulture and potential as a business hub. The conference in Stellenbosch included a tour of vineyards and a visit to Cape Town.

2014 Zeiss Vision

This project aimed to profile Zeiss, the leading multinational lens manufacturer to consumers worldwide by leveraging its pro bono eye-health projects in India, while still retaining the organisation's highly specialist global profile in the fields of optics and

optoelectronics. The conference hosted by Emerson College in Boston included a dinner at the British Embassy and students also visited PR agencies and consulates in an overnight trip to New York.

All the projects required researching the company's products and organisational context, identifying global communications issues, researching the international media and finally creating a strategic communications proposal with an overarching theme. Students needed to develop strategic objectives, an implementation plan, which explained each action, plus an evaluation and detailed budget. The proposals were submitted online and judged by the supervisory lecturer team, according to specific criteria. The projects were complex as they involved ambiguous requirements that needed to be clarified through research and client interaction. The detailed and diverse project has high task complexity for the student teams needing group decision-making which would, according to Bell and Kozlowski (2002), require coordination and synchronous communication.

3.1.1 The student teams and the team leader forum

The GlobCom student virtual teams are organised in the same way as they would be in a global public relations consultancy, where the teams take a brief and develop a competitive team proposal in real-life conditions. The student team leaders are required to encourage team participation in order to achieve development of a PR strategy through the collaborative work of their virtual team members. The projects are judged by the supervisory lecturer team according to specific criteria posted on the GlobCom website and the winning team presents at the conference. The collaborative work demanded by GlobCom where students learn how to interact with each other, while sharing and processing information, reflects the authentic environment in public relations that relies on team interaction (Gordon, 2011b; Gordon & Picherit-Duthler, 2009).

A student team leader for each student team is elected online by the team in the first four weeks. There is a team leader forum for the leaders to post comments or questions visible to the team mentor and other team leaders. This is supervised by the team mentor, who is a lecturer, and this researcher and supports student leaders via email and the team leader forum. Leaders are expected to submit student registers, report participation issues and team progress to the team mentor.

A deputy student team leader is chosen by the team leader who decides how the deputy works with them. In addition, each country identifies a team member (country leader) who would represent them; sometimes a university had more than two people in the team so having a country leader made one person responsible for attending meetings and the key country contact for that team. Therefore, there would be about 10-12 country leaders per team. Consequently, the virtual team is a hierarchical order, in terms of communication, of team leader, deputy leader, country leaders and other team members as shown in the table below. Most universities had a country leader and at least one other student from that university in the team.

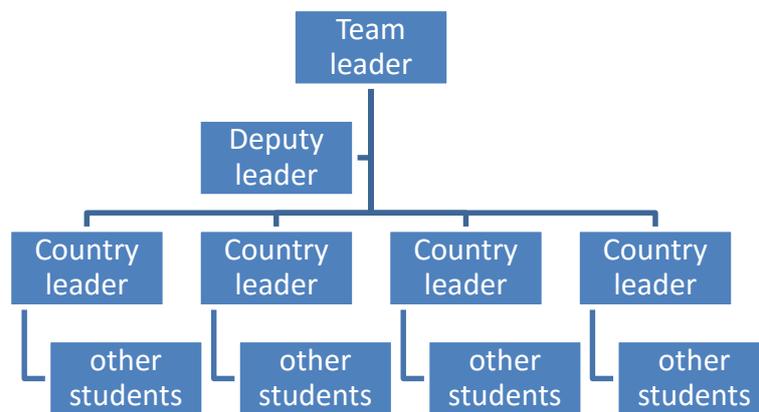


Figure 4. Showing the format of a student virtual team.

During a board meeting in Barcelona in 2009, board members discussed reports of students reporting they felt isolated. I was appointed team mentor and liaised with the students during the project. Although the website archives previous student proposals, I developed pages for students called team mentoring. These outlined the timeframe for elements of the proposal writing, team development recommendations, recommended research material and a review of collaboration tools. All participating students have access to the team mentoring pages.

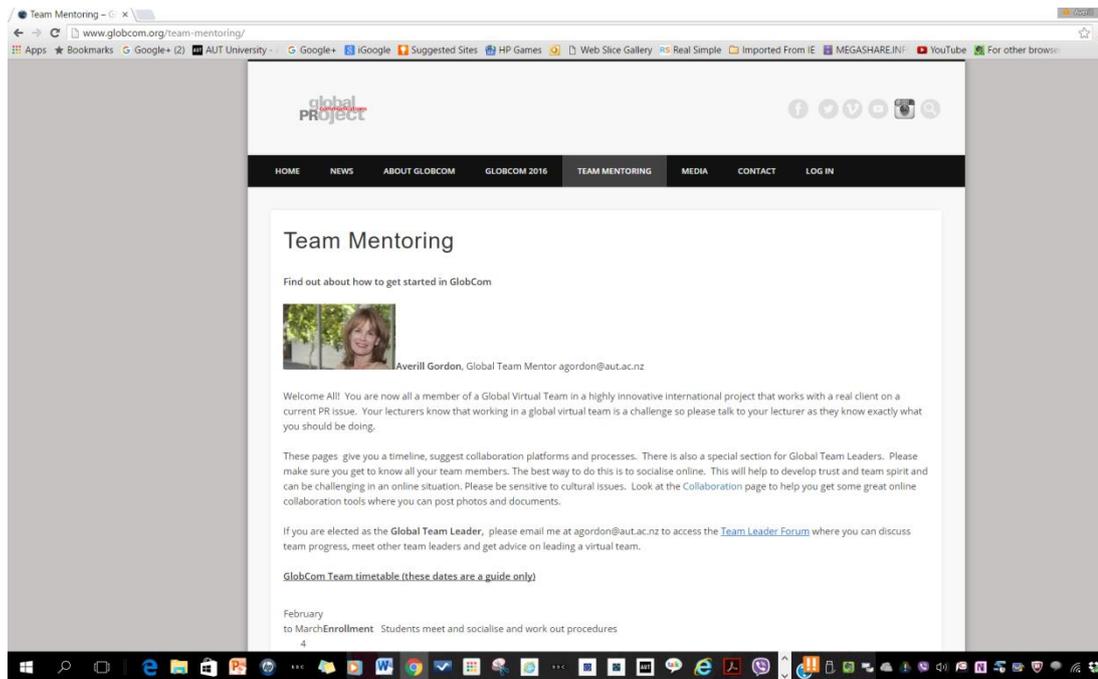


Figure 5 The team mentoring introduction page (www.globcom.org)

In 2012 a facility for student team leaders only was developed. This arose as there were login issues to the website for the students and I created a WordPress site for the team leaders. I hosted the site and posted information on the project and advice on team collaboration and client information. This developed into a team leader forum where team leaders posted comments to the other team leaders and to me as the team mentor, which led to discussions and also to the site becoming a support for the team leaders. The team leaders also provided team registers, meeting minutes and emailed me questions. This provided an external point of contact for the student team leaders and provided me with information which was used to help the supervisory team of lecturers get an overall picture of each student team.

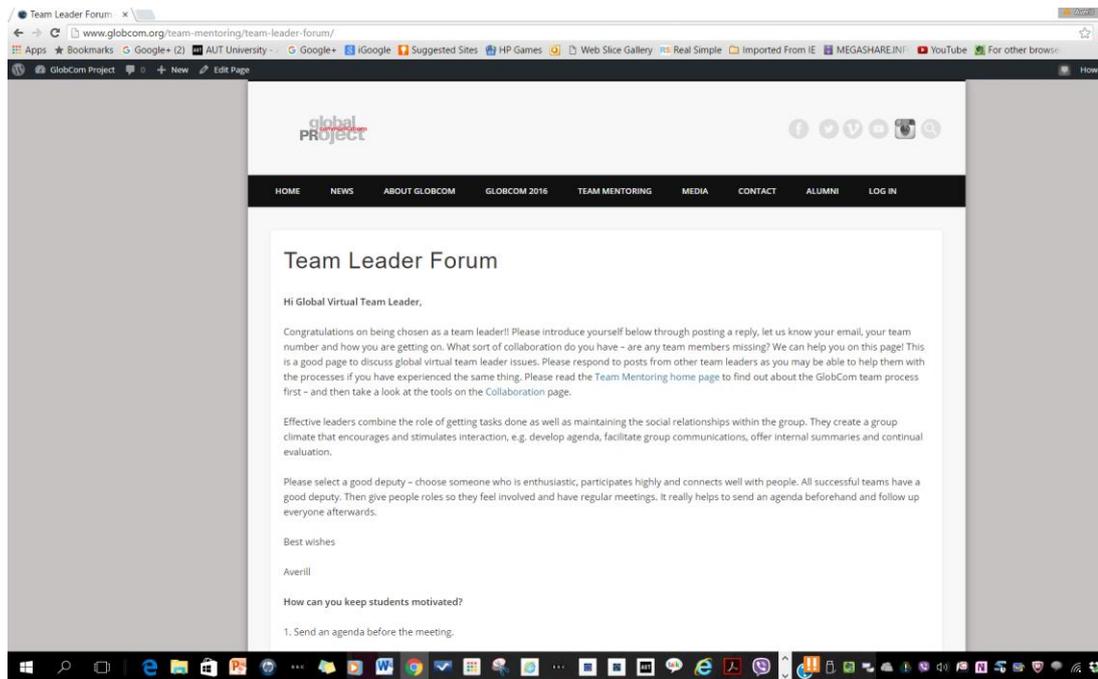


Figure 6 Introduction to the student team leader forum (www.globcom.org)

Apart from providing support and guidance to the team leaders, their feedback made the Board aware that students and the lecturers valued these initiatives where the site and the team mentor role provided them with recognition as team leaders, and also an opportunity to ‘meet’ other team leaders and discuss issues privately.

The team mentor role therefore developed to offer support regarding the collaboration, which is largely redirecting student issues to the relevant lecturer regarding student issues in the teams but it is not pedagogical scaffolding as the team leaders’ work with their own tutors in class. The student data for this project were drawn from student team leaders’ emails to the team mentor and their posts on the global team mentor forum.

Each year a student satisfaction questionnaire is completed and discussed by the lecturers to ascertain the way forward. The lecturers have roles which vary annually depending on what they volunteer to do as well as on who is hosting the conference. Each year lecturers improve the project through considering their own experience, student feedback, including that from an evaluation questionnaire, and from each other. The annual committee meeting and a board meeting consider the feedback and outline improvements for the following year.

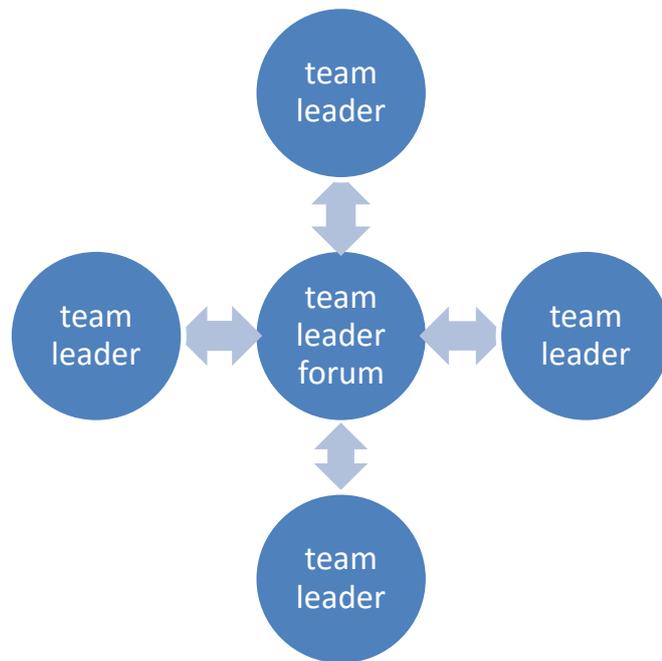


Figure 7 Showing the shared communication between the student team leaders through the team forum.

The team leaders could also communicate directly and privately with the team mentor.

3.1.2 The researcher's GlobCom role

I have several roles in GlobCom, these include being a global team mentor to the student team leaders, a board member and a 136lecturer in the academic supervisory team. As mentioned, I set up the team mentoring site, posted information for the team members and created the student leader team forum where team leaders posted comments. I communicated with student team leaders regularly, receiving and responding to their team registers, team minutes and answering their questions on the team leader forum or via email. I resolved matters with the team leaders first and then updated lecturers on progress. This meant much of the role involved being an intermediary. For example, if a team leader was unable to motivate a team member and reported this to me, I alerted the relevant lecturer who would address the issue and give me feedback, in which case I was able to inform the team leader.

In my board member role, I work with the board to develop GlobCom by providing ideas, identifying sponsorship opportunities and implementing any changes as well as driving the project and offering support to the other lecturers. As lecturer in the supervisory team, I manage my own class of students who participate in the GlobCom project. This means I supervise their progress in class and incorporate the GlobCom project into the curriculum. It also means I attend the annual conference and present

interim PhD findings. The ethical issues of this research on GlobCom and my ethics application in order to involve the student team leaders and lecturers in the research will be discussed in the next chapter.

GlobCom was formed in 2003 and became a German charitable organisation in 2008, GlobCom Institute e.V. A board was formed by the German president, who is an ex-proprietor of international PR consultancies, a diplomat and a visiting university lecturer; the vice president, from Spain, who had an academic background, and myself with a practitioner and academic background. More lecturers are joining the board. In addition, there is a board of trustees of senior business associates who are interested in promoting GlobCom, have connections to help with funding or have expertise in PR or virtual teams.

The following section outlines the virtual team research that has arisen from similar student projects.

3.1.3 Virtual team research on student projects

There seem to be two types of studies on virtual teams which involve student cohorts. Those set up for research purposes regarding virtual team issues, where the participants are drawn from a student cohort, and those set up for experiential learning involving students within an academic discipline and for the pedagogical purpose of working in a virtual team. GlobCom falls into the latter category but also addresses the former through action research and this thesis.

Among studies that have been published on student learning projects, there are several that bear comparison, particularly in being innovative authentic learning experiences, as they use real-world experiences, or simulate them (Brewer et al., 2015; Cajander, Clear, & Daniels, 2009; Flammia et al., 2010; Gilson et al., 2013; Ocker et al., 2011). Their subsequent research highlights the practical and theoretical elements which are outlined below.

A longitudinal multinational project which originated from two Columbian universities developed the global enterprise experience (GEE), an international business competition that aims to develop skills in managing across cultures, time zones, world views and levels of wealth and poverty. It was launched in NZ in 2004 and students from 155 higher education institutions from 64 countries have participated. They work in multinational teams of eight, sign onto the website and collaborate on an international

business academic project which provides preparation for the real world (Gonzalez-Perez et al., 2014). Students found time zones the main limitation, making it difficult to reach a consensus without real-time meetings. There was a lack of trust and an uncertainty about whether someone would collaborate.

Another annual longitudinal two-week project which was across US campuses and running for six years (Gilson et al., 2013) looked at how to train individuals to be effective virtual team members. It involved an experiential activity with business students collaborating on movie studio business simulation activity across two universities in which virtual teams of three had the collective task of producing and marketing a screen play on a budget. The teams later included a colleague from another time zone and focused on identifying team cohesion and technology use (Gilson et al., 2013). Students found that initial communication among members set the stage for subsequent team interactions. It also confirmed the importance of presence in virtual teams and the use of technology to facilitate presence and found planning was needed to allocate roles, ensure deliverables and clarify expectations. Students who worked across campuses found that loafing stopped with peer evaluations and grading at the end of the project which was thought to have the effect of clarifying expectations (Gilson et al., 2013). Additionally, students found they were harsher in their assessment of their virtual peers than in face-to-face teams Gilson et al. (2013).

Socioemotional role of leaders

Irish and US students were involved in a single virtual team project involving 26 Irish and US students in seven virtual teams over eight weeks who developed a website about intercultural communication plus a proposal, progress report and team website (Flammia et al., 2010). Students used mostly email and the research analysis used surveys regarding the team roles, with quantitative data for the technology preferences and socioemotional communication (Flammia et al., 2010).

This is a significant study as it was an experiential learning project which also had a research purpose. It was a qualitative study, with interpretative analysis regarding leadership, trust and socioemotional communication and has added to the body of knowledge in this area. Early socio-emotional communication was found to create trust and led to strong participation, and a sense of satisfaction and project ownership (Flammia et al., 2010). It was found that socioemotional communications, nurtured through chat, played a strong role in successful team processes. It encouraged team

cohesion, a sense of project ownership and subjective satisfaction. Low socioemotional communication led to less interaction and less satisfaction. Also if socioemotional communication did not develop at the beginning it did not develop at all. Where team leaders were not assigned, proactive emergent team leaders established positive team processes and assumed roles depending on their abilities which showed high satisfaction among team members (Flammia et al., 2010).

The role of an external mentor was explored in a project among 28 IT students in Sweden and the US who were to develop professional skills with the goal of writing a white paper for the EU Council in Brussels regarding online access to patient records (Clear & MacDonell, 2011). A leadership framework suggested by Quinn (1988), was applied by the mentor to enable the team leaders to critique their leadership roles and identified the mentor as important to the project (Cajander et al., 2009). This was consistent with a study that found leaders need to be strong motivators, a role missing in the CVF (Cajander et al., 2009), although the motivator in the study was actually external to the team.

An experiential virtual teams learning programme in the US where students taught other students in a five-week cross-disciplinary project on the same US university campus but virtually, was developed by Brewer et al. (2015). The research showed that students had high uncertainty about the project, had expectations of their instructors and a lack of clarity as they wanted clear direction and an articulated shared vision and purpose. Although students reported finding it difficult to cope with the uncertainty they were seen to benefit from encountering real-life challenges and identified a distinct set of competencies needed to work in a virtual team (Brewer et al., 2015).

The above projects, as well as GlobCom, have students collaborating on a final report with ongoing reporting, with the exception of Gilson's study on Tinsel town (Gilson et al., 2013), a simulated business.

All the studies discussed the learning projects and the pedagogical insights into virtual teams. However, only two build virtual team theory. Flammia et al. (2010) discusses trust and socioemotional communication in leadership, and although the study is largely descriptive it was not longitudinal; and Cajander et al. (2009) introduce the concept of mentorship drawn from the competing values framework. Research on the other educational projects have focused on the educational benefits of students working in virtual teams in terms of improving their global awareness, innovation of online

communication and processes and collaboration skills. The studies outlined previously are more descriptive and, with the exception of Flammia et al. (2010), don't address virtual team leadership. The few longitudinal projects suggest the difficulties in maintaining these initiatives and it is hoped that GlobCom offers some guidelines or templates to create more of these student learning experiences.

GlobCom is a distinctive and unique project, being longitudinal, and its research to date has focused on the educational challenges and benefits to students collaborating in these virtual teams (Archer, 2009; Gordon, 2011a; Gordon & Picherit-Duthler, 2009; Picherit-Duthler, 2011; Wolf & Archer, 2013).

A presentation at a PR conference by Gordon & Picherit-Duthler (2009) outlined the conception of GlobCom where its unique development as a pedagogical PR project was discussed. At the same time, at a PR conference in Australia, Archer (2009) presented research on her own students who had participated in GlobCom. The research showed that the virtual teamwork in GlobCom was challenging to students and it was argued that universities need to offer more resources if they wish to develop these international projects. Similarly, at the GlobCom conference in Barcelona, I presented research from my own student feedback (Gordon, 2011a), which applied a classification using headings from a study on virtual teams by Lee-Kelley and Sankey (2008, pp. 57-59). The findings showed that the classification was useful in helping to shape and corroborate the student virtual teams' own challenges of requirements creep, asymmetry in processes, unclear roles and responsibilities, time zone-confusions, over-communication, changes in the management agenda, trust and dissonance (pp. 57-59). The student comments were collated and systematized below (Table 3).

A wider survey of all participating GlobCom students in 2010 explored how students perceived diversity within their teams (Picherit-Duthler, 2011). The findings suggested that students did not perceive cultural differences as a barrier to team performance and felt that technology helped to reduce their differences. In fact, students felt similar in terms of age, lifestyle, education, knowledge and involvement in the project. They felt different in terms of English language skills, cultural stereotypes, nationality, lack of shared knowledge and lack of project involvement. Students also reported that a good leader was crucial and was the central communication channel. A later study of GlobCom students explored the major learning outcomes of the project and whether it prepared students for the international business environment (Wolf & Archer, 2013).

The study found that a global experiential learning opportunity may not always be popular. Students did not embrace the increase in workload and felt outside their comfort zone. The authors warn that these real-life client projects are not a safe option if teachers are concerned about quantitative student feedback. Nevertheless, the study found that the students' learning was facilitated by the other students in their teams offering them skills which are difficult to learn in the classroom, such as coping with ambiguity and uncertainty which are likely to occur within a career in a transnational environment (Wolf & Archer, 2013).

Table 3 Challenges in the GlobCom student teams presented at the GlobCom conference in Barcelona (Gordon, 2011a).

(Lee-Kelley & Sankey, 2008, pp. 57-59)	Student (NZ) feedback regarding challenges
Requirements creep	Faced demands from other students' curricula; there were also additional elements such as translating and also correcting English.
Asymmetry in processes	Different interpretation of the timelines and different understandings of activities among team members.
Unclear roles and responsibilities	Uncertainty about roles in these new teams and responsibilities of the team leaders.
Time zones	Confusing virtual meeting times and being fair to all. Also pressure as work would appear overnight from other students and create additional demands. Teams operated differently according to their own learning, holidays and academic calendar.
Over communication	It was difficult to find and collaboratively manage the ideal virtual space and there was a plethora of emails.
Changes in the management agenda and decisions	Different university demands and assignment weighting.
Trust	Affected by temporal and cultural issues as well as technology (face-saving by some meant there was limited clarification at times) and attitudes to deadlines was variable, the different technology availability and capabilities made a difference, e.g., Google+ would fade in some meetings.
Dissonance	Disagreements were not addressed but lingered and participation expectations varied.

Bearing in mind the research on GlobCom which revealed student dissatisfaction and its associated pedagogical challenges (Archer, 2009; Gordon, 2011a; Picherit-Duthler, 2011; Wolf & Archer, 2013), it is arguable that improving team performance would improve student satisfaction and as a result enhance the learning opportunities.

The GlobCom project provides a unique opportunity to carry out a longitudinal study that explores leadership of both the student teams and the supervisory lecturer team and incorporates changes as the research progresses. This study is the first virtual team study to focus on supervisory leaders (lecturers) and student team leaders in an experiential learning project which also investigates leadership interactions, particularly in how actions are elicited and roles performed and participation encouraged. Also, it focuses on the role of team mentor which provides the internal communication of the teams that Gilson et al (2015) has argued is lacking in virtual team research. It is hoped it will be useful in building the theoretical body of knowledge as well as make a practical contribution to virtual team practice to both industry and pedagogical virtual team projects. The lecturers, as well as the student team leaders, have a shared understanding as they agreed to be participants in this collaborative research project and are already writing about this project (as above) and developing ongoing research projects.

CHAPTER 4 RESEARCH DESIGN

This chapter discusses the research design of this study. It provides a rationale for research on the global collaboration experiential educational project, GlobCom, to explore both the theoretical and practical elements of virtual team interaction. The rationale for selecting action research as the methodology is first explained. The chapter then focuses on discussing how a longitudinal study provides an opportunity to improve GlobCom, as well as build on existing theoretical insights into virtual team leadership. Other approaches are explored which highlight the value of action research to the study. The role of participant observer is examined along with the associated ethical responsibilities. The research takes a pragmatic epistemological approach which is suited to the flexible and practical aspects of action research. It also fits well with the qualitative content analysis which is used to analyse the emails of all the team leaders plus the team forum posts of the student team leaders.

4.1 Research Questions

This research on leadership interaction within global virtual teams is based on three years of the GlobCom project. As discussed in Chapter Two, the research is applied to a live industry PR project within an educational context and is an example of both situated learning (Lave, 1988) and problem-based learning (Barrett & Moore, 2011). Although student virtual teams are not teams of professionals, many student projects have made significant contributions to the field of virtual team research.¹⁷

This study focuses on two types of virtual team leaders, one of professionals – academics who are members of staff – and student team leaders. The first comprises an established supervisory virtual team of lecturers who each year supervise the seven-to-eight virtual teams comprising more than 20 students a team, each team with students from different countries. Therefore, the supervisory team is operating effectively as a professional team working on a collaborative project. The second group is the student team leaders, who each lead their own ad hoc student PR team. These teams are newly formed each year, as well new student team leaders.

¹⁷ There are a number of seminal virtual team studies which have involved student projects (Balthazard et al., 2009; Flammia et al., 2010; Gonzalez-Perez et al., 2014; Hambley et al., 2007; Huang et al., 2010; Iorio & Taylor, 2015; Jarvenpaa & Leidner, 1999; Kayworth & Leidner, 2001; Ocker et al., 2011; Purvanova & Bono, 2009).

GlobCom is a real-life industry project, and the multinational client is financially invested in the project as a sponsor¹⁸ and expects a selection of industry-appropriate PR proposals. The project is designed to provide a realistic setting with students and lecturers working in diverse multinational teams, an institutional background of the universities as well as the client organisation, and industry requirements. The student virtual teams are given a live PR brief directly from the client to research and write a collaborative global proposal that is relevant to the PR industry and has commensurate deadlines. Therefore, the project is competitive and industry focused. The virtual teams are highly relevant to current PR practice as they engage in a collaborative project, cross cultural and national boundaries, time zones and use variable technology, which defines virtual teams (Mukherjee, Lahiri, et al., 2012; Zivick, 2012). This project, although student based, is unique as it draws on data from lecturers working in a professional virtual team as well as data from student team leaders supervising teams in an industry context, making it a relevant research project for virtual teams in general and to PR teams in particular. It is also relevant to industry-based pedagogical projects.

The GlobCom supervisory team agreed to be participants in this study in terms of using their interactions as data with findings discussed among the team. Each year the student team leaders also agreed to be part of the action research. Along with this PhD, other individual and group research projects have grown from this collaboration. Those studies have focused on student team satisfaction and student experience (Archer, 2009; Picherit-Duthler, 2011).

However, this study moves a step further, both in its scope and depth. It seeks to explore, through action research, how leadership interaction influences teams in terms of eliciting actions, negotiating roles and improving team participation. These three elements are part of successful team leadership, which ensures the team is maintained, tasks are achieved and individual needs are met (Bales, 1950).

This section introduces the research questions which are derived from the gaps identified in the theoretical review and an assessment of the practical issues in GlobCom. For example, it was recognised that virtual teams had challenges which created uncertainty about how to ensure individual needs were met, how roles were manifested, and whether socioemotional or task-related communication was more

¹⁸ The key sponsor provided the live brief and contributed towards the annual GlobCom conference costs and implemented the PR recommendations from the winning proposal. Further sponsorship was obtained for additional conference costs.

effective. Furthermore, the theoretical review also showed that stages were important to virtual team leadership but there was limited understanding of their requirements. Equally, in the practice of GlobCom, team stages were ill-defined. These issues matched the practical challenges we were facing in GlobCom and I drew on information to which I had access as a team mentor, board member and supervisory team member.

The research questions will now be discussed. These were developed from initial discussions at the board meetings. The main focus was the issue of engagement by both lecturers and the student team leaders, and discussion centred on how to get them to be more involved. However, it was important to know if actions could be generated by team leaders and whether there were particular roles which needed to be performed. Furthermore, the issue of participation needed to be assessed as to whether it was an issue and how it was perceived and how it could be addressed. Therefore, the following questions were developed that required both practical and theoretical input:

What do virtual team leaders do to elicit actions?

- Are there specific action-eliciting interaction behaviours?
- If so are some more frequent than others?
- When in the team stages are these patterns most frequent?
- How does interaction influence or reflect what is going on in the team?

How are face-to-face leadership roles renegotiated in virtual teams?

- Which are the most performed roles?
- How do these reflect the activity in the team?
- Can the CVF roles be adapted to virtual teams?

How can team leaders encourage participation?

- Is participation an issue in virtual teams?
- How is it manifested as an issue?
- What can team leaders do?
- Are there socioemotional and task-related interactions which are more effective?

This research situates leadership interaction within a theoretical framework of organisational behaviour and interpersonal theory which explores the examination of the environment and people's behaviour. The study follows an action research methodology (McKay & Marshall, 2001; Myers, 2013) and applies a qualitative content analysis to collect and analyse data in order to gain knowledge which can build theory and practical

results to improve the work of virtual teams in general. It is guided by a pragmatic epistemological research focus on what team leaders are doing, who is doing it, how are they doing it and what it will lead to, which Goldkuhl (2004) would define as pragmatic questions regarding the actions performed by the team leaders.

4.2 The methodology of action research

This research addresses the practical leadership issues in GlobCom and aims to develop a framework that can be applied to other live virtual teams, whether in industry or similar experiential educational projects. Action research methodology has been chosen for this study in order to intervene and analyse the online leadership communication in each cycle over a longitudinal iterative study. This was believed to provide a more holistic and useful understanding of leadership interaction as a complex social process rather than a linear study where no changes could be implemented with their effects observed in order to build leadership theory.

This study uses action research to create understanding by interpreting phenomena with the participants to bring about change during the research project (Cardno, 2003). The research is designed to help virtual team leaders become more reflective about their own actions and identify areas of concern and improvement while also making changes. The guidelines from McTaggart and Kemmis (1988) are used in order to avoid improving things uncritically and to 'plan, act, observe and reflect more systematically and more rigorously' than happens in a normal situation (p. 10). Although this action research leads to improvements, the design and questions naturally emerged and changed over time as it involved trial and error, which typifies action research (Melrose, 2001).

There are different ways of looking at action research (Crotty, 1998; Klein & Myers, 1999; Susman & Evered, 1978) but most significantly it is defined by research and action cycles carried out by an active participant researcher and concerned about adding to the body of knowledge and learning from the intervention (Baskerville & Myers, 2004; Klein & Myers, 1999; Myers, 2013). Action research is recognised in information systems (IS)¹⁹ research for helping to solve real world problems as it can be performed collaboratively and build the knowledge base (McKay & Marshall, 2001). Its suitability to IS research may also be because a social system can be more deeply understood if the researcher is part of the sociotechnical system being studied (Kock, McQueen, & John,

¹⁹ IS (Information Services) is the collection of technical and human resources that provide the storage, computing, distribution, and communication for the information required by an organization. A special form of IS is a management information system (MIS), which provides information for managing an enterprise ("IS (information system or information services)," 2015).

1997). Scholars in this area argue that action research implies change. It must be self-reflexive and correlate with a theoretical framework applied to a real-world issue from which arise the research questions and methods (Baskerville & Myers, 2004; Klein & Myers, 1999).

Action research was first formalised by the US social scientist, Lewin (1946) who became engaged in theory building and practical social problems. Lewin (1946) identified the diverse issues associated with intergroup relations and then researched these alongside a theoretical framework to implement and measure change and develop knowledge about it. He believed that using social science criteria to measure the success of social workers would be validating and give them objective standards of achievement which would allow for more learning. This led to the circular or spiralling pattern of action research showing reconnaissance, taking action and fact-finding about the results of the action (Lewin, 1946). Equally, McTaggart and Kemmis (1988) refined this model to include reflection. They defined action research as having the four steps: 'plan', 'act', 'observe' and 'reflect' (p. 5), which then led to planning for the next action research cycle with the same four steps.

A more distinctive model of action research, which is used for this study, was later developed by McKay and Marshall (2001) which separated, but also linked, the theoretical and practical cycles. The model shows two separate but interconnecting and interacting cycles, one cycle focused on the problem-solving interest and the other cycle focused upon the research interest. These interconnecting cycles are expected to facilitate the reflection and learning processes and allow for better planning, evaluation and monitoring of an action research than the traditional models. Also the two cycles are concomitant, which helps to avoid limiting research to a simple consultancy, or problem solving, focus, as the academic research interest allows activities to be differentiated from those of consultants and build theory (McKay & Marshall, 2001).

The problem-solving cycle first identifies the problem, its context and relevance, the stakeholders and situational issues and then develops a strategy and implements actions which are evaluated. The superimposed research cycle focuses on the theoretical issues and links to the problem-solving issues. This model was designed to increase reflection of the researcher and prevent an overemphasis on practice (McKay & Marshall, 2000). It highlights the action researcher's dual aims of bringing about changes in a problematic situation and also generating new knowledge and insights as a result of the

activities which were shown as occurring simultaneously rather than in spiralling cycles. In summary, action research is an iterative research process that capitalizes on learning by both researchers and subjects within the context of the subjects' social system (Baskerville & Myers, 2004, p. 330).

There were criticisms from positivist researchers of action research not being objective as it was influenced by the environment and the participant involvement which led to uncontrolled research findings (Kock et al., 1997). However, a feature of action research is the active participant role of the researcher in the context of the investigation (Baskerville & Myers, 2004; McKay & Marshall, 2001; Melrose, 2001).

Scholars believe that immersion in the research setting allows the researcher to experience reality as the other participants do, and learn directly from their own experiences (Marshall & Rossman, 2011). Action research has been used in virtual teams as an effective method for researchers to collect data based on participants' experiences in new and often ad hoc forms of IT-based work and social interaction (Pauleen, 2003b). For example, action research and qualitative interpretative methodology was used for a study on how to build relationships in a virtual team and was considered a valuable support for combining experience, learning and reflection (Pauleen, 2003b).

4.2.1 Action research applied to this study

Action research methodology is therefore ideally suited to GlobCom with its own three-monthly annual timeline of lecturers and budding PR practitioners who collaborated and led virtual teams. It is used in this study to understand practice and develop and evaluate actions introduced as GlobCom progressed. It is a typical use of action research which monitors and evaluates the effects of the actions of a planned intervention by the researcher. Action research is also valued in this study as an enabling strategy, that is, it helps participants collaborate, learn from the experience and then develop the theory thus adding to the body of knowledge, as described by Susman and Evered (1978).

Since its origination, GlobCom has undergone informal action research based on annual student surveys, board meetings, lecturers' annual meetings and collegial discussions, as well as the participants' own research. During each ongoing three-month period, GlobCom underwent review and improvement. This informal action research started to identify issues in virtual team leadership as well as develop theoretical findings for the purpose of PhD research. The research therefore follows the dual theoretical and

practical cycles for practical problem solving as well as being able to generate new knowledge and test theory (McKay & Marshall, 2001). These scholars argue that action research is ‘a powerful tool for researchers who are interested in finding out the interplay between humans, technology, information and socio-cultural contexts’ (p. 48). Similarly, Melrose (2001) recommends action research to improve processes and interaction between team members as well as improve individual practice in a common area of concern for that group and contribute to the research.

Three types of action research, identified by Carr and Kemmis (1986) and placed on a continuum by Melrose (2001), were useful in clarifying this research: ‘Technical’ action research, where a researcher guides the participants towards change; ‘practical’ action research, which was applied in this research, where the focus and purpose is on building group understanding and professional development (Carr & Kemmis, 1986, p. 162). And lastly ‘emancipatory’ action research, which focuses on a critical response to organizational constraints and aims to explore socially constructed meanings and unearth hidden meanings to produce a different understanding of reality (Carr & Kemmis, 1986). This practical action research was more reflective and collegially focused than the other two, in the sense that research findings were presented at the annual meetings as well as during the project itself. Therefore, the practical action research was suited to this study as it aimed at working with the leaders on how they, as a team, can improve actions in virtual teams.

4.2.2 Participant observer

Action research means that the researcher is a participant observer and also one of the study’s subjects, who makes changes over time and influences the research (McNiff & Whitehead, 2009). Therefore, the observer’s values and previous knowledge affect the observation and interpretation of the observation and must form part of the data (Lee & Baskerville, 2003). As action research is on a live project and others are involved as participants there are ethical concerns over how they are affected by the research, which includes the risk of being manipulated, not informed of the research and their anonymity (Dewalt, Dewalt, & Wayland, 2000).

In this research, as a participant observer and in line with the purpose of action research, I was using and interpreting the research data to improve the situation. This was through my role as team mentor, board member and lecturer in the supervisory academic team. I was immersed as the researcher as well as the ‘problem owner’ who has knowledge of

the context. These roles and responsibilities in action research are often attributed to two different people (McKay & Marshall, 2001, p. 47) so I had to ensure ongoing reflection to ensure I facilitated the action research cycle with equal emphasis on the action and research imperatives in recognising and integrating both the problems and the theoretical needs. As a participant observer, I therefore had to consider how anything I did for research purposes affected others as I was an active participant in the project which meant I was influencing and making changes.

Ethical consent was gained from the University which allowed examination of emails and participant observation on the student team leaders and the lecturers involved in the supervisory team, all of whom were to be first informed of the research and agree to it. The research was explained to the participants whose understanding was confirmed by their signing of an ethics consent form which outlined the ethical considerations. The participants were aware of the research progress as I presented findings to the participants at the annual GlobCom meetings, where the results were discussed further. However, action research is not a linear activity (McKay & Marshall, 2001) and findings were presented as an ongoing action during each cycle to improve practice and reflect on it. My role as team mentor involved supporting the student team leaders and consulting with the lecturers on team issues that were reported by the team leaders. Therefore, the role included relationship building and helping to improve the GlobCom leadership of the supervisory team and the student team leaders, which was of benefit to all participants. The data collection methods of collecting emails, team leader forum posts and participant observation methods were explained to participants. Furthermore, the action research process was explained and the process of analysis and how the results would be used. It was also made clear that the research would be used to improve the GlobCom leadership of both the supervisory team and the student team leaders. The participants were invited to review any aspects of the research as it happened.

Although all the participants had agreed to participate, were fully informed of the processes and potential outcomes and had signed an ethics' consent form to verify this, I continued to reflect on whom my research benefitted; whether I had a right to take up people's time and energy, whether they experienced any discomfort; whether I was invading their privacy; whether I was diminishing anyone's standing. There was enthusiasm for this research based on being asked to discuss findings at the lecturers' meetings and also to participate in other participants' research. Furthermore, some of

the lecturers were publishing research papers and were keen to develop collaborative research projects.

I presented at the GlobCom conferences and at the board meetings where the research was discussed and changes were made based on the research, which demonstrated transparency of process. However, as Dewalt et al. (2000) stress, it is important to be aware of one's own subjectivity in participating in fieldwork and one's own biases. Therefore, I undertook the self-reflection recommended by McKay and Marshall (2001) to ensure the integrity of my research. This meant that while attempting to improve the GlobCom practice, which was expected of all board members, I kept a diary to use in the action research which helped to prevent my own biases by ensuring reflection during and after each cycle, and discussing changes.

This meant I was an active participant but also a privileged participant observer, which occurs when the researcher is visible but moves in and out of the research roles and is a leader and helper (Zieman, 2012). Although I was actively engaged in communicating with the student team leaders and the lecturers I had to stay sufficiently detached to observe and analyse. This meant I discussed the progress with the other lecturers to get their views on the student team leaders and I also had information from my own students which helped me to get different perspectives. However, the role of researcher helped to make me more objective in my roles too: the discipline of action research involved more reflection, was open to more discussion and looked at more influences, so reducing the risk of making subjective decisions. For example, it allowed me to investigate the lower level of team interaction in 2013, rather than making immediate changes. By looking at all possible reasons to influence interaction it also encouraged me to be more relationally-focused, rather than task-focused. For example, I followed up with new lecturers to help them become more involved in the interactions.

4.2.3 Ensuring academic rigour of the action research

The participatory and collaborative elements of action research 'arising from concerns expressed by the group' (McTaggart & Kemmis, 1988 p.9) are evident in this project. The participating lecturers cooperate and engage practically in this research and are carrying out their own research (also collaborative) on the project. However, as Melrose (2001) contends, insisting on time for theory sharing is one of the most difficult issues in action research where people prefer to act and improve a project but not build on theory. Although this study required participation from the academic team members, it

was largely for the purposes of my PhD and driven by me. I am able, through my roles as board member and team mentor, to track most of the decision-making and communication and be closely involved in making and implementing decisions about the project's direction and development. The non-board members were not involved in the initial arrangements, although more active lecturers were added to the board as the project progressed.

The research was therefore established by using the dual-goal model developed by McKay and Marshall (2001), which was also used by Clear and MacDonell (2011) in their research on technology-use mediation of students in a global project. It includes the following:

1. A research framework or theoretical element of leadership informing the research.
2. The research method, or the problem-solving method of action research with content analysis.
3. The practice situation applying practical action research to the virtual teams.
4. The problem situation of interest to the researcher of how leaders improve interaction.
5. The problem situation for intervention of poor interaction.

The following table shows how this research was applied. The practice goal shows intervention to solve the problem and the research goal shows the theoretical framework to understand and clarify the problem (McKay & Marshall, 2001).

Table 4 Adaptation of dual goal model of action research by McKay and Marshall (2001) to GlobCom

Dual cycle	Applied to research project (GlobCom)
Step 1. Problem analysis	
<p>Theory problem: identify a real-world problem situation potentially of interest to research themes.</p> <p>Ownership of the theoretical problem remains with researcher throughout the project.</p>	<p>In a virtual team it is uncertain how leadership can achieve team cohesion; address individual team members' needs and ensure the task goals are reached.</p>
<p>Practical problem: A specific, real-world example of above which allows the researcher to investigate it, so that there would be overlapping elements.</p> <p>Problem remains with participants.</p>	<p>Lack of action, poor interaction can mean that team goals are not always effectively reached.</p>
Step 2: Determine framework	
<p>Theoretical framework.</p>	<p>Leadership theory with an interpersonal communications and organisational focus and pragmatic epistemology.</p>
Step 3 Intervention - the dual cycle	
<p>Method related to theory which formulates and guides the intervention and makes sense of the accumulating experience of the intervention.</p>	<p>Action research using a qualitative thematic content analysis.</p>
<p>Method relating to practice in the problem-solving interest cycle which may guide problem-solving intervention and tackle certain organisational problems.</p>	<p>Action research with a qualitative content analysis resulting in practical constructs which formed recommendations.</p>

The authenticity and rigour is further evaluated using criteria which focus on the conduct of the research, its conceptual significance, its practical significance and presentation (McKay & Marshall, 2001). The framework was used for self-reflection and Melrose (2001) recommends that 'Self-reflection on learning and progress as an action researcher and/or practitioner is an important part of the thesis' (p. 162), which is applied to this research as follows:

Table 5 Adaptation of McKay and Marshall (2001) framework to ensure authenticity and rigour in research

<i>Conduct of the research</i>	The academic team has a shared understanding as they agreed to be participants in this collaborative research project and many are already writing about this project (Archer, 2009; Gordon & Picherit-Duthler, 2009; Picherit-Duthler, 2011).
Justification of research, theoretical framework, transparency and rigour.	Leadership theory informs the research. Research methods include qualitative content analysis of communication (emails and posts) and participatory observation.
<i>Conceptual significance</i>	Literature shows a gap in understanding leadership in virtual teams, and allows for future research.
How is it linked to academic literature in field and future knowledge?	Interpretations and tentative conclusions were checked with others throughout the research.
<i>Practical significance</i>	This research will help improve the leadership functioning of GlobCom and can be generalised to other virtual teams.
How does it help in a real-world problem?	
<i>Presentation of research</i>	This research is for a PhD and adheres to the professional and academic formatting and rigour required.
Will research results be communicated?	Results were presented at the GlobCom conferences as part of the action research and publications are being prepared for academic journals.

This research aims to create change and apply critical reflection, refining methods and interpretation developed from earlier cycles, as change arose from an understanding. A pragmatic and flexible definition on action research which could be applied to existing situations and changing situations, developed by Altrichter, Kemmis, McTaggart, and Zuber-Skerritt (2002), is applied to GlobCom as follows:

Table 6 Action research applied to GlobCom

Action research elements	Applied to GlobCom
People reflecting and improving their own work and situations.	The lecturers are constantly improving the learning opportunities for their students and suggesting new ways of working.
Tightly interlinking their reflection and action.	Action research is used to feedback findings and gain feedback on interventions.
Making their experience public to other participants and others interested in the work and situation.	The annual conference and its publications provide a platform for both students' and lecturers' work.
Changes in the situation	
Data gathering by participants in relation to their own questions.	Questions and concerns from team leaders are incorporated into the research and lecturers' own research on GlobCom.
Participation in decision-making.	Findings were fed back to participants for comments and action research made decision-making more transparent.
Power sharing and moving towards a flat structure.	Increasingly moving towards a more democratic style as new lecturers are helped by existing team leaders.
Collaboration of participants as a community.	Research encouraged a shared 'language' and tools which created more collaboration.
Self-evaluation, self-reflection and self-management.	Essential for each leader and the student team leaders in developing their proposals in autonomous teams.
Learning in the self-reflective spiral.	The GlobCom cycles emphasise the dual cycle.
Reflection which supports self-reflective practitioner.	The researcher sees this as part of the essential element of action research and is aware of her influence on changes and the need for reflection reports.

Adapted from Altrichter et al. (2002).

The findings from this research are therefore expected to build theory and be helpful for the academic supervisory team to improve their own collaboration and enable the leading of student teams. A second goal is to provide monitoring tools and a framework for generating further changes as well as for virtual teams in general, as and similar teams relating to an educational context. The core methods for gathering information in qualitative research are identified by Marshall and Rossman (2011, p. 104) and applied to this project as follows:

Table 7 Data collection for this study

Data collection methods	
Reviewing documents and material	This research analyses emails from the members of the supervisory team and the student team leaders as well as posts on the team leader mentoring site. The student team leader emails also included their meeting reports which were used to develop an understanding of the project and its progress, particularly important in action research. The study is a qualitative content analysis of all of these emails and the student team leader posts. The researcher is an active participant observer and therefore intervened in the research setting and this was reflected upon and recorded to show results of the intervention.
Direct observation	As this is action research, the researcher is involved in the setting and implementing the changes (as board director, team mentor and participating lecturer) and these will be recorded in the analysis and to help identify themes.

Adapted from data collection methods of Marshall and Rossman (2011).

It is hoped that the findings of this research may be of value to the progress of other virtual team projects as it is what Melrose (2001) would define as being about practice, where theory informs practice and practice informs theory. However, it has been argued that action research has unpredictable results and conclusions and may not be able to be generalised as it depends on participants within their own context and focuses on changing and improving the group as well as carrying out research. Equally, Melrose (2001) argues that action research is too specific to a particular context and situation and cannot be repeated and may not have a generalised conclusion. However, scholars argue that this is relevant to all research until there is a more critical assessment of generalizability (Lee & Baskerville, 2003). It may be that results of both statistical and qualitative research may not be applicable to other domains unless there has been empirical testing in each particular situation (Lee & Baskerville, 2003). Although generalising the findings can be problematic, this research is dependable, as defined by Marshall and Rossman (2011), as it refers to the original theoretical framework of leadership interaction to show how the data collection and analysis is guided by concepts and models. This also helps to place boundaries and limitations on the study.

Furthermore, the action research identifies and describes the research subjects and the criteria for the findings and uses in-depth descriptions of data derived from the setting. This also helps the findings to be transferable as it shows whether they can be applied to similar situations to determine their usefulness (Marshall & Rossman, 2011). In addition, details of the GlobCom case are explained which can be used to show relevance to other

projects. Additionally, the research is chunked into the team stages which makes it easier to compare to similar team stages in other projects.

As the researcher, I was actively and deliberately involved as a member of one of the group, researching with, and not on, other people, as recommended by McKay and Marshall (2000). This action research is also influenced by issues that affect the project such as new lecturers, a new client and new student virtual teams formed each year. This showed that controlling the process of action research is difficult, as Mathiassen (2002) also observes. This means the research agenda is affected by how practice evolves, which is made clear in the study.

4.2.4 Choosing action research over other methodologies

The researcher applying action research methodology is immersed in the research of an ongoing case and makes practical changes which affect the theoretical knowledge base as the research occurs (Denscombe, 2010; Myers, 2013). Unlike case study methodology that observes changes in a real-life context using multiple data collection methods and analytical techniques on a small number of cases, action research can take a holistic view and explore, describe and analyse a situation from different viewpoints to understand the multiple realities or diverse perspectives of the informant or research participants. Action research can have a wider perspective and focus on how the situation is changing as well as identifying its influences.

A case study methodology is similar to the action research used in this study in that it is also a form of empirical research and is exploratory. Similar to action research methodology, Meyer (2001) suggests that a case study has to choose a case that is likely to replicate or extend theory. Yin (2009) argues that a case study also asks how and why questions and uses a contemporary set of events over which the researcher has limited control. However, action research makes purposeful changes with the researcher as participant observer who not only observes the changes but also creates them and builds on the results of the changes as part of the research. The case study methodology could have been used in this study, except that the researcher wanted to assess the situation, develop research questions collaboratively and make improvements, monitor the improvements and build on the changes collaboratively as the project progressed in real time. Conversely, a case study does not allow for changes although it can test changes that have been carried out to note progression and explore real life complexity (Denscombe, 2010). Similar to action research, a case study can use a participant

observer, particularly to gain access or collect evidence, which has the ability to manipulate the events and can threaten the whole case study credibility. However, a case study does not depend solely on participant observation or ethnographic data—it observes changes in a real-life context using multiple data collection methods and analytical techniques on a small number of cases (Yin, 2009). However, as in ethnography, it investigates a current phenomenon in depth and within its real-life context.

On the other hand, action research also has the advantage of leading into other areas that arise owing to intervention by the researcher. That was advantageous to this study as it led to discovering the best ways to improve the leadership interaction. Although a case study can also be longitudinal, this research looks at making changes and evaluating them rather than just reflecting on one situation. In summary, the researcher is an active participant and driver of this work, not a bystander, which provides the rationale for the action research methodology. The researcher as participant is situated within the research and makes changes as the research progresses, so it is not a case study methodology as defined by scholars (Denscombe, 2010; Silverman, 2010; Weerakkody, 2009) because the researcher is active in making changes and reflecting on these changes, rather than being unobtrusive. A case study is useful for exploratory research and can be used to develop a plan and establish a review, but a case study is situated in its own context (Meyer, 2001). However, in this study, changes are being made to the actual case involved as the research is performed and, although a case is used and the research is reported as in the style of a case study, it includes actions which have been completed or recommended, which fits the definition of action research (Yin, 2009).

The case study methodology was applied to the virtual teams within a global transportation company with 100,000 employees located in Europe, Canada, the US and Asia (Bjørn & Ngwenyama, 2009). It was effective in understanding how the participants collaborated and what would be likely to improve their participation, however no changes were made during the study (Bjørn & Ngwenyama, 2009). The virtual teams were charged with developing a common software process and the study explored how shared meaning was built among the virtual teams within the organisational context. Researchers investigated the participants' perceptions of their virtual collaboration based on data from interviews, organizational documents, emails, work documents, field notes and observations. These data allowed researchers to access actions, events and the organization context within which the events occurred.

Consequently, researchers found that shared meaning, or background knowledge, and translucence, or visibility, awareness and accountability, were important for virtual team collaboration (Bjørn & Ngwenyama, 2009). The study did not allow for the introduction of changes or development of the theory based on changes, however, it provided an in-depth analysis of communication records, which is rare in virtual team research (Gilson et al., 2015). The static situation of case study methodology where the participant is not involved was not appropriate for this project on GlobCom, with its need to develop and improve during its operation and with the researcher as part of the development team.

The alternative methodological framework for this study was ethnography, a methodology similar to action research, in that participant observation is a key element (Crotty, 1998). This methodology was considered for this study, as it is empirical with direct contact with people and places, and aims for a deep understanding of people and their culture (Denscombe, 2010; Myers, 2013). As in action research, ethnography has a participant observer and requires self-reflection and the building of theory by the researcher (Myers, 2013). However, action research focuses on change as well as building theory. In this study the interaction problem is defined and is relevant to the leadership theory and overarching communications discipline. Unlike ethnographic research where the researcher may inadvertently affect the research and needs to be transparent about their role, this action research depends on the intervention of the researcher who is situated in the research as team mentor and lecturer influencing the research and also making changes based on the research outcomes. This is being achieved through the reflective process which is part of the action research cycle. Qualitative content analysis, which has origins in ethnography, is used as the method for collecting and analysing data (Weerakkody, 2009). How people experience their lives is also captured in the more theoretical approach of phenomenology. It attempts to examine other people's experiences through a theoretical approach and is inductive and largely descriptive (Denscombe, 2010).

Phenomenological research, which explores how people experience their lives by seeing them through the eyes of others, was not applied to this thesis. This research required a more systematic method of data collection with theory linked to action to create change, more than providing insights into the participants' viewpoints. A phenomenological approach which seeks the views of the participants would create a large and unstructured situation, which would not be able to be replicated (Gray, 2009). Phenomenology uses the immediate subjective experience as the basis for knowledge

but the researcher must know the perspectives of the people it is dealing with in order to predict and understand behaviour, which can provide intense descriptions of people's experiences (Susman & Evered, 1978).

Critical discourse analysis was also considered in this study but was not adopted for its narrow focus on language in use and the forms of meaning making (Fairclough, 2009), whereas this had specific practice-related questions. The overarching philosophy of critical inquiry, which explores how the ability to change social and economic circumstances is constrained by social, cultural and political forces (Crotty, 1998), would be valuable in understanding the challenges and beliefs in society but does not have a value in improving the virtual team interactions in this research. The beliefs and value systems embedded in society and reflected in people's interactions were attractive to explore but are outside the remit of this research. This study was about examining the text for interaction patterns and leadership rather than deconstructing the text to find the reflection of wider economic, political or cultural patterns of social networks, a feature of critical discourse analysis (Crotty, 1998). Action research was preferred as the findings did not rely on interpretation of concepts or theories generated from the discourse and could therefore be more accessible to the GlobCom board and other lecturers who were interested in improving the project itself. Furthermore, action research was about creating change along with building theory, rather than 'unpacking the beliefs, norms and values that are taken for granted in everyday interaction and critiquing these' (Crotty, 1998, p. 144). The objective of this study is to investigate how leadership can improve interaction in virtual teams, which has both an academic and practical orientation.

Virtual team research can become messy and chaotic, with the emails covering different time zones and the unpredictable participation of the team members. The systematic research and practice cycles of action research were able to explore existing theories and shape both the theoretical and action cycles. Although the grounded theory approach was considered, as it is commonly used in interpretive research to build new theory (Denzin, 1994), it would not have been as practically useful. Grounded theory research may have introduced too many concepts which can create excessive coding and categorising (Denzin, 1994). Action research was useful for the development of theory by taking action guided by theory and evaluating the consequences for the problems and adopting actions based on evaluation (Susman & Evered, 1978).

This section has presented the rationale for using the action research methodology in this study, which is to deepen the literature on leadership interaction in virtual teams and find out how to improve virtual team leadership practice. The next section introduces the epistemology which guides the research.

4.3 The epistemological approach of pragmatism

The collection, analysis and interpretation of data collected through the action research methodology are affected by the underlying philosophy of the research project. There are different epistemological approaches which can legitimise and validate the philosophical grounding of the knowledge development during the research (Crotty, 1998). Pragmatism, which is about change and action, guides this action research (Goldkuhl, 2012). The pragmatist epistemology focus is on the consequences and meanings of an action or event in a social situation (Lindesmith et al., 1975) and is 'about the practical outcomes of the way we think' (Goldkuhl, 2004, p. 105).

Pragmatists ascribe to the philosophy that the research question should drive the method used (Miles & Huberman, 1984, p. 21). It is therefore relevant in focusing this exploration of leadership interactions in global virtual teams which create change and set the agenda for further improvement.

Pragmatism arose in the late nineteenth century from a reaction to rationalism, a theory of knowledge where truth was considered to be fixed and independent of human involvement (Goldkuhl, 2004). It was a process of inquiry, questioning the past and focusing not only on what is happening but what might happen. Pragmatism, according to Dewey (1932, pp. 54-55), is concerned with the effects or outcome an action has on a situation and how that changes its meaning. This study, with pragmatism as the epistemology (Dewey, 1932), is a perspective that suggests existing realities may change but overall the research has to be useful and look at how matters are changing (Wahyuni, 2012). As a result, pragmatism considers truth as fluid and dependent on the stream of experience, always changing but dependent on human thought (Wahyuni, 2012). Dewey was concerned about pragmatism having reflection at its core, and a review of his philosophy showed that pragmatism can be described in four stages: starting with uncertainty, then developing into actions which cause a redirection of thought and knowledge to the formation of behaviours and beliefs which have consequences in real life, (Maddux & Donnett, 2015).

Therefore, pragmatism is the ideal philosophical guide for using action research as an ongoing inquiry for practical and theoretical purposes, planning, improving and reflecting. Furthermore, action research within a pragmatist philosophy is considered valuable as it solves problems as well as expanding scientific knowledge and as such is commended within the information systems (IS) discipline (Baskerville & Myers, 2004).²⁰ It allows researchers to focus on the importance of asking the right sort of questions and getting empirical answers which explain why things work or don't work (Baskerville & Myers, 2004). Action researchers in IS argue that action research is underpinned by the tenets of pragmatist philosophy composed by Peirce, Dewey, Mead and James, as it shows consequences, truth in the outcomes, controlled inquiry of thought and action and socially contextualises action (Lee & Baskerville, 2003).

Pragmatism framed this research in a new area of improving virtual leadership and linked intervention to the ongoing process of developing knowledge. Pragmatism's concern with action and change and the interplay between knowledge and action makes it relevant to the research which intervenes and does not merely observe the world (Goldkuhl, 2004). Pragmatism also reflects the underlying pedagogical elements of GlobCom as an experiential authentic learning project where students learn about the world through experience, a principle already espoused by Kolb (2014).

This section has covered the guiding philosophical approach of pragmatism which directs the action research methodology and the data collection and analysis. The following research methods section provides detail on how the data was collected, managed and analysed through the qualitative content analysis. It explains how the virtual team project was divided into team stages to structure the thesis.

While other issues may be identified, such as the influence of time and culture, these are huge topics for further research and are outside the scope of this study. Hence the authenticity in this study is based on it being longitudinal with three cycles, and different cohorts, the first being the established supervisory team over three years and the second the ad hoc student teams with 10 student teams each year for three years. They are subjected to three different analyses, all interpretive but applying different interpretive models.

²⁰ These scholars edited a special issue about action research in the MIS (Management Information Systems) Quarterly IS (information system).

4.4 Research methods

This research applies a qualitative content analysis or more specifically a thematic analysis (Braun & Clarke, 2006). This means data is gathered and discussed to identify the participants' views in an effort to understand and improve the complex social phenomenon of leadership patterns in global virtual teams with the objective of improving their functioning. This section first defines content analysis and compares the quantitative and qualitative approaches. It explains why the qualitative content analysis was considered the preferred research method for the study.

Content analysis was originally developed as a method for analysing large amounts of newspaper content where it could identify the frequency of particular words which were then statistically analysed (Krippendorff, 2013). It was defined as a scientific methodological tool in 1948 when it became valuable as a research method to analyse data arising from the new large data collection methods such as surveys and polls in the growing behavioural and social sciences. It was used to measure personality traits, lifestyles and attitudes and helped develop the empirical and theoretical findings in these areas which could be generalised across groups. It became more about making meaning and therefore looked at how meanings and themes could arise from the data. For example, content analysis was chosen for the research of cross-cultural leadership in organisations in 62 countries from 1994 to 1997, which formed the recognised GLOBE study (House, Hanges, Javidan, Dorfman, & Gupta, 2004).

Broadly, a content analysis helps to answer research questions or a hypothesis by providing an analysis of data from a particular sample and using a coding scheme to analyse it and develop further categories and classifications. Inferences are made based on the context of the data and on the scholarly interest and this can be numerically assessed or form a narrative which has semantic validity by being connected to the text.

Although all coding involves qualitative judgements or identification procedures, a content analysis may have a quantitative or qualitative emphasis. It can be used to statistically analyse large amounts of data and can also be used qualitatively to allow close reading of small amounts of text which can identify deeper meanings. It is also an unobtrusive method which allows coding and categorising of unstructured data to find meanings that were not evident at the time of the communication occurring (Krippendorff, 2013). Psychology uses content analysis to identify motivation, personality, and processes of communication, e.g., Bales and Strodtbeck (1951) used it

to explain leadership interaction in groups. It can also analyse historical data and range across disciplines to investigate specific human behaviour.

A particular value of a content analysis is that it can make inferences from an analysis of the data, rather than just looking at statistics, by linking the coded text to the context (White & Marsh, 2006). It uses analytical constructs or rules of inference to move from the text to the answers in the research questions. The analytical constructs are not always explicit and may be from existing theories or knowledge or previous research and keep the inferences focused on the text and the research question (Krippendorff, 2013). Analytical constructs operationalise what the analyst knows about the context of the body of the text. This helps to create a correlation between the observed and unobserved, e.g., the frequency of interaction and the taking on of other roles which can be applied to individual cases but needs a context to understand more about the findings. As a flexible research tool a content analysis can be applied across a range of theoretical and epistemological approaches as it identifies analyses and reports patterns within the data. It can be inductive in that themes are linked to the data themselves and can evolve through the coding, and also deductive when it follows the theoretical framework (Braun & Clarke, 2006).

Drawing on recommendations by Silverman (2010) for qualitative research, this study uses naturally occurring data, which were emails and posts exchanged during the teamwork. Furthermore, it allowed a build-up of data over time for the purposes of action research.

Qualitative content analysis originated from an ethnographic content analysis, first described by Altheide (1987). This research method focuses on in-depth meaning and therefore requires a smaller amount of data than in a quantitative study to create meaning (Krippendorff, 2013). It involves a recursive process, recommended by Elo and Kyngäs (2008) which prepares and organises data and searches for repeated patterns to identify themes over time. The themes capture what is important in relation to the overall research question, so it goes beyond a semantic level to the more latent level (Krippendorff, 2013) to examine the assumptions and underlying ideas that inform the semantic content (Braun & Clarke, 2006). This study takes place in the natural world and observes and interprets the social interactions among team leaders. The process of thematic analysis was followed for each research question and includes the following phases as outlined by Braun and Clarke (2006): reading the data, generating codes,

searching for themes, reviewing themes, defining and naming themes and presenting the findings relating to the research and the literature.

4.4.1 Qualitative and quantitative content analysis

Qualitative data gathering and analysis is used to explore leadership interaction in a virtual setting, drawing on existing leadership theories. Because there is limited research on the phenomenon of leadership patterns in virtual teams, this research is both exploratory and explanatory (Silverman, 2010) as it attempts to understand how leaders elicit actions, develop roles, and encourage participation from their team members. It originates as an exploratory study where, as recommended by Gray (2009), it sets out to explain and account for the information and set the main constructs of a study and seeks to explain what is happening and to ask questions about it.

Qualitative research is about interpretation of meaning in text, sound or images (Guest, MacQueen, & Namey, 2012) and how social experience is created and given meaning (Lindesmith et al., 1975). The underlined understanding is that truth and meaning do not exist in an external world but are constructed through people's interactions with the world (Gray, 2009). Qualitative research, with its series of iterations involving design, data collection, and preliminary analysis and redesign (Gray, 2009) fitted this live empirical study where leadership interaction meant that the data provided new directions. This means that the design can be flexible in the variety of data types and the evolving nature of qualitative research means plans can change (Gray, 2009). This study was driven by qualitative thematic analysis and quantitative analysis was used to structure and systematise the representation of data.

The text is selected by purposive sampling, that is, it is based on the research question rather than being a representative or random selection of text. Coding is carried out as an ongoing process of close iterative reading to identify significant concepts and patterns, involving re-contextualising, reinterpreting and redefining the interpretations in relation to the research questions (White & Marsh, 2006) which is what Krippendorff (2013) calls a hermeneutic loop. It does not use a statistical analysis but descriptive statistics to structure and present the data and although counting may occur, it doesn't rely on the frequency of occurrence. This is used to create a narrative of scholarly interest and interpretation through inference which is related to the text. This semantic validity can be shown through interlacing quotes with the interpretation (Krippendorff, 2013).

As Crotty (1998) explains, interpretive research uses qualitative data and is dependent on the context, which in this case is virtual team leadership, to determine how it can be generalised. This conforms to Myers (2013) explanation of interpretive research as focusing on sense making and understanding phenomena through the meanings people assign to them, therefore it is reliant on the context. Interpretivism is based on the researcher's subjective understanding, it does not define independent and dependent variables, as in positivist research, but focuses on the complexity of human sense making as the situation emerges (Myers, 2013).

The analysis of this research is driven by the theoretical approach to leadership within the communications studies discipline and is a recursive process refining these themes to produce an action research analysis showing theoretical and practical implications. This involves interpretive work and concerns understanding and explaining through theorising, rather than just describing (Crotty, 1998). A criticism of qualitative research is that it is unsystematic, subjective and lacks reproducibility. However, qualitative content analysis is not about statistical testing. In qualitative content analysis it is the research questions that guide the data gathering and analysis of potential themes where other questions may arise from reading of the data (Krippendorff, 2013). It is therefore inductive and naturalistic rather than positivist as the objective is to capture meanings and themes and search for interpretations. Inductive research starts from a more exploratory stance with descriptions and then towards explanation, establishing patterns and meanings. This leads to the development of an argument and theories that explain those observations and is suited to the use and interpretation of the qualitative data in this study. Qualitative research also involves analysis of data that are not amenable to numerical measurement. For example, Chapter Seven explains that student team leaders analyse the participation of team members through how they perceive their participation, rather than based on quantitative methods. Interpretivism is therefore used to understand and describe meaningful social action, rather than predict and control events which is evident in positivism.

An interpretive approach with its qualitative methods of research perceives a lived world with its ambiguities and inconstancies (Crotty, 1998). In contrast, the positivist approach is associated with quantitative methods of research. It takes a scientific stance of objectivity with organised, constant and uniform principles. It assumes an unchanging world where findings are about research having internal validity (matching patterns, explanation building, rival explanations addressed, logic models used) and

external validity (theory used in single case studies, replication in multiple case studies, reliability and objectivity) (Crotty, 1998). Quantitative research stresses standardisation which allows replicability and tests the same theoretical relationship among the variables by asking the same question in the same way.

A quantitative content analysis is deductive and systematic. It first establishes a hypothesis or research questions, identifies the text and selects what is usually a large amount of data which is preferably random to allow for generalisation. It draws the sample, establishes data collection and the unit of analysis, establishes a coding scheme, systematically codes the data, checks for reliability and validity of coding to determine objectivity, analyses coded data and applies statistical tests, and writes up the results (White & Marsh, 2006). Quantitative research emphasises 'the measurement and analysis of causal relationships between variables, not processes' (Denzin & Lincoln, 1998, p. 8). The argument is about frequency which indicates intensity and importance and has statistical testing and can be generalised to a wider population. So in quantitative research the objective is to make replicable and valid inferences from texts to the contexts of their use whereas the qualitative analysis captures meanings, emphasis and messages to understand for considering perspectives. However, quantitative indicators such as counting, frequencies and correlations can be shallow and insensitive, whereas qualitative content analysis is more about depth of meaning and looking and can also be systematic, reliable and valid (Krippendorff, 2013).

Crowther and Lancaster (2009) argue that management research and management problems can often involve both quantitative and qualitative aspects requiring a combination of inductive and deductive methods. Many types of information and data can be used to develop theories in inductive research which is flexible and allows a problem to be studied in several ways. It is particularly suited to the study of human behaviour, which includes organisational communication research and allows flexibility in research design including aspects such as sample size and data (Crowther & Lancaster, 2009). The primary focus of this research is academic and knowledge building but also investigates and proposes solutions to real life management. It aims to build theory by improving understanding and knowledge of the leadership process.

4.4.2 Data collection and selection

The qualitative interpretive assumption is that the social world is always being constructed and so the concept of replication is of course problematic. This included

collecting data across the cycles so as to maintain consistency, taking three cycles of GlobCom (2012, 2013 and 2014). This was in order to look at the long-term effects and assess the effects that occurred in earlier iterations, using three cycles to minimise the impact of the personal responses of the researcher. The longitudinal approach, with its separate action research cycles, provided more opportunities to generalise findings to virtual teams. The three cycles include two cycles of the supervisory lecturers and three cycles of student team leaders. This means that the same two cycles examine both the supervisory team and student teams (2013 and 2014). Also one cycle of the supervisory team is researched again using a different research question which validates the results of the single cycle (2013). Although this research cannot be repeated it covers several cycles, the research design is explicit and the data are available for checking.

As Gray (2009) would argue, a qualitative researcher being more personally immersed is better positioned to examine the linkages between events and activities. In this research, rigour is preserved through the replication of method over three years, which Gray (2009) would argue demonstrates a dependability of findings as there are also consistent team stages applied to all cycles.

The year 2012 marked the launch of the student team leaders' forum, where team leaders posted messages to each other and to the team mentor. The time frame within these years starts from when all lecturers were welcomed into the project (around mid-January) and continues until the student teams submit their proposals (around end-May). After the proposals are submitted the student teams are no longer required to collaborate although communication about conference preparation takes place among the supervisory team of lecturers.

As explained in Chapter Three, GlobCom is a longitudinal learning project where students in multinational teams develop a PR proposal annually and are supervised by a virtual team of lecturers. Students in peer-managed teams carry out experiential learning by working to a real-world time frame writing a PR proposal, all of which is built on the previous year's learning and shared on the GlobCom website. The project culminates in a conference where the students meet face-to-face for the first time.

Scholars recommend that more longitudinal empirical studies of virtual teams are needed in order to understand the complex nature of team interactions (Gilson et al., 2015; Malhotra, Majchrak, & Rosen, 2007; Mukherjee, Lahiri, et al., 2012). Emails from the supervisory team to the rest of the team (which included the team mentor), the

student team leaders' emails to the team mentor, and the student team leader posts on the team leader forum, showed the communication that progressed the GlobCom project. Therefore, these units of analysis were considered the most relevant to understanding the leadership interactions in virtual teams. The team mentor role, which had been created in 2011 to support team leaders, opened a channel of communication for team leaders to email the team mentor directly with questions, and send their meeting reports.

Other data such as in the meeting documents, interviews and meetings themselves could have been used. However, this action research sought the in-depth analysis of communication records from empirically derived field data which Gilson et al. (2015) note is rare in virtual team studies. The emails and posts were used to identify ongoing interactions, their frequency and style over the team stages. Interviews are 'reported information' which risks being biased information (Silverman, 2010). The student team leaders' emails and posts were reports of their interactions with their team members, written as they occurred and showed a pattern over time, whereas interviews would be more likely to have created a reflective time for the leader to consider their actions, rather than simply reporting on events. Using emails and posts was also considered an unobtrusive and non-reactive way of collecting data to examine conversations and interactions. In this study, using emails also acted as an audit trail and aide memoire.

Emails were previously used by Flammia et al. (2010, p. 90) in their analysis of student virtual teams who note that while email is not a rich media technology, it is frequently the communication medium of choice for virtual teams. Flammia et al. (2010) suggest this may be because email gives team members time to edit their messages, making it easier for non-native speakers to communicate and the lack of nonverbal cues and the resulting social distance may be desirable when handling negative feedback from a leader to a team member.

In contrast, researchers who applied the competing values framework to study virtual teams relied on interviews, surveys and retrospective perceptions of virtual team leaders and managers to identify what leadership roles would be preferred (Konradt & Hoch, 2007). These researchers and others studying virtual teams recommend analysing email conversations of team leaders accumulated during a live project in a longitudinal study, in order to validate existing virtual team research (Konradt & Hoch, 2007; Mukherjee, Lahiri, et al., 2012). Therefore, the unit of analysis selected was the team emails of the lecturers' supervisory team, the student team leaders' emails and team leader forum

posts as they provided a regular and complete chronological insight into activity as it happened. They were also regenerated each year which provided a longitudinal data source for action research. These were collected as ‘social artefacts’, which provided a context for the research as ‘a product of people and their activities or behaviours’ (Weerakkody 2009, p. 47) and could be used to highlight key issues and allow for triangulation.

The following is a summary of the data collection during three cycles of GlobCom: 2012, 2013 and 2014.

Table 8 Participants and the data collected during the three GlobCom cycles

Participants	Primary Data
Established academic team including the webmaster.	Group emails and individual emails to the researcher.
Student team leaders of ad hoc teams.	Group and individual emails sent to or received by the researcher (with reports attached). Posts from student team leader forum.

The research was initiated by the launch of the team leader forum in 2012 which was the support site for student team leaders set up by the team mentor, where they could post to each other and seek help from each other or the team mentor. This also specified that leaders were to submit reports and student registers. This gave the lecturers insights into how the teams were working and also was expected to highlight issues as they occurred. However, it was also difficult dealing with them as these were perspectives for the team leaders only who may post issues when it is too late, may not feel obliged to post updates or may not wish to communicate with the team mentor as it was a support system, rather than obligatory. However, the team mentor role, which had been created in 2011 to support team leaders, opened a channel of communication for team leaders to email the team mentor directly with questions, and send their reports attached to their registers. Therefore, the information available was team leader posts, registers and emails to the team mentor. The lecturers communicated via email in an ongoing fashion and inconsistently.

The content emerges during close reading of the text and the process of categorising data through identifying and reinterpreting the text to identify trends and patterns and make valid inferences. The emails from the supervisory team and student team leaders plus the student team leaders’ posts were analysed while their information was reviewed for context and to ascertain the research needs.

Information provided a context for understanding the teams and highlighting the key issues and allowing for triangulation.

Table 9 Data from lecturers and students

Lecturers (12-14 each year)	
Lecturer emails in 2013:	128
Lecturer emails in 2014:	145
<i>Total lecturer emails:</i>	273
Student team leaders (7-8 each year)	
Student team leader posts and emails in 2012	113
Student team leader posts and emails in 2013	35
Student team leader posts and emails in 2014	67
<i>Total student team leader posts and emails:</i>	215
Lecturers and team leader emails and posts:	488

The research included two years of lecturer communication and three years of student communication. The first year of student communication included the new team mentoring forum which led to more communication created among the lecturers which led to the research on the supervisory team.

4.4.3 Data management

The data of this study is constantly reviewed to ensure it is placed into sequences of related talk (Silverman, 2010). Some email conversations form what Markus (1994, p. 518) called a ‘mosaic message’ when they are forwarded and collect other messages in their journey and also add newcomers which affect the final meaning and need to be unravelled from each other. It is necessary that conversation threads are ordered in a linear manner to detect dependencies and improve the quality of data analysis. A tree structure is helpful in identifying the overall conversation and viewing conversational threads in emails, particularly when following complex debates (Dehghani, Shakery, Asadpour, & Koushkestani, 2013). However, in this project the emails are either individual or include the entire group and the timeline moves into different topics without visiting old ones, thereby avoiding long conversational threads. As Dehghani et al. (2013) recognise, the downside of using a tree structure means that emails are not ordered in a linear manner which makes it more difficult to identify turn taking (argued as important by Silverman (2010) to examine roles and identities and sequences) and the team stages.

Therefore, to show chronology and turn taking, emails and posts were ordered through their date and time, which was essential as some showed an erroneous earlier or later time in a different hemisphere, and the sender and receiver were identified to preserve its context. Roles, identities and sequences are important in research (Silverman, 2010) and are necessary to analyse communication in this study. This virtual team communication is complicated with its varying topics, discussion threads, time zones and activities, therefore systematic formatting is needed which provides consistent results.

The lecturers' supervisory team starts earlier than the students as there was preparation carried out by the lecturers and the student academic years are on variable dates so a suitable date was mutually agreed. Constant comparative methods are employed to help develop critical thinking during the analysis, as recommended by Silverman (2010), through comparing the supervisory team to an earlier and later cycle. In addition, the team stages of the virtual teams are identified based on virtual team research (Hertel et al., 2005; Mennecke et al., 1992; Mukherjee, Lahiri, et al., 2012; Zander et al., 2012).

The student teams' stages were also identified using the same criteria against the student team leader data corpus of posts and team leader emails to the team mentor as they were dependent upon critical events in the student teams and had different dates. However, the student team stages have different activities from the supervisory lecturer team as they dealt with each team's research, writing and submission of the PR proposal and these are presented in Chapter Seven, the final research chapter, which focuses on student participation.

This systematic method of ordering the emails, categorising words and meanings into themes, helps to make valid inferences from data. The data are also presented in tables to show more detail, or in bar charts to show the frequency of interactions within each cycle. The bar charts are also used to show the stages within each cycle on one graph. The supervisory team data of emails (2013 and 2014) and the student team leader data of emails and forum posts (2012, 2013 and 2014) are collected and structured chronologically based on critical events and goals showing the team stages for each group. The student team phases are also divided into an input and output model to present the activities within each team.

The following table summarises the research process.

Table 10 Summary of the research process, adapted from Weerakkody (2009)

Elements of the research process	Application in study
Epistemology	Pragmatism (Dewey, 1932; Goldkuhl, 2004, 2012)
Theoretical frameworks	Leadership interaction theory (Gibb, 1958; Quinn, 1988; Quinn & Rohrbaugh, 1983; Yukl, 2013; Yukl et al., 2005; Yukl, Guinan, & Soitolano, 1995) Interpersonal communication (Berger & Calabrese, 1975; Burgoon, 1993; Burgoon et al., 2007; Goffman, 1972) Virtual team leadership (Avolio et al., 2001; Avolio et al., 2014; Avolio et al., 2009; Hertel et al., 2005; Mukherjee, Lahiri, et al., 2012; Pauleen, 2004a, 2005; Pauleen, 2003b)
Methodology	Action research of a longitudinal study (3 years) (Carr & Kemmis, 1986; McKay & Marshall, 2001; Melrose, 2001)
Methods of data collection	Qualitative content analysis (Braun & Clarke, 2006; Krippendorff, 2013) Participant observer during the specific task stages
Units of analysis	Whole emails and posts of team communication from supervisory team and student team leaders
Time orientation	Longitudinal study of the 12-week GlobCom cycles over three years
Data analysis	Qualitative content analysis (Krippendorff, 2013) Thematic analysis (Braun & Clarke, 2006)

4.4.4 Summary of research design chapter

In summary, this chapter has explained how the research is carried out and outlined the action research methodology with a pragmatic epistemological approach using the method of a qualitative thematic content analysis. The participant observation is used to explain the context and factors which were observed during each cycle. The next three chapters focus on the research questions.

The first chapter addresses how team leaders elicit actions in global virtual teams and uses one cycle (2013) of the supervisory team. It identifies and explores the specific action-eliciting interactive styles which form a unique content analysis tool called DEPIQA and reflects on its emerging leadership themes. The second research chapter is based on cycles of the supervisory team (2013 and 2014) and applies a recognised managerial tool of leadership roles as a content analysis tool to explore how face-to-face

roles are renegotiated in virtual teams. Both these questions research the established supervisory team. Although this is initially deductive, the analysis is interpretive in exploring role activity and recommending a new model of virtual team roles. The third question researches three cycles (2012, 2013 and 2014) of the student ad hoc teams focusing on student team leader interaction with the team mentor and other team leaders. A qualitative content analysis is first applied to identify the specific team stages. It then searches for the interpretation of issues by team leaders and how they approach them in an effort to identify whether a task or relational focus is more effective in addressing participation. Although a new client and therefore a different client brief was used each year, there was the continued established nature of the yearly tasks, that is, the students developing a PR proposal to the live brief and the supervisory team managing the student teams.

The following table summarises the questions and the data used. The study uses the emails and team leader posts to which the researcher has privileged access in her role as board member, participating lecturer and team mentor.

Table 11 Research questions and data used in each chapter with student leader data used only for RQ3

Research question	Data	Source of data
RQ 1: What interaction styles do team leaders use to elicit action in virtual teams?	Lecturers' and webmaster's emails to each other	GlobCom cycle x1 (2013)
RQ 2: How are face-to-face roles renegotiated for virtual teams?	Lecturers and webmaster's emails to each other This was used to compare the results of RQ1 with RQ2 using 2013 data	GlobCom cycles x 2 (2012 & 2013)
RQ3 What do team leaders do to encourage participation?	Student team leaders emails to the team mentor, meeting reports and team leader posts on team leader forum	GlobCom cycles x 3 (2012, 2013, & 2014)

Each of the following three action research chapters has five parts and is structured as a research project (Crowther and Lancaster, 2009). It provides an easy flow through the research by identifying the issue within the theoretical and practical context, outlining how it will be addressed and then presenting the research results with a discussion and conclusion on findings.

1. A research context first explains the issue the research is addressing.
2. A research design identifies the research methods used.
3. The results are presented, referring to the team stages.

4. A discussion follows which relates to the research question.
5. Each chapter concludes with a reflection providing the theoretical and practical implications identified from the study.

An overall discussion followed by a conclusion to the thesis with a reflection follows these research chapters.

CHAPTER 5 VIRTUAL TEAMS MEAN NEVER HAVING TO SAY YOU'RE SORRY²¹

This chapter explores the question of how leadership interaction can elicit actions in virtual teams to reach common goals. The chapter is structured by starting with the research context which highlights specific findings of existing research on leadership interaction and is the departure point for examining what types of interactions lead to actions. It then presents a research overview on how this study expects to build on these. The research methods and data management discuss the data in terms of the team stages and the thematic content analysis method used. The results present the specific interactive styles in terms of when they occur in the team stages and their frequency. The discussion explains how and when these styles are used and the reflection presents the theoretical and practical implications of the action research with recommendations on the most effective interaction styles.

5.1 The research context

This study builds on virtual team research regarding leadership interactions in an effort to understand how leaders elicit actions. It aims to identify those interactions most effective in eliciting actions. Leadership in face-to-face teams is needed to ensure the sustained interaction which is necessary for a team to achieve its task, fulfil individual needs and achieve team maintenance (Bales & Strodtbeck, 1951; Gibb, 1958). This is even more challenging in virtual teams as they are recognised for having low information sharing, less questioning and a more forceful approach to tasks, all of which are believed to inhibit collaboration (Balthazard et al., 2008). Recent research on influence tactics in virtual teams identified the paradoxical issue of virtual teams being more likely to withhold information, but also more able to share information (Wadsworth & Blanchard, 2015). Furthermore, leaders cannot use visual social cues which help to show seniority and gain members' trust and commitment (Malhotra et al., 2007; Yukl, 2013; Zaccaro et al., 2001). Consequently, scholars are uncertain how a virtual team leader can most effectively interact with their team members and move the project forward (Avolio, Sosik, Kahai, & Baker, 2014a; Iorio & Taylor, 2015; Walvoord, Redden, Elliott, & Coovert, 2008; Zivick, 2012).

²¹The leadership tool, DEPIQA, is licensed under the Creative Commons Attribution 4.0 International License. To view a copy of this license, visit <http://creativecommons.org/licenses/by/4.0/> or send a letter to Creative Commons, PO Box 1866, Mountain View, CA 94042, USA.

Research found that face-to-face leadership influence tactics (Yukl et al., 2005) were effective in influencing interactions in virtual teams, but some were expressed differently and more frequently. For example, the aggressive influence tactics of pressure and legitimating were used more frequently to avoid the risk of being ignored in the chaotic virtual team environment (Wadsworth & Blanchard, 2015). However, it is not clear if these are transferable to other virtual teams.

The researchers also found that lowering ambiguity could be defined as a new influence tactic specific to virtual teams and requires a level of empathy. Socioemotional responses have been recognised as effective in previous virtual team research (Kayworth & Leidner, 2001). However, scholars are asking how leaders can demonstrate empathy online without it being misinterpreted as disempowering or time consuming (Walvoord et al., 2008). Equally, scholars are not in agreement on when the transformational or transactional interaction styles are most effective or even when they occur in the team lifecycle, as these are seen to emerge differently in virtual teams than in face-to-face teams (Huffaker, 2010). This may make these styles difficult to define or assess and differentiate, although researchers have argued transactional leadership may have more value at the beginning of a virtual team (Mukherjee, Lahiri, et al., 2012).

Furthermore, the team stages pose new questions. As in face-to-face teams, research shows that there are also distinct team stages within the lifecycle of virtual teams which suggest specific leadership requirements and different management tasks for each stage, although these require more research to identify what is required (Avolio et al., 2009; Hertel et al., 2005; Krumm et al., 2016; Mukherjee, Lahiri, et al., 2012).

5.2 Research overview and contribution

Leadership is known to change within the lifecycle of face-to face-teams (Benne & Sheats, 1948; Hersey & Blanchard, 1969). There is some research to suggest that specific leadership capabilities may also be needed in different virtual team stages (Mukherjee, Lahiri, et al., 2012). However, the identification and study of specific interactions and activity within the virtual team stages are under-researched areas, especially within the later stages (Hertel et al., 2005).

This study uses empirically-derived virtual team data to first identify the specific team stages specific to the project. It aims to provide enough detail in order that these stages can be adapted and universalised to other virtual teams, including pedagogical and

management projects. This chapter then identifies the action-eliciting interactions used by the supervisory team and explores their function and frequency during each team stage. It also provides in-depth research on the inner workings of a virtual team, which is currently lacking (Gilson et al., 2015).

In order to address the issue of what elicits action, a unique content analysis tool called DEPIQA was used, which is an acronym of the interactive styles identified within the research. This content analysis tool is empirically derived from the virtual team emails and identifies the interactive styles, their frequency and their effect and when they are used. It also identifies a supervisory strategy which recommends the most effective interaction styles. The study also considers how the interpersonal theories, including the uncertainty theory (Berger & Calabrese, 1975) and politeness theory (Brown & Levinson, 1987), may explain these interactive styles and how they affect the actions elicited. This research also investigates the manifestation of transformational and transactional leadership and their effect on eliciting actions.

5.3 Research methods and data management

This part of the study looks at the emails exchanged among the GlobCom supervisory virtual team during the four months' cycle of the 2013 project. The stages started when the lecturers first came on board and ended when the lecturers were marking the student proposals and arranging the conference. The five stages of the project mark activity carried out by the team: introduction, preparation, production, facilitation and evaluation, which is a full overview of the work done that year. The following section describes how these stages were identified.

5.4 Identification of team stages

The specific stages of the GlobCom supervisory team were identified through an inductive and deductive process which built on virtual team models (Hertel et al., 2005; Salmon, 2004; Zander et al., 2013), as well as the project's management schedule and its critical events. The identification of stages proved effective in constructing the research, as well as providing more insights into the timing of the team activities, and reflects other research which has found that it is much simpler to research global virtual teams when the team development stages are clarified (Zander et al., 2013). This section discusses how the data was analysed to identify team stages, which gave a framework to the research. The preparation involved selecting the unit of analysis, which in this study was an email from a leader. All the team leader emails were reviewed using a content

analysis where critical events were identified to form the five functional team stages which reflected different management needs. The critical events were the welcoming of the lecturers, the welcoming of students and forming of student teams, delivery of the client brief to the students, the preparation of the proposals and the proposal submission and then the evaluation by the lecturers.

These findings were formed into goals determined by what was expected to be achieved along with a strategy which summarised the plan on how each goal would be accomplished (Gordon, 2011b). The activities were identified as essential to team growth and performance and were listed under each stage: as introduction, preparation, production, facilitation and evaluation. Although the team stages are distinctly based on GlobCom data they follow similar functional stages of other virtual teams (Duarte & Snyder, 2006; Hertel et al., 2005; Salmon, 2004). However, this model provides more depth and transparency of the stage development with the teasing out of a goal, strategy and activities which allows the model to be adapted to other virtual team projects. The stages in this research are therefore specific in terms of activities and focus on functional events, which makes the study useful to other educational or project management virtual teams. It can also be used in public relations as it reflects supervision of the proposal development process (Gordon, 2011b).

The following table shows the stages based on the goals, strategy and actions which have formed the team stages and was used in this research.

Table 12 GlobCom team stages for supervisory team

	Stage 1 Introduction	Stage 2 Preparation	Stage 3 Production	Stage 4 Facilitation	Stage 5 Evaluation
Goal	Participate in the project and the conference	Register and prepare students	Encourage student progress	Ensure students' global progress	Ensure proposals finalised and prepare for conference
Strategy	Lecturer team welcome, clarify instructions and role outlines	Review client brief, preparation information and checking student registration and website assistance	Support students and facilitating team leader support	Collaborate on providing student feedback	Arrange submission and marking
Actions	Team welcome, introductions, schedule, client brief, budget, student registration, conference details, post student welcome	Repeat brief, submit student registration, announce project and schedule to students	Lecturers guide student teams	Lecturers to address team issues and provide feedback	Finalise proposals, lecturers to receive and mark proposals

The following table shows more detail in mapping the activities against the dates and stages of the project and shows the activities expected from the students. This was also used to develop the student team stages in Chapter Seven. Consequently, the similarity of the stages to other virtual team models justifies the universality of the subsequent research findings and provides a strong methodological structure framework for these first two research chapters which both focus on the supervisory team of lecturers.

Table 13 Functional stages and activities of the GlobCom project

Date	Functional stage and activities
February - March 4	Enrolment Students meet and socialise and work out procedures
March 4 – 24 Stage 1	Research and development of processes Develop project timeline (identify holiday times for different team members) Research - SWOT/PEST; write up situation analysis. Elect team leader and develop team processes. Team leader confirms deputy. Select country leaders as contact for the team leader Identify team goals and norms (see below) Allocate roles (see below for examples of roles)*
March 25 - April 15 Stage 2	Framework of proposal Develop objectives, strategy, publics, concepts
April 16 - April 29 Stage 3	Body of proposal Confirm strategy, implementation, action plans
April 30 - May 6 Stage 4	Finalise Develop budget, proposal evaluation and submit presentation

This section has explained how the team stages were developed. The next section of the research methods explains how the data was selected and coded against the team stages. Drawing on what Silverman (2010) calls ‘purposive sampling’ it uses one set of data which is all the emails from all of the stages in one cycle (2013) to which the researcher has privileged access in her role as board member, participating lecturer and team mentor.

5.4.1 Developing the content analysis tool: DEPIQA

The emails from one cycle (2013) were first unravelled from their communication threads and ordered in a linear manner through date and time and sender following existing research models (Markus, 1994; Silverman, 2010) outlined in 3.6.2. The emails sent by the supervisory team in the 2013 cycle were first manually coded to review patterns of themes within the data, based on the research question on how actions were elicited. The method employed was open coding as defined by Silverman (2010) and includes searching for concepts and recurrent words in an effort to identify the themes in the communication, based on a review of the conversation topics and purpose of the email. These themes were then formed into a classification of concepts, called a category and each time an instance of a category was found it was compared with previous instances (Gray, 2009). This meant that each category was reviewed to ensure

it was a specific pattern, internally consistent and differentiated from the others, as recommended by Marshall and Rossman (2011).

The following four distinct categories were extracted from the emails:

1. *Action-eliciting category* which aimed to elicit action essential for a stage to be completed, e.g., asking for an action, directing an action, suggesting an action. For example, in stage 1 the goal was to ensure lecturers participate in the project and the conference through preparing and motivating the lecturers with a welcome, providing clear information and role outlines. Examples of actions to be elicited within the lecturer team included agreeing a conference date, confirming conference attendance and approving the client brief.
2. *Socioemotional category* which focused on building relations, e.g. about looking forward to meeting, the weather across the different countries participating and holiday greetings.
3. *Technology category* which was about working with technology, e.g., working of the website, use of various platforms and online meeting arrangements.
4. *Problem-recognition category* which focused on student-specific issues, e.g., participation, issues with the proposal development and teamwork.

These action-eliciting emails were therefore selected for this study. Each of these emails was formatted in terms of frequency, team stage and the sender. This showed that more than a third (43) of the emails formed this category, out of a total of 123 emails, which were sent from five lecturers only, in the following order of frequency:

- L1 – Lecturer and President of GlobCom
- L2 – Lecturer and conference host
- L3 - Lecturer and team mentor to the student team leaders
- WM – Webmaster with no academic or supervisory role
- L4 - Lecturer and vice-president

The action-eliciting category was more frequent in stages 1 and 4, and the least frequent in stages 2 and 3. The following bar chart shows the frequency of the action-eliciting category by leaders in each stage.

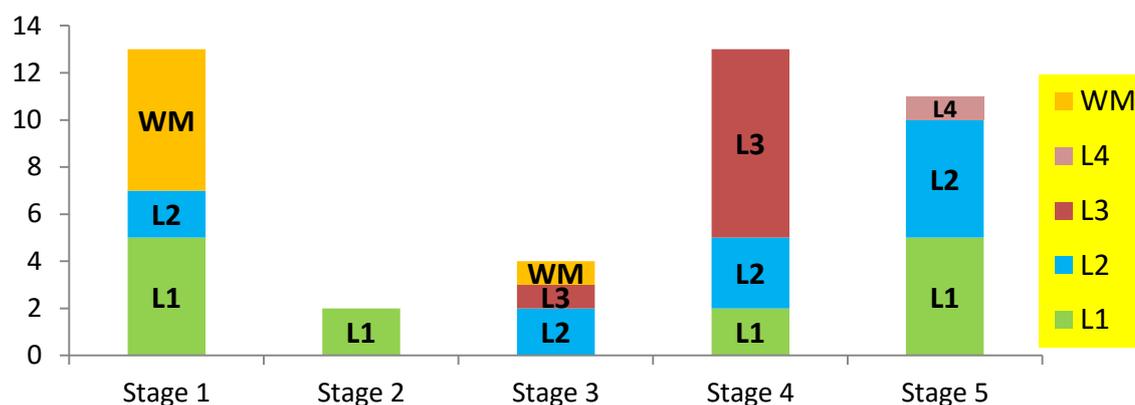


Figure 8 Number of action-eliciting emails by team leaders in each stage showing stage 1 and stage 4 as the highest with L1 and L2 sending the most action-eliciting emails.

Only the relevant and distinct category of action-eliciting emails was selected to undergo an in-depth qualitative analysis. Although this assumes that actions were not elicited in other ways, it is possible the action-eliciting category included some of the socioemotional, technology and problem-recognition categories. Therefore, it is likely this category may have reduced the size of the other categories, rather than the reverse being true. This category of action-eliciting emails underwent a second level of pattern-coding to reveal the different ways the actions were elicited and these were called functions (Silverman (2010)).

These functions were derived inductively by first analysing the emails linguistically to identify the phrases that elicited the action and then chunking them under verbs that explained the action. The verbs were refined and the phrases were coded and recoded, which generated six different functions.

These are *directing* which gave an order about an action or announced that the action was happening; *explaining* which rationalised the need for an action, *personalising* which used the recipient's name or their role in connection with the action; *insisting* which mentioned time or its limitations to denote a sense of urgency; *questioning* which asked a question related to the action and *apologising* which showed concern or made an apology. These functions formed the unique acronym, DEPIQA,²² and became an original content analysis tool used in this study for identifying, analysing and reporting the use of functions within the data.

The functions were then reformatted back to their original emails and team stages and to the interactant to be reviewed in their original context. They were then formatted into

²² DEPIQA is the acronym for an original content analysis tool which identifies the directive, explanatory, personalising, immediacy, questioning and apologetic communication functions in the action-eliciting emails of the global virtual team.

the team stages chronologically. Some actions were elicited in a single email by using more than one function, although this usually meant the email had several sentences.

Table 14 The content analysis tool DEPIQA, showing functions within the action-eliciting category derived from analysis of the empirical data

Functions within the action-eliciting category (DEPIQA)	Meaning when associated with an action
Directing	Giving an order or announcing what is happening
Explaining	Rationalising a need for an action
Personalising	Using the recipient's name or role
Insisting	Using time to denote a sense of urgency
Questioning	Asking a question about an action
Apologising	Apologising or showing concern

These functions were subsequently interpreted as interactive styles, that is, the way people interact with each other (Balthazard et al., 2008; Potter & Balthazard, 2002). These styles that I will refer to in the discussion section later were named *directive*, *explanatory*, *personalising*, *insistent*, *questioning* and *apologetic*.

5.5 Results

The interactive functions and the frequency of their appearance are analysed in relation to the team stages. The six distinctive leadership interactive styles – directive, explanatory, personalising, insistent, questioning and apologetic – emerged from 113 registered communication acts embedded in 43 action-eliciting emails from five leaders. A communication act is the function or meaning of a sentence or a set of sentences within the email, for example, it could mean a direction, or an excuse, or an intention (Searle, 1969).

The same leader used different modes of functioning to elicit actions at one time. This is consistent with research by Yukl et al. (2005) which examined influence tactics in face-to-face teams. The researchers argued that there was a difficulty in assessing the independent effects of individual influence tactics when incidents involved multiple tasks.

5.5.1 Frequency of the DEPIQA functions

The explaining function was the most frequent, which occurred 33 times, followed by the directing function, which occurred 30 times. The questioning and insisting functions (15=) were less frequent followed by the personalising interactive function (12) and the

frequent apologising interactive function (8). The overall frequency of the interactive functions is shown in the PIE chart below.

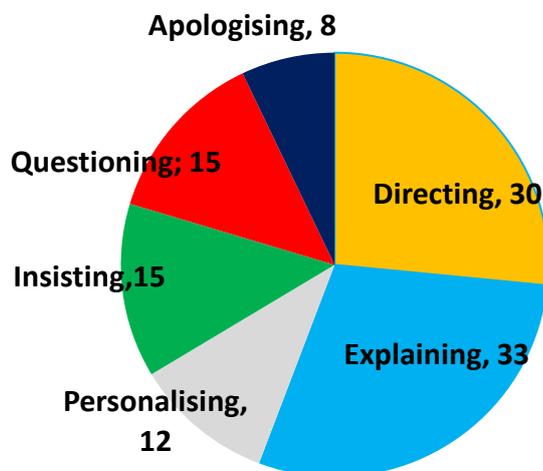


Figure 9 Showing frequency of the different DEPIQA functions during a cycle (2013)

The interactive functions were assessed for when they were most frequent in the team stages. There were five stages in the team lifecycle. The highest frequency of functions occurred in stage 1, which focused on lecturer preparation and in stage 4 where lecturers collaborated to ensure student progress, followed by stage 5, which was concerned with marking the proposals after submission and organising the conference. There were markedly fewer interactive styles in stage 2, responsible for student preparation and stage 3, where lecturers facilitated team support.

The interactive functions were analysed for when they were most frequent in the team stages in order to understand the most prevalent function in the team and in each team stage. The graph below shows the frequency of all the interactive styles in each stage. The explanatory and directive interactive styles were most frequent in stages 1, 4 and 5 and the personalising and apologetic interactive styles were the least frequent overall. A bar chart is used rather than a pie chart as it gives more detail and is able to compare the frequency of each DEPIQA style in each stage.

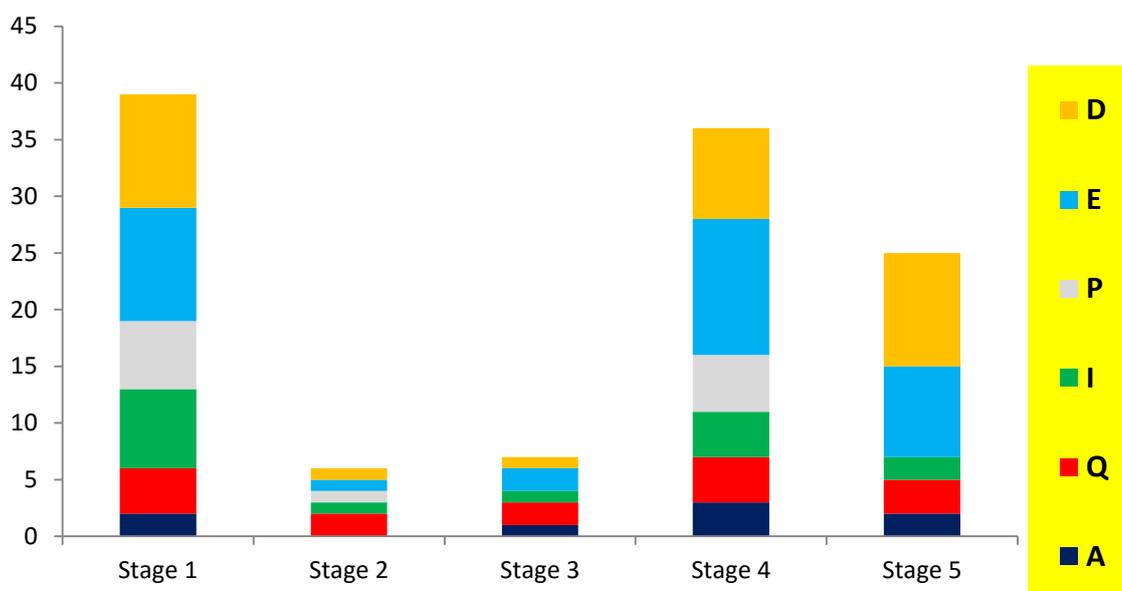


Figure 10 The frequency of the interactive styles in the team stages, showing the most interactive styles in stages 1 & 4 each. See appendix for more details.

The action-eliciting category of the emails was used by only four lecturers and the webmaster. Each of these used the interactive styles with variable frequencies in the different stages and this will be later correlated to their delegated role as well as showing how the more active leaders had more influence on the team. L1, the GlobCom president, exercised the most styles and primarily the directive style while L2, L3 and WM exercised the explanatory style followed by the directive style. L4 sent the fewest action-eliciting emails. The personalising, insistent, apologetic and questioning styles were exercised with much lower frequency by all team leaders than the directive and explaining styles.²³

5.6 Discussion

The action-eliciting emails comprised more than a third of all the emails exchanged by the supervisory team of lecturers. This discussion reviews the interaction styles within these action-eliciting emails in terms of how and when they were used in each team stage to elicit actions during the GlobCom project. The delegated GlobCom leaders used specific and distinct acts of communication to elicit actions. These acts in this study are called functions and they generated a classification of styles defined by how leaders request actions: directive, explanatory, personalising, insistent, questioning and

²³ Additional data: L1 used the directing function more than anyone else followed by the explaining function, then the insisting and questioning functions (equally), and personalising and apologising functions. L1 was most active in stages 1 and 5, but was inactive in stage 3 and least active in stage 4. L2 was most active in stage 5 followed by stage 4, inactive in stage 2, least active in stages 1 and stage 3 equally. L3 was most active in stage 4, active in stage 3 and inactive in the other stages. The WM was most active in stage 1, and again in stage 3 only. Further tables and graphs are included in the appendix.

apologetic. The classification is generated by using a unique content analysis tool DEPIQA.

The team stages are identified through crucial events. According to the frequency of the interaction styles, stages 1 and 4 can be identified as the most active stages with the highest overall frequency of the DEPIQA acts. The goal of stage 1 is for the lecturers to participate in the project by ensuring they had information and role outlines. Stage 4, the penultimate stage, is for the lecturers to collaborate on feedback and address issues in order to encourage the students' progress.

5.6.1 When actions start

All four DEPIQA styles (explanatory, directive, insistent and questioning) were more active in stages 1 and 4 than the other stages, which suggest that there is a high need for action in these two stages. This is a significant finding for virtual team research. Stage 1 has been considered highly active and challenging because of its planning activities (Avolio et al., 2014; Hertel et al., 2005; Krumm et al., 2016; Zander et al., 2013), but there has been a lack of research regarding the later virtual team stages. Later stages carry out performing and executing activities (Hertel et al., 2005), and this study shows that the first stages of a virtual team are most challenging, as others have discovered (Hertel et al., 2005; Mukherjee, Lahiri, et al., 2012; Salmon, 2004), but the analysis of this study shows that there was also a high need for direction and explanation in stage 4. This penultimate stage involved checking participation of students in order to ensure proposals were ready for submission and lecturers needed to guide, and report on, student progress. In stages 2 and 3, students were more self-managing so there was less interaction between the lecturers.

The high interaction in stage 4 may also have been owing to the higher frequency of action-eliciting interactive styles used to reinvigorate the supervisory team. Or the higher frequency of interaction may have been influenced by the leaders having a sudden awareness of approaching deadlines, as outlined by Gersick (1988) in the punctuated equilibrium model.

The directive and explanatory styles were established as the most frequent but they had variable effects in combination with other styles. L1 used the directive interactive style to present the schedule, delegate roles, and arrange student registration which provided structure, clarity and motivation. The norms and practices, motivation, goals and information, considered essential to be established in the first stage (Avolio et al., 2014;

Salmon, 2011; Zander et al., 2013), were largely communicated from the beginning. The directive interactive style is defined in this study as ‘giving an order or announcing what is happening’ and is likely to set up expectations of how team members were to collaborate. For example, the following comment from L1 uses the directive interactive style of what has to be done but it is in combination with the insistent style which refers to timing:

...as far as the brief is concerned, we have to progress rather fast.

Furthermore, the insistent interactive style was used in stage 1 to initiate actions and get lecturers on board agreeing to activities.

...very soon the eleventh term of our project will start

...before the storm of student questions hits us (WM asked L to check the website).

L1 performed all the interactive styles and had a high interactivity in this action-eliciting category. L1 also used the directive interactive style more than anyone else and was the most interactive in stage 1, with the directive style being the most dominant. L1 also structured overall goals yet allowed members to be self-monitoring. However, the team stages were not specified and the goals were not explicit to the team, and these were developed through the action research.

GlobCom did not have early cohesion issues which is contrary to similar virtual team research (Hambley et al., 2007). This may have been because messages from L1 were clear, unrepitive and focused on roles, motivated the group and facilitated team communication, all of which are considered key leadership functions in both face-to-face (Benne & Sheats, 1948) and virtual teams (Huang et al., 2010).

Furthermore, team cohesion in virtual teams is also influenced by trust and L1 carried out actions and communicated about them which Jarvenpaa and Leidner (1999) argues will build trust. The instructions from L1 were clear and instilled confidence with his directive interactive style. For example, L1 reminded lecturers of the activities he had organised:

the briefing...students and you will be informed...have a look at....,

L1's directive interactive style, achieved by the use of task-oriented messages, was also transactional (Avolio et al., 2014) in the sense of being task-oriented and directional.

This leadership approach has been found to stimulate task cohesion and lessen ambiguity in the early stages (Huang et al., 2010), which this study also suggests and may have helped to overcome any initial uncertainty. It may also have helped instil confidence in the team members which Crisp and Jarvenpaa (2015) argue is crucial for implementing actions in the early stages, e.g.,

Please make sure that your university is represented in all teams with at least one student, better two or more...

The timetable is as follows...

Furthermore, L1 combined a directive interactive style with an explanatory interactive style which conveyed the certainty, confidence, clarity and persuasiveness indicative of transformational leadership (Balthazard et al., 2009), e.g.,

...the briefing...keep confidential until published on the website...

...without interfering too much I think this might be better for you...

This is an example of how difficult it is to differentiate the transformational and transactional leadership approaches online but it also shows how they can work in combination. Scholars have recognised that in virtual teams there is a lack of social cues to denote an online leader who sets the direction (Zaccaro et al., 2001; Zigurs, 2003). Therefore, leadership manifests differently online and is marked by high assertiveness and linguistic capability (Huffaker, 2010) and frequent emails which build telepresence (Walvoord et al., 2008).

Although initial socialisation is thought to develop trust in a virtual team (Flammia et al., 2010; Jarvenpaa & Leidner, 1999), early socialisation did not happen in this study, although once again this may be due partly to it being an established team where most lecturers knew each other. However, L1 used a personalising interactive style, which is when the recipient's name or role is used in the communication to them. This welcomed the team leaders, informed the team who was present, and also delegated roles which may have prevented any ambiguity arising from poor role definition, e.g.,

...our new webmaster is XX, who is preparing...

...L3 will act as team mentor again

...L2 is in charge [of symposium]...

This study showed that actions can be accomplished without group discussion. For example, L1 announced the schedule and delegated roles through a directive interactive style which assumed team agreement. This directive style may also have been effective in eliciting the collaborative action as virtual teams have been found less likely to develop a constructive style (Branson et al., 2008). Equally, Zaccaro et al. (2001) argue this will occur if the virtual team leader is authoritative. Moreover, research suggests that an overall virtual team leader is expected to keep the team focused, self-managing and share roles (Bell & Kozlowski, 2002), which in turn helps team cohesion and motivation (Avolio et al., 2014; Cajander et al., 2009). Equally, the collaboration may also have been because many of the tasks were familiar (Bell & Kozlowski, 2002), as this was an established team which did not need excessive explanation.

The high frequency of L1's directive interactive style further strengthened his position as the main decision-maker but on the other hand, he also exercised the least polite interactions. When L1 discussed the conference budget and presentations with the conference host he was very direct, e.g.,

...the budget is fully unrealistic and ...should not charge more than...

*I do not suggest having three plenary presentations...
two are boring enough*

According to the politeness theory (Brown & Levinson, 1987), these impolite interactions may be caused by someone feeling they have high leadership power and feel they do not need to be polite, or feel they are unlikely to hurt someone's feelings. As this was an established team it is likely that the latter applies. Furthermore, Wadsworth and Blanchard (2015) have observed the use of stronger influence tactics are more likely in a virtual team than a face-to-face team. However, these seemingly impolite interactions may be a combination of high leadership power and a feeling of being unlikely to hurt someone's feelings, as other lecturers were consistently polite. Additionally, it could also be a cultural issue which, although it is outside the remit of this study, is still an important consideration and worthy of further research.

Communicating new procedures to the team was challenging. In stage 1, WM attempted to encourage lecturers to register on the website and complete student registration processes, but he was not always successful in eliciting action through his explaining interactive style, e.g.,

...so that [registration] will be very close to the old way

Although the explanatory interactive style risks being lengthy and complex, this was compounded by the topic's technical nature. It suggests that a transactional style is preferred by team members to reduce any ambiguity, especially in technical issues, as L1 later repeated the WM's request but used a directive style:

...need to ensure your students are now all registered.

The explanatory interactive style in stage 1 was also used by L2 to elicit responses from the lecturers on confirming their conference attendance, e.g.,

...because I need to fix the bookings ...

...we are working hard to keep costs...

However, these were also a face-saving action (Goffman, 1972), as being direct may have risked the other team members perceiving these interactions as orders and becoming resentful, and subsequently less enthusiastic, about conference attendance.

Therefore, the apologetic interactive style, defined as apologising or showing concern, was the least used overall. In addition, L2 often combined the apologetic style with the explanatory style, which further suggests the explanatory style was a possible face-saving style. The apologetic style was used most frequently by the conference host (L2) when requesting confirmation of conference attendance. The apologetic interactive styles of L2 would be what Brown and Levinson (1987) consider negative politeness, that is, when the communicator recognises the other's need for freedom and appeals through apologies and self-effacement while at the same time presenting their request. In this case, the lecturers were autonomous and therefore L2 did not have the power to enforce them to confirm their attendance at the forthcoming conference, but at the same time he was anxious for the details. Nevertheless, L2 sent repeated requests through all the stages regarding conference attendance which suggested he was receiving limited feedback. This shows how online requests can be avoided or ignored owing to the lack of social cues which are present in a face-to-face team. Also, his repeated requests were likely to have reduced his telepresence (Zigurs, 2003) and subsequently his authority, e.g.,

*I know I have asked before...,
...wondering if it would be a problem...*

...as soon as possible...
...preferably not later than...

This study shows that the apologetic interactive style may be easier to ignore in a virtual team than in a face-to-face team, and is not improved by combining it with the explanatory style. The apologetic style appears to be unsuccessful in eliciting action or feedback. When combined with the explanatory style, which is also empathic, it is still not effective and may even increase the ambiguity which is believed to be endemic in virtual teams (Wadsworth & Blanchard, 2015). This suggests that an empathetic style may need to be combined with a directive interaction style in order to elicit actions, and prevent them being ignored in a virtual team.

5.6.2 Generating actions and feedback in the later stage of a virtual team

This study showed that in stage 4, when lecturers were collaborating to ensure student progress, the action-eliciting communication increased. This was stimulated largely by L3 requesting feedback on student progress. L3, the team mentor, emerged as a leader in stage 4 by showing high interaction, which according to Iorio and Taylor (2015), indicates virtual team leadership. The messages from L3 focused on facilitating student participation and L1, the overall leader, did not send any action-eliciting emails on this issue. As Weisband (2008) notes, it is possible for virtual leaders to emerge and lead according to their particular strengths and Zander et al. (2013) also observes that role changes can occur in a middle stage.

The low frequency of action-eliciting functions in the previous stages 2 and 3 suggests the directive interactive styles used by L3 in stage 4 may have reinvigorated the team and announced a new stage and its purpose, e.g.,

...please check on non-participating students...

L3 used the most interactive styles (24) in stage 4, and eight were explanatory to introduce why feedback was needed, e.g.,

...most of the teams will be completing objectives...

In this stage, L3 sent the other lecturers progress reports based on feedback from the student team leaders and lecturers were then asked to verify their own student progress and participation, and this material was in turn shared. Furthermore, growing trust is believed to be associated with increased coordination (Hertel et al., 2005), and this was

apparent in stage 4 with L3's personalising, questioning and explanatory interactive styles which led to active collaboration and cooperation around discussions on participation. The interaction from L3, as team mentor, created responses from the lecturers on student progress which enabled L3 to interact further with updates and responses. Therefore, lecturers had, for the first time, more comprehensive feedback, and could see how other lecturers were managing their students, which increased the awareness of the team activities. These are factors which improve performance (Hertel et al., 2005; Jang, 2009) and reduce ambiguity (Wadsworth & Blanchard, 2015) in virtual teams.

The sharing of information within the questioning interactive style, which occurred in this team by L3, shows concern for others. It also elicits cooperation and is considered to develop team cohesion, which can help build a constructive team interactive style, as opposed to the defensive style identified more likely to be found in virtual teams (Balthazard et al., 2008).

However, questions are a form of information seeking and can suggest uncertainty by the sender (Berger & Calabrese, 1975) or can be used as a polite way of eliciting action (Brown & Levinson, 1987). For example, instead of telling the conference host to invite a speaker, L1 asked if someone was invited:

...Did you invite Albert?

And instead of reminding L3 that the team leaders should be elected, L1 presented it as a question, i.e.

...elections ...have you a timetable for the team leader elections?

This study suggests that when questions are used in a virtual team – a virtual team does not have the visual and social cues of a face-to-face team – these questions may not be direct enough to prompt action. This was evident when L2 asked about conference attendance, as he received minimal response. Questions may also risk creating ambiguity, especially if there is already an overload of information common to virtual teams (Kahai et al., 2013; Lee-Kelley & Sankey, 2008). Reducing ambiguity is believed to help team cohesion (Huang et al., 2010; Wadsworth & Blanchard, 2015), which may be achieved through empathic responses which recognise someone else's needs such as sharing information, creating accountability and providing examples (Wadsworth & Blanchard, 2015). In this study, a high frequency of a directive interactive style

appeared to reduce ambiguity as these requests were clear and did not have to be repeated as the project progressed. Also, this study suggests that a combination of interactive styles may also reduce ambiguity if they can lessen potential overload and provide more focus. For example, in stage 4 the insistent, questioning and explanatory interactional styles resulted in lecturers responding and did not require more leadership intervention or repeated requests.

As this was an established team and most of the participants were familiar with the project, there was little need for them to focus on relationship building. However, this could mean that a new member could be overlooked and be left feeling isolated. For example, the personalising interactive style exercised by L3, which addresses someone directly and often privately, prompted a new lecturer in stage 3, to confess his uncertainty for the first time, i.e.,

...I am not sure what is happening.

This suggests the new lecturer was reticent and may not have asked for help earlier owing to his own fear of losing face (Goffman, 1972). However, there is the possibility that he may have been more comfortable about seeking support earlier if there had been initial relationship building. This lack of early relational behaviour is consistent with studies that argue virtual teams are more task-oriented with less motivation to spend time on building relationships (Wadsworth & Blanchard, 2015). However, the personalising interactive style was frequent by stage 4 and was exercised to get feedback from the lecturers on their students' progress, along with other styles, which suggests that focusing on a relational interactive style may help collaboration for individual tasks, even in an established team. This study shows that relationship building may help reduce the ambiguity for members who are new to the team, especially as the lack of interaction means that there may be minimal relationship building.

Stage 5 centred on the conference and evaluations of the proposal and had higher activity than stages 2 and 3, although it was less active than stages 1 and 4. The directive interactive style was the main interaction style in stage 5 and used to ensure the proposals were collected and evaluated and these were largely sent by L1. The conference arrangements regarding attendance and budget were largely led by L2, e.g.,

...template which must be completed and sent to me and could you please confirm....

However, stage 5 is more of an addendum to the project as the students have submitted their proposals and are no longer working in their teams. It focuses on the lecturers discussing the marking of the proposals and the conference arrangements.

In summary, the directive and explanatory styles were the most frequent which suggests these can offer the most effective leadership in a virtual team, but only when used in combination with other styles, depending on what is needed. The directive style with its task-related interaction helps to reduce the ambiguity common in a virtual team. Equally, the explanatory style provides more socioemotional connection by recognising that more information is needed. Both styles are particularly active in stages 1 and 4, when there is the most uncertainty and where direction is needed.

Therefore, it is suggested that these interactive styles would form a supervisory strategy as the most appropriate leadership interaction in a virtual team. It is possible that the directive style could be seen as more transactional and the explaining as more transformational. However, earlier research suggests that a transactional interactive style is needed more at the beginning of a virtual team and socioemotional communication later (Mukherjee, Lahiri, et al., 2012). In contrast, this research suggests that the two styles are both required earlier and later. However, an established team with established relationships may be more forgiving and self-motivated than an ad hoc team. Therefore, a single directive style may still be feasible, although not ideal, as it does not seem to create team feedback and awareness of team activity. The directing and explanatory styles are recommended as the supervisory strategy. These are needed not only to elicit actions but also to gain team feedback. Furthermore, the use of the directive and explanatory styles in the quiescent middle stages may help reinvigorate these stages and maintain momentum.

5.7 Reflection

The findings of this cycle of the GlobCom project, presented in the previous sections, were discussed at board meetings and then with the rest of the team. These meetings were always short with limited time to discuss implications. Any changes suggested were introduced slowly after gaining gradual acceptance, first of the need for change and then the desire to implement changes. This was corroborated by my diary notes which described my frustration at the delay in accepting changes and then my realisation that there was a need to explain thoroughly why changes were necessary. This is probably the most effective way to introduce changes as the uncertainty is

already high in a virtual team and therefore there has to be reassurance that suggestions will improve performance and not threaten it.

This action research showed practical and theoretical constructs which will be taken into subsequent cycles. The research showed that leaders can use interactive styles to provide structure as well as guidance to encourage team cohesion and consequently actions. It focuses on the key findings which include the difference in activity related to stages, the distinct action-eliciting emails and the value of DEPIQA as a content analysis tool and builds on the theory of eliciting actions within a virtual team.

5.7.1 Theoretical implications

This study builds on previous models of virtual team stages and confirms that distinct levels of activity in each team stage can be identified which leaders need to manage (Hertel et al., 2005; Salmon, 2004; Zander et al., 2013). This is helpful to team leaders as scholars recognise that a leader who understands the stages can improve team interaction (Hackman & Johnson, 2009). The study also confirms previous research that the functional team stages have different leadership needs (Mukherjee, Lahiri, et al., 2012).

The most frequent interactive style performed in this study was the explanatory style, defined as rationalising a need for an action, and was spread similarly over four leaders. The rational persuasion influence tactic, identified by (Yukl et al., 2005) and adapted to virtual teams, and defined as presenting logical argument and facts, along with using technology to track and generate data, has been found to be high in both face-to-face and virtual teams (Wadsworth & Blanchard, 2015) and may be similar to the explanatory interactive style in this study, although it is more assertive. The directive interactive style, defined as giving an order or announcing what is happening, can be identified as the second most frequent style in this study. It was exercised largely by L1, who had the delegated role of president. It is also the most assertive DEPIQA style. Similarly, Wadsworth and Blanchard (2015) found that assertive styles were more preferred in a virtual team than in a face-to-face team.

The DEPIQA interactive styles identified in this research have some similarities to the virtual team influence tactics identified by Wadsworth and Blanchard (2015), which drew on earlier research in face-to-face teams (Yukl et al., 2005; Yukl & Falbe, 1990; Yukl et al., 1995). However, the DEPIQA interactive styles are more concise, empirically derived (coming directly from virtual team conversations) and were

identified inductively to ensure objectivity, rather than building on a face-to-face model which may have been too prescriptive. For example, there is no DEPIQA match for the influence tactic 'consultation' which is defined as 'anticipation in planning a strategy or change where they are willing to modify a request or proposal to deal with the person's concerns and suggestion' (Wadsworth & Blanchard, 2015, p. 395). This may be because the DEPIQA interactive styles are focused on eliciting actions, that is, activities which move the project forward.

The study also suggests that the interactive styles are more relevant and accurate when they originate from virtual team data rather than applying interactive styles drawn from face-to-face team leadership. This observation has also been discussed in virtual team leadership studies by Avolio et al. (2014). For example, the face-to-face influence tactics applied to virtual teams (Wadsworth & Blanchard, 2015) were more forceful than the empirically-derived DEPIQA interactive styles. In contrast, the most assertive interactive style in this study is the rather moderate directive style, defined as 'giving an order or announcing what is happening.' Conversely, Wadsworth and Blanchard (2015) identify the influence tactic 'pressure', which is considered an aggressive influence tactic and is defined as 'demands, threats, persistent reminders' (p. 389) based on face-to-face team research. Although the directive style was effective in this study, shown by the progress of the project, it is surprising and questionable that the pressure influence tactic was found by Wadsworth and Blanchard (2015) to be a successful leadership tactic as hierarchy is less likely in these teams than in face-to-face teams (Avolio et al., 2014; Daim et al., 2012; Konradt & Hoch, 2007). Equally, they found that aggressive tactics create visibility in the chaotic environment of the virtual team (Wadsworth & Blanchard, 2015). However, in this study, the assertive directive style did not encourage feedback which leads to awareness of team activities and is essential to effective virtual team performance (Jang, 2013). There was more feedback generated within the team when both the directive and explanatory styles were used in combination, and more so when other styles were included, that is the questioning, insisting and personalising styles. The only original and specific virtual team tactic which emerged from the virtual team study by Wadsworth and Blanchard (2015) was the ambiguity-reducing influence tactic which may be achieved through the use of empathy. This is not at all an assertive or forceful tactic, yet it was found to be effective. Again this reinforces the view that virtual team data may be more useful and accurate in identifying the interaction styles for these teams, rather than applying leadership tactics derived from face-to-face data.

This study showed that the explanatory and directive interaction styles can be identified as the most frequent and suggests that in combination, they are the most effective leadership styles which lead to feedback, actions and subsequently performance and virtual team success. Therefore, these would be conceptualised as a supervisory style which needs to be exercised by a leader. However, it is evident that other styles added to this supervisory style improve the feedback and activity. These styles need to be selected according to the situation, e.g., personalising may be needed when addressing someone new or wanting a specific action from someone. Equally, the insistent style denotes urgency and can be used to help reach a deadline and the questioning style can be used to elicit more detailed feedback.

This research also suggests that frequency of interaction and linguistic prolixity can elicit actions. Hertel et al. (2005) has also found growing trust is associated with increased virtual team coordination. Nevertheless, not all interaction is effective at all times. The effect of the leadership style depends on the frequency, the team stage and the combination of styles. For example, this study showed that an explanatory interactive style, can create cognitive overload, and an apologetic interactive style can reduce telepresence and may even undermine activity.

This study also builds on research that has found a high frequency of emails in virtual teams suggests transformational leadership (Ziek & Smulowitz, 2014) which is also indicated by linguistic prolixity (Balthazard et al., 2008; Huffaker, 2010). The face-to-face understanding of transactional and transformational leadership is less evident in this study, with both approaches difficult to differentiate. This questions whether these two leadership styles can be accurately applied to virtual teams, although there have been efforts to redefine them in this context (Huffaker, 2010). This study showed that a delegated leadership role both empowers the leader and allows them to be recognised by the team, which legitimises a leader's actions and encourages their visibility. This also leads to them being trusted by the team members (Joshi et al., 2009) and in turn helps to develop the telepresence which communicates virtual team leadership (Zigurs, 2003).

This study provides research on all the team stages, including the latter stages, where there has been a paucity of inquiry (Hertel et al., 2005). It showed that strong direction, particularly at the beginning through ensuring direction, explanations, clarity and team member's roles can be effective in eliciting action and structuring a team. Information from L1 to the lecturers provided goal alignment, motivation and imparted knowledge,

considered essential in the first stage (Salmon, 2011; Zander et al., 2013) but neither L1 nor anyone else communicated explicit goals for the subsequent stages, although this is recommended to lessen ambiguity (Wadsworth & Blanchard, 2015).

It reinforces the research on the initial stages that there is high activity at the beginning and strong direction is required and less explanation. In stage 1, the high number of action-eliciting messages used a high frequency of explanatory and directive interactive styles and suggested active coordination, which Yoon and Johnson (2008) argue virtual teams need more than face-to-face teams.

Stages 2 and 3 were quiescent with the team focusing on conference organising and L1 did not send any action-eliciting emails in stage 3. This research showed there can be a risk of denouement as the team lifecycle progresses. Nevertheless, teams can become quiescent for unclear reasons. The stage 2 and stage 3 quiescence and the subsequent invigoration of stage 4 owing to action-eliciting emails, particularly the directive and explaining styles, builds on findings by Hertel et al. (2005) that middle stage team development requires management of knowledge and motivation of members and needs major leadership functions to initiate later action. Although information exchange and knowledge construction is believed to take place in the middle stages (Salmon, 2004), this study shows that these stages needed action-eliciting interaction to ensure this happens.

The study shows that the later stages may need highly active leadership, with similar interactive styles in both stages 1 and 4. It showed that there may be a middle period of quiescence which can be reinvigorated with assertive action-eliciting interaction. This means that the directive interactive style, which is less likely to be ignored and is more assertive interaction than apologetic, can be used to help team sustainability.

This study shows that leaders can emerge, even with an overall directive leader. L3 emerged as a late leader in stage 4 after sending action-eliciting emails to facilitate student participation. L1, the overall leader, did not send any action-eliciting emails on this issue. This supports research by Weisband (2008) that it is possible for virtual leaders to emerge during a team lifecycle and lead according to their particular strengths and Zander et al. (2013) also argue that role changes can occur in a middle stage. The emerging leader could also be attributed to the growing trust within the team. This was apparent in stage 4 with L3's personalising, questioning and explanatory interactive

styles which led to active collaboration and cooperation around discussions on participation, e.g.,

Hi F...thank you for, followed by ... would you be able to...

The last stage showed that strong leadership was used to ensure submission and evaluation of the proposals and finalisation of the conference, which was demonstrated when L1 re-emerged with 13 action-eliciting interactive styles in only five action-eliciting emails and led these actions. These are tentative findings and it would be helpful to carry out further research to test the validity of these interactive styles and their combinations on more virtual team cycles.

5.7.2 Practical implications

The study reveals that action-eliciting emails are a distinct category and differ markedly from other emails. The other team emails were in the socioemotional, technology and problem-recognition categories. The findings show that the action-eliciting emails were sent only by those team members who were given specific roles by L1 (including himself), and became the most frequent interactants overall. The findings from this study suggest that more delegated roles would improve team participation as the delegated roles appear to empower team members and give them legitimacy in the team. This is also found in face-to-face teams where empowering team members is considered to be a significant leadership activity (Cameron et al., 2014b).

The study showed that the DEPIQA content analysis tool can be used to monitor and measure interactive styles. It can be used to identify styles in terms of frequency, timing, reciprocity, and ownership and help diagnose leadership difficulties and create more effective interactions, as well as identify effective leaders. The tool can also be used by a leader to identify their own interactive styles and monitor their success in eliciting actions, thereby more consciously choosing the best leadership strategy. Wadsworth and Blanchard (2015) also recommend leaders use the influence tactics to identify a leadership strategy in their virtual team. This study also provides a confirmation of the team mentor role, created as a result of the action research cycle. It was successful in gaining reports from student team leaders which were shared with the lecturers which enabled more leadership interaction and subsequent team cooperation.

The DEPIQA analysis revealed that a virtual team progresses with a strong directive leader, and revealed an emerging leadership can arise later in the team. Emerging

leadership is accepted, if expertise is evident (Liu et al., 2008), which in this case was the delegated role of team mentor who had carried out this role the previous year. The research showed that the team can be re-invigorated through the use of action-eliciting emails and that leaders can be more prominent in different stages, depending on their capabilities, although an overall strong leader was valued.

In this study, the directive and explanatory interactive styles were the most frequent. However, these styles were combined with others and more research would be valuable in identifying the best combinations. For example, the insistency interactive role with the explanatory role may have focused the information and prevented cognitive overload.

Finally, as scholars have suggested, this study reflects the view that leadership becomes an interplay of team members and technology (Avolio et al., 2014). In this case study the webmaster, although not a lecturer (in fact a former and recent student) became an integral part of the lecturer team. His technological abilities and managing of the website meant he had 'ownership' of student emails, and subsequently became involved in directing and reporting on the student team leader elections. This is worth reflecting on as to whether the people in this position are appropriate to deal with the level of unexpected responsibility that can arise in these situations.

DEPIQA has some similarities to the Leadership Practices Inventory (LPI), a management tool derived from empirical research, which measures the five practices of the Exemplary Leadership Framework, a transformational leadership model (Posner (2016). It is also similarly easy to follow, logical and clear. The LPI was developed by Kouzes and Posner (2017) and emerged from the analysis of people's reported personal best leadership experiences. The model postulates there are five exemplary leadership practices: Model the way; inspire a shared vision; challenge the process; enable others to act, and encourage the heart. It assessed individual leadership behaviours in providing feedback useful for enhancing leadership capability. These provide the groundwork for organisational success by recommending what behaviours and actions people need to do to become effective leaders.

On the other hand, DEPIQA identifies the leadership interaction styles that virtual team leaders use to create actions and recommends the most effective leadership interaction styles which may be singular, or in combination. Unlike Kouzes and Posner (2017) who argue that although circumstances and contexts vary, the process of leadership remains

relatively constant, this research argues that leadership processes are not always constant and may need different leadership with different circumstances and recommends what is most effective at different stages of the virtual team.

In summary, the study shows that the most appropriate interactive leadership styles are significant and different from those of face-to-face teams. Furthermore, these styles are affected by, and affect, each team stage. Exercising the explaining and directive styles, along with the questioning style, in all stages of a team, but particularly in stages 1 and 2, may be the most effective way to elicit actions. As a result of this action research it was agreed to make the following six findings more explicit to the GlobCom team, including:

1. Team stages have different levels of activity and demands and identifying them can help structure the workload.
2. Delegated roles are more likely to elicit actions and justify the creation of additional roles.
3. The directive and explanatory interaction styles are the most effective in eliciting actions with additional styles added depending on the situation.
4. Team quiescence occurs in the middle stages and needs to be reinvigorated to avoid a loss of team momentum.
5. The apologetic interaction style, despite it being socioemotional with its intention to be caring, is likely to diminish telepresence.
6. The team mentor role generates feedback and may need to be more active earlier.

The following chapter considers these findings within its review of two cycles of GlobCom (and includes the one in this study), which focuses on whether face-to-face team roles can be renegotiated in virtual teams.

CHAPTER 6 HOW FACE-TO-FACE LEADERSHIP ROLES CAN BE RENEGOTIATED IN VIRTUAL TEAMS

This chapter explores the question of whether face-to-face leadership roles can be renegotiated in virtual teams. It first presents a research context which highlights relevant elements of role development research in face-to-face and virtual teams. It then identifies key elements of the competing values framework (CVF) of leadership roles, first mentioned in Chapter Two, and how these may relate to virtual teams. It then explains the research method and data management and investigates how face-to-face roles are renegotiated in virtual teams. The results are presented, analysed and discussed in terms of activity, validity of the roles and their definitions, plus the issue of how roles can increase interaction. It also builds on the previous chapter which contended that delegated roles are the most effective for virtual teams. Finally, two models are presented: the first is an adaptation of the competing values framework followed by a model of position roles. The latter is considered more useful to GlobCom and virtual teams in general.

6.1 The research context

In virtual teams, the distance between team members can affect the interaction between individual members and create situations where people are misunderstood which can lead to conflict and a lack of sharing (Balthazard et al., 2008; Cramton, 2001; Ocker et al., 2011). Although team autonomy is possible, virtual teams are still believed to need guidance, structure and management with defined team roles for successful virtual team management (Hertel et al., 2005). However, these teams are believed to have a diminishing hierarchy and therefore more likely to be self-managing (Avolio et al., 2009).

Traditional leadership models may not fully explain how virtual teams work as these teams need more structure and more processes than conventional teams and ways to maximise human and social capital (Hertel et al., 2005; Zaccaro et al., 2001). Team leaders may therefore need to develop mechanisms and processes that become reinforced by team members themselves and subsequently regulate team performance patterns (Zaccaro et al., 2001). Virtual team members have been found to influence the virtual team's direction and performance as they share and rotate leadership roles (Yukl, 2013; Zigurs, 2003). As a result, there may be a more participative leadership as

opposed to the hierarchical relationships that usually exist in face-to-face teams (Daim et al., 2012).

On the other hand, researchers have suggested that inspirational leadership may be more important in virtual teams than in face-to-face teams as it can enhance group engagement and therefore overall performance (Joshi et al., 2009). Equally, the psychological uncertainty of participants in virtual teams may mean that transformational leadership can have a greater effect in these teams than face-to-face teams (Purvanova & Bono, 2009). Furthermore, intense and frequent task-related messages, rather than those with personal content, have been found to create relationships in virtual teams (Yoo & Alavi, 2004). Conversely, scholars have suggested that high interactions may not mean quality of interactions, and suggest that more longitudinal studies on virtual teams are needed to know when a particular leadership role is more effective (Joshi et al., 2009).

Roles may help find a way through virtual teams. The leadership interactionist scholar, Gibb (1958), argued that individuals in a face-to-face team influence each other and can achieve personal satisfaction through roles that work to move a team towards its common goals. This study uses the definition of roles in virtual teams by Zigurs and Kozar (1994) as ‘a dynamic set of recurring behaviours, both expected and enacted, within a group context’ (p. 279).

6.2 The research overview and contribution

This chapter reviews how roles develop in a virtual team through interaction. This takes an interactionist view as outlined by the role theorist, Turner (2002), who argues that functional roles arise from sustained interaction within the team (p. 234). Conversely, position roles are the delegated and formalised roles.

Functional roles are identified in this study using the competing values framework (CVF), a managerial tool of leadership roles, mentioned in Chapter Two, which was introduced for face-to-face teams (Quinn, 1988). The CVF is based on a values framework and suggests that a good leader should be able to incorporate all the roles in their leadership repertoire (Quinn, 1988). Although the CVF has been applied to virtual teams (these studies are discussed later), it has only been applied to leadership roles in virtual teams by Konradt and Hoch (2007) and then using only reported reflections.

This study offers empirically-derived data drawn from the live activity within the team and builds on these studies.

As in face-to-face teams, research shows that there are also distinct team stages within the lifecycle of virtual teams which suggest specific leadership requirements and different management tasks, for each stage, although these require more research to identify what is required (Avolio et al., 2009; Hertel et al., 2005; Krumm et al., 2016; Mukherjee, Lahiri, et al., 2012). Leadership is also known to change within the lifecycle of face-to-face teams (Benne & Sheats, 1948; Hersey & Blanchard, 1969) and this study adds to the research on the specific leadership capabilities needed in different virtual team stages (Mukherjee, Lahiri, et al., 2012).

6.2.1 Leadership roles of the competing values framework (CVF)

As explained in Chapter Two, the CVF has eight functional roles within a managerial framework of values (Quinn, 1988). These were divided between control and flexibility as well as an external versus internal focus to create four competing models into which were embedded two roles:

1. The flexible roles of *facilitator* and *mentor* roles are within the internally focused human relations model which has a participative style of relationships and affiliation.
2. The control roles of *coordinator* and *monitor* are within the internally focused internal process model which has a conservative and cautious style.
3. The flexible roles of *innovator* and *broker* are within the externally focused open systems model which has a flexible, risk-taking style.
4. The control roles of *producer* and *director* are within the externally focused rational goal model which has a directive and productive style.

This research used the following concise definitions of each CVF role which were updated and amended from the original CVF (Quinn, 1988) when applied to research on informational systems (Roy et al., 2006).

Facilitator:

- Facilitates the establishment of consensus within the team;
- Encourages members' participation in the decisions of the team;
- Encourages team members to share their ideas within the boundaries of the team;
- Develops team spirit.

Mentor:

- Is attentive to subordinates when they talk about their problems;
- Shows empathy and interest in his (her) relations with the team members;
- Treats each employee empathetically (sensitive);
- Is sensitive to the needs of the team members.

Innovator:

- Develops original and innovative ideas;
- Tries out new concepts and procedures;
- Solves problems intelligently and creatively;
- Seeks innovations and improvements.

Broker:

- Influences senior management;
- Influences decisions at higher levels;
- Develops contacts with top management;
- Persuades management to adopt new ideas.

Producer:

- Makes sure that the team remains centered on the results;
- Sees that the team achieves its goals;
- Take steps to ensure that the team attains its goals;
- Underlines the achievements of the team compared with the established objectives.

Director:

- Clarifies the zones of responsibilities for the members of his (her) team;
- Ensures that each one knows the orientation of the team well;
- Specifies clear objectives for the project team;
- Clarifies orientation and priorities.

Coordinator:

- Ensures the continuity of daily activities;
- Ensures that work is minimally disrupted;
- Keeps up to date with what occurs in the team;
- Creates a feeling of coherence in the team.

Monitor:

- Examines detailed reports attentively;
- Reads records, reports and other sources of information to detect anomalies;
- Uses information of a technical nature in his (her) work;
- Analyzes planning documents and schedules.

Figure 11 Definitions of each CVF role and applied to this research.
Originally adapted by Roy, Bernier, and Leveille (2006, p. 30).

The following figure shows the distribution of these roles within each quadrant which clarifies their flexible and control leadership style as well as the organisation's internal and external focus.

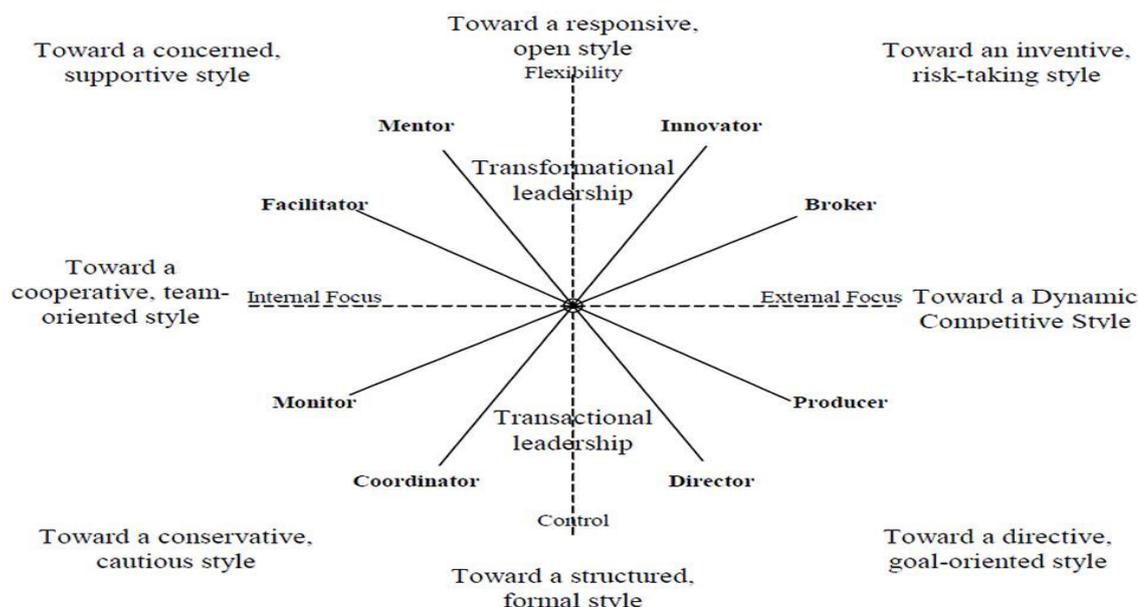


Figure 12 Team leader roles within the Competing Values Framework. (Quinn, 1988, p. 86)

Other face-to-face leadership models (Belbin, 1993; Margerison et al., 1986; Mintzberg, 1989) were also considered for this research and were reviewed in chapter 3. Although they apply the behavioural approach they do not show the organisational and environmental influences, as does the CVF. Furthermore, the CVF has a connection to public relations in that it is an organisational communication theory and is drawn on to form the situational theory of public relations (Grunig & Hunt, 1984).

6.2.2 CVF leadership model applied to virtual teams

The competing values framework of leadership roles (Quinn, 1988) has been validated in other team and organisational contexts (van Assen et al., 2009) and studies have applied it to global virtual teams in different ways (Cajander et al., 2009; Dani, Burns, Backhouse, & Kochhar, 2006; Kayworth & Leidner, 2001; Konradt & Hoch, 2007; Wakefield et al., 2008).

The research most relevant to this study is by Konradt and Hoch (2007), who applied the CVF role criteria to help analyse team leadership in established virtual teams and identify which roles were preferred. Their research found that role expectations were ambiguous, there was a narrower repertoire of CVF roles in virtual teams compared to face-to-face teams and the more controlling roles were preferred by virtual team leaders, which may have been due to the reduced opportunity for highly interactive roles. The director, producer and facilitator roles were deemed to be the most important in the virtual teams studied. Furthermore, there was high correlation between the director and producer roles; the coordinator and facilitator role and some correlation between the

innovator and mentor role. The researchers relied on interviews, surveys and retrospective perceptions of virtual team leaders and managers to identify what leadership roles would be preferred (Konradt & Hoch, 2007).

In an earlier study, the CVF was applied to multinational virtual teams to measure leader complexity through surveys and questionnaires. It was found that effective leaders perform a mentoring role and have high empathy (Kayworth & Leidner, 2001). Another study investigated trust in virtual teams and applied the CVF to examine the four organisational models which the CVF represents (human relations, open systems, rational goals and internal process models), but did not examine leadership roles (Dani et al., 2006). Later research applied the CVF to understand conflict, rather than leadership, in virtual teams but limited the study to the internal leadership roles of mentor, facilitator, coordinator and monitor (Wakefield et al., 2008). Another virtual team student project used the CVF mentor role to facilitate more team collaboration which was found to be very effective in Cajander et al. (2009). This role mitigated anxiety and helped manage uncertainty and the inherent frustration in the roles. It also highlighted that a motivator role may be needed in the CVF criteria. A virtual team study by Duarte and Snyder (2006) did not apply the CVF to their research, but they recommend it for analysing leadership in virtual teams.

Other ways that virtual team researchers have explored leadership roles are also considered in this study. For example, Mukherjee, Lahiri, et al. (2012) consider cognitive, social and behavioural leadership capabilities within transactional and transformational styles. Ocker et al. (2011, p. 279) found that virtual team roles emerged of initiator (creator), scheduler (meeting organiser) and integrator (structuring all information).

This study on GlobCom teams follows recommendations to analyse email conversations of team leaders accumulated during a live project in a longitudinal study, in order to validate existing virtual team research (Konradt & Hoch, 2007; Mukherjee, Lahiri, et al., 2012). It also focuses on building the understanding of virtual team roles and leadership within team stages and uses stages to structure the research and measure the type of leadership needed as the team progresses.

6.3 Research method and data management

This part of the study focuses on two consecutive cycles of the established virtual team of lecturers for GlobCom, 2013 and 2014, each of which formed a cycle that lasted 12 weeks and formed four stages, from when the lecturers were preparing students for the live project, to when the students submitted their proposals. The fifth stage, explored in the previous chapter, is not considered for this study as it focuses on finalising the project without student involvement, e.g., proposal marking and conference arrangements. These actions were outside the managing of the student proposal development which this study is focused on.

6.3.1 Team stages and research participants

The team stages in these two cycles are specific to GlobCom and defined based on earlier virtual team models and the goals leading to crucial events (Duarte & Snyder, 2006; Hertel et al., 2005; Zander et al., 2013). The research also addresses the gap regarding the later stages of virtual team research, noted by Hertel et al. (2005) and provides actions for the next cycle based on reflection.

In brief the team stages are as follows:

Stage 1 Introduction

Lecturers participate in the project

Stage 2 Preparation

Lecturers register students

Stage 3 Production

Lecturers encourage student progress

Stage 4 Facilitation

Students submit proposals

The following table shows the team stages identified in the previous chapter—included here as a reminder of the different stages and activities.

Table 15 Goal, strategy and actions which helped to define each team stage in the supervisory lecturers' team

	Stage 1 Introduction	Stage 2 Preparation	Stage 3 Production	Stage 4 Facilitation
Goal	To ensure lecturers participate in the project and the conference.	To ensure lecturers register and prepare students.	To ensure the lecturers encourage student progress.	To ensure all students progress to final submission.
Strategy	By preparing and motivating the lecturers with a welcome, clear information and role outlines.	By giving the team the client brief, preparation information and checking student registration and website assistance.	By supporting lecturers and facilitating team leader support.	By ensuring lecturers collaborate on providing student feedback.
Actions	Team welcome, introductions, schedule, client brief, budget, student registration, conference details, post student welcome.	Repeat brief, submit student registration, announce project and schedule to students.	Lecturers guide student teams.	Lecturers to address team issues and provide feedback.

All lecturers' emails to the team as well as any additional emails sent to the team mentor were collected over the two cycles and formed the data for the action research process which is aimed to build on findings from each year. The initial activities by the GlobCom Board and the conference host included website development, client acquisition and brief development, briefing of new universities and conference arrangements. These activities were carried out before stage 1 and the implication of this is that some roles may have been highly active between each cycle in the early project development period. The 12 lecturers were supervising their own students who were dispersed through all the student teams, therefore the lecturers were involved in each stage through ongoing team communication.

However, although this research explores the functional roles, that is, the unformalised behaviour patterns, originally described by Benne and Sheats (1948), which emerge spontaneously as individuals develop their own identities as part of the team, it also considers position roles (Turner, 2002), as they were formally organised assigned positions within GlobCom and their responsibilities were announced at the beginning of each cycle:

1. The **president (L1)** secured the client, obtained sponsorship, worked with the conference organiser, delegated roles, welcomed lecturers and students and presented the schedule.
2. **The team mentor (L2)** worked with the president on the above and also liaised with the student team leaders (through direct emails and the student team leader forum) and the lecturers to monitor and guide student progress.
3. The **webmaster (WM)** was not a lecturer but set up the website, was responsible for technological issues and arranged the online student registration where they formed teams.
4. The **conference organiser L3** decided the conference date, arranged speakers and liaised with the team participants. Owing to the conference being hosted by each university the conference organiser changed each year.
5. The **vice-president (L4)** worked with the president and the lecturers on all of the above
6. **The other lecturers (L5-L12)** participated in the team forming roles as they progressed.

6.3.2 Applying the role criteria

The research was initiated after all emails were retrieved, untangled from their mosaic structures (Markus, 1994) and structured chronologically with the sender's name and formatted into the four team stages as discussed in the previous chapter and detailed in Chapter Four.

Deductive coding is used to map the criteria of the eight roles within the competing values framework. In order to understand if face-to-face roles apply to virtual teams the criteria comprising each role were mapped to the activities discussed in each of the 12 lecturers' emails from the supervisory team over two cycles (2013 and 2014). This means there could have been more than one role in an email as they are based on emerging activity, which is a functional role. However, it is the frequency of these unformalised behaviour patterns arising out of interaction which makes these roles significant (Turner, 2002). Therefore, the role criteria were mapped against the team leader who performed these roles, the frequency of the role and the team stage. Some participants performed a role more than once within each stage; equally some also performed more than one role within each stage and this is discussed later as a role identity.

The data show which roles were adopted by individual participants and also how much activity was carried out in each role in all the stages. Measuring how frequently a participant communicates is associated with understanding virtual team engagement (Branson et al., 2008; Iorio & Taylor, 2015), although this may not equate to quality of interaction (Iorio & Taylor, 2015). The data is presented in pie charts to show the level of role activity over the cycles and also to compare cycles. A bar chart is used to show stage activity over the two cycles. Tables are provided in the appendix to show numerical results and portray comparisons between the stages and the cycles (see appendix).

The role activity is measured by how many times the role was performed within a team stage. The sharing of a role is assessed by how many people performed the same role in each stage. This means that a role may not be highly shared, but still have high activity if the participant performs it many times in a stage. Equally, a role may be highly shared, with comparatively low activity, if each participant is not highly active within the role. Therefore, the initial analysis shows the level of preference and activity for each role and the performers of each role within each team stage.

6.4 Results

The data revealed there was a similarity in the pattern of overall interaction in 2013 and 2014 12-week cycles although there was markedly more activity in 2014. This high activity is most likely due to the results of the 2013 research which created awareness among the lecturers of the need for higher interaction, as well as more activity by the team mentor. However, role activity and role sharing was different within each stage and there were active and less active roles. Equally, the activity of individual participants varied in each stage.

6.4.1 Most active stages and roles

Stage 1 and stage 4 were the most active stages in both cycles. In stage 1, lecturers were becoming involved in the project and in stage 4 lecturers ensured students completed and submitted proposals. The middle stages (stage 2 which ensured lecturers inducted students and stage 3 which ensured lecturers encouraged progress) in both cycles had much lower activity, however, they became more active in 2014. The following bar chart shows the activity in each stage over two cycles.

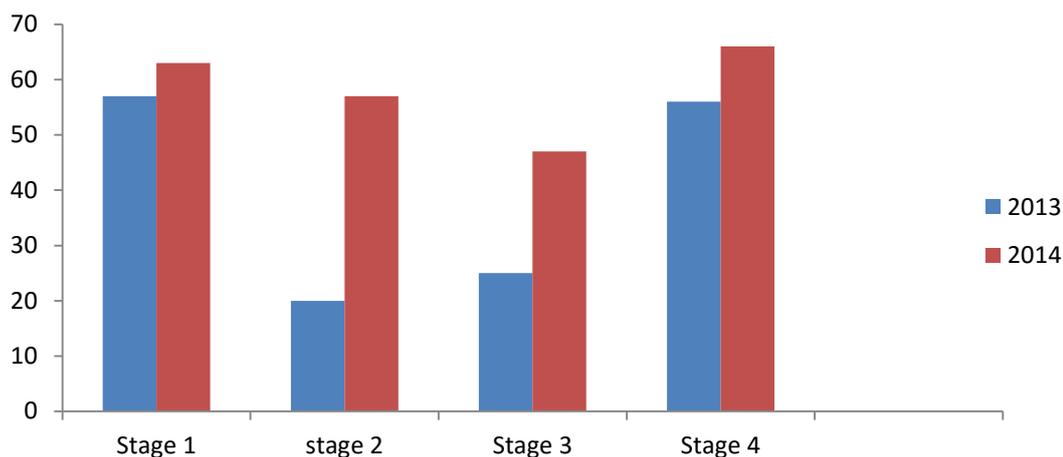


Figure 13 Comparing the leaders' activity in each stage over the two cycles.

Participation varied in each stage from five-to-12 participants. In 2013, there were 12 lecturers who interacted ranging from five-to-12 lecturers a stage. In 2014, there were seven-to-nine lecturers interacting in a stage which meant there were three lecturers not participating in group discussions.

There were two distinct groups of high activity and low activity within the eight roles in terms of activity over both cycles, forming groups of high activity and low activity. The high activity group comprised the coordinator, and the producer, and in 2014 the facilitator became a high activity role. However, they were each highly active in different stages. The low activity roles were the director, the monitor, innovator, broker and mentor over both cycles. The highly active roles of producer, coordinator and facilitator were also more shared each year than the other roles. Although the director was the fourth active role, this was not a shared role so the participant was solely responsible for this high activity.

6.4.2 Role activity within each stage and cycle

The producer and coordinator roles are the most active roles in both cycles with the facilitator role also very active in 2014. In 2013, the producer is most active in stages 1 and 2 and the coordinator most active in the last two stages. Equally, in 2014 the producer is most active in stage 1, the coordinator most active in stage 2 and the facilitator highly active in stage 3. As in 2013, the coordinator is the most active in stage 4 of the second cycle.

There is more activity in 2014 and the role sharing is more even which is a result of the action research, as the team became more involved and more responsive to the team mentor's feedback. For example, in 2014 the coordinator is shared more evenly in each

stage than in 2013, with four-to-eight a stage compared with one-to-ten in 2013. Also in 2014 there is more sharing in the facilitator role (four-to-five a stage compared with two per stage in 2013).

The most shared role is the coordinator role and was most shared in stage 3 and stage 4 (2013) and in stage 4 (2014). The most shared roles overall are the coordinator, the producer, and monitor plus the facilitator who emerged as an active role in 2014.

In 2013 the least shared roles are the director, mentor and broker.

In 2014 the least shared roles are the director, broker and innovator.

The following table shows the most active roles in each cycle.

Table 16 Team leader roles in 2013 and 2014

	2013 - Most active role	2014 - Most active role
1	Producer	Producer
2	Producer	Coordinator
3	Coordinator	Facilitator
4	Coordinator	Coordinator

The following graph uses a pie chart to show the overall activity of the roles. The director is the fourth active role but, unlike the other roles, it is performed by only one participant.

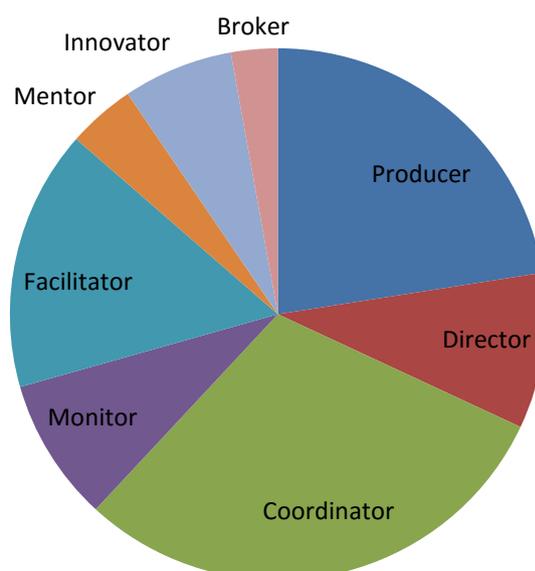


Figure 14 Overall activity of roles in both cycles, 2013 and 2014

6.5 Discussion

This study on two cycles of GlobCom builds on the previous chapter which explored leadership interactions in one of these cycles (2013) through a content analysis tool. This study expands the knowledge on virtual team roles by using a face-to-face leadership model to show that virtual team roles are different from face-to-face roles and need to be highly specific, delegated and interactive. It identifies the most frequently performed roles and when they occur, building on the argument that different leadership capabilities are needed in each stage (Mukherjee, Lahiri, et al., 2012). The study also shows that people are less likely to take on riskier roles although an overall leadership role is effective.

The discussion first highlights when roles emerge and which roles emerge in the different team stages. It then identifies roles in terms of their levels of activity and why some roles are more active than others. This leads onto the importance of interactivity and how it can be generated and sustained.

6.5.1 Stages

The study shows the first and last stages (stage 1 and stage 4) can have the most interaction in both cycles and the middle stages have much lower interaction. This

pattern of interaction over the two cycles suggests this trend could be generalised to virtual teams.

In this study, there was high activity in stage 1, with its focus on orientation and developing the programme, and also in stage 4, with its focus on students finishing the proposal in both cycles. The high activity in stage 4 may have arisen from the impending deadlines of the project (Gersick, 1988). There was also low activity and low sharing of roles in the middle stages (stages 2 and 3) where there was less urgency about the task. Mukherjee, Lahiri, et al. (2012) recommend that leaders use more social capabilities to encourage participation and motivation in stages 2 and 3, which may need to be considered to improve these stages in this project.

Scholars contend that virtual team roles emerge after the first team stage, Mennecke et al. (1992) argue that roles arise in stage 3 of team development in group support systems, and Mukherjee, Lahiri, et al. (2012) suggest that roles emerge in stage 2. However, this study showed that the functional roles, that is, the unformalised behaviour patterns that emerge spontaneously (Benne & Sheats, 1948; Turner, 2002), can emerge in stage 1 and suggested early team activity and direction. There could be several reasons for this early emergence of roles. It could be that it is an established team with familiar activities and many of the actions would be defined as habitual actions and likely to be implemented (Bell & Kozlowski, 2002). Additionally, it could also be because the position (delegated) roles were enacted at this stage, i.e., the president set goals, the webmaster registered students' profiles online and the conference organiser confirmed attendees and the programme. Overall activity of the participants shows a quiescence of role activity in the middle stages. The following pie graphs are used to compare how the roles changed over the two cycles and how they affect the other roles.

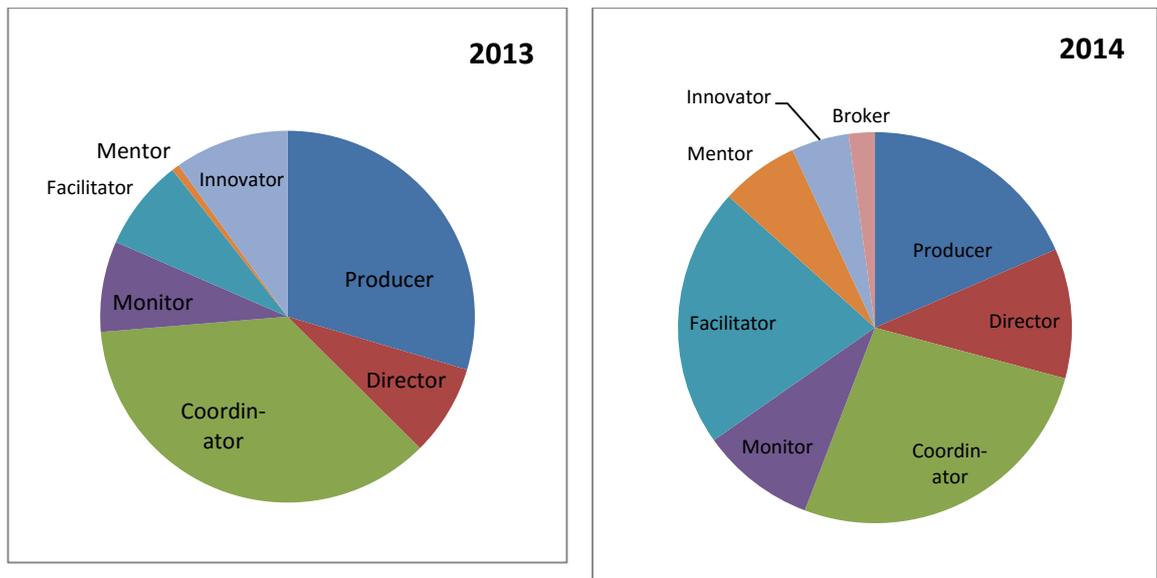


Figure 15 Comparing the role activity in 2013 to 2014.

6.5.2 High activity and low activity roles

This study showed that two distinct groups of roles, in terms of activity, can be identified. The high activity group comprised the coordinator and producer roles, which were the most active in both cycles, and the facilitator role, which was the most active in cycle two.

Both the coordinator and producer role have a controlling and task-focused orientation (Quinn, 1988) which is consistent with virtual teams being largely task-oriented (Wadsworth & Blanchard, 2015). The producer role was the most active in stage 1 of both cycles. This role was about focusing on results and results suggested that the team needed the most guidance at the beginning.

The coordinator role, which ensures the continuity of activities (Roy et al., 2006), was the most active in stage 3 of 2013, stage 2 of 2014 and stage 4 of both 2013 and 2014, and suggests that the team became more collaborative as the team progressed. The facilitator role was also highly active and emerged as the most active role in stage 3 of 2014, with a more participative and relational orientation. It facilitates consensus and participation (Roy et al., 2006) and suggests that these interactions developed as the team matured and also benefited from the action research which highlighted the need for more feedback on student progress as well as more activity by the team mentor to encourage this feedback.

The group of low activity roles included the director, but this was the fourth active role and was performed by only one person, so it was comparatively highly active, and is also a task-oriented control role and ‘clarifies responsibilities, objectives and priorities’ (p. 30). The other less active roles were the monitor (also a task-focused control role), followed by the innovator, broker and mentoring roles which were flexible roles (Roy et al., 2006).

Similarly, Konradt and Hoch (2007) found that the director, producer and facilitator roles were reported as being the most preferred roles for virtual teams. These highly active roles, except for the facilitator role, are also similar to the roles which emerged in a study of virtual teams by Ocker et al. (2011). The researchers found that the roles which emerged were those of integrator (involved in coordinating and integrating work) and scheduler (involved in setting up meetings and organising activities) (Ocker et al., 2011), although neither studies (Konradt & Hoch, 2007; Ocker et al., 2011) identified team stages so it was unknown when the roles were most effective or most needed. The following bar chart provides more detail in comparing the activity in each role over the two cycles showing the coordinator role as the most active in both cycles and the emergence of the facilitator role in 2014, which is the most active cycle.

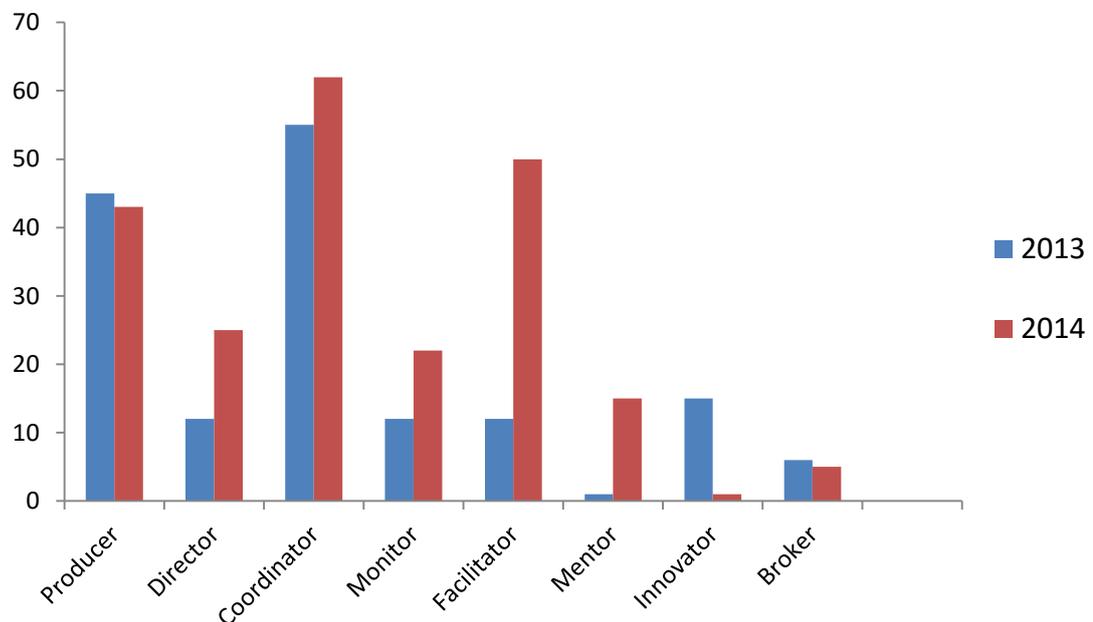


Figure 16 Comparing the number of coded occurrences of each role in both cycles

6.5.3 The singular director role

The director role, which is situated with the producer within the rational goal model and focuses on goals, productivity and efficiency (Roy et al., 2006), was performed by the president of GlobCom (L1) who announced clear and directive goals of scheduling, delegating and directing which set the vision and direction of the team at the start of stage 1.

L1: I am attaching today the still confidential briefing of our client, Zeiss Vision International GmbH, together with a presentation. The briefing will be uploaded and mailed to the participating students on March 1. Please encourage your student to contact the other students in their teams.

This study showed that directive leadership, with information sharing, does not necessarily lead to interaction but can still lead to progress, and this may be because there was less ambiguity, considered to be essential to virtual team success (Wadsworth & Blanchard, 2015).

The initial leadership by L1 followed a transactional style which is common to successful virtual teams (Mukherjee, Lahiri, et al., 2012). However, there was no interaction from other team members in stage 1 although tasks were carried out, as observed through the ongoing progression of the project, which suggested L1 empowered participative leadership, which is a transformational leadership style (Cameron et al., 2014b). Empowering team members is a key leadership capability which ensures flexibility and self-managing, is needed in times of uncertainty (Cameron et al., 2014b) and is considered essential in a virtual team (Hertel et al., 2005; Kayworth & Leidner, 2001). In this study, L1 performed the director role, along with other roles, with frequent directive messages and created a strong telepresence, as defined by Ziguers (2003).

L1: All registered students will get the brief today. They should come up with questions on one of the two sessions on March 6

6.5.4 The active and shared roles

The study showed that the most shared roles were also the highly active roles: the producer, coordinator and facilitator.²⁴ The coordinator role was overall the most active

²⁴ These are all, except for the facilitator, control roles.

and most shared role in both cycles.²⁵ The high sharing of the producer and coordinator roles combined both the external and internal facing models, the producer being more about productivity and goals and the coordinator being more about control and stability and tasks. This sharing of leadership responsibilities indicated relationship building and a collaborative view which increases team empowerment (Cameron, Quinn, DeGraff, & Thakor, 2014a; Cameron et al., 2014b; Carson, Tesluk, & Marrone, 2007; Yukl, 2013).

The lack of face-to-face interaction may mean there is less opportunity for others to influence and shape perceptions of the roles and as scholars have recommended, it may well be important to clarify team roles at the beginning of a virtual team (Hertel et al., 2005; Konradt & Hoch, 2007). In this study, participants preferred performing the low-risk tangible roles of coordinator, producer and facilitator rather than roles which required initiative, suggested uncertainty and the risk of being more visible (broker, innovator, director and mentor). Participants may have been more comfortable being followers rather than leaders, especially when they did not have clear, delegated or explicit roles. This builds on the study by Konradt and Hoch (2007) where leaders reported that they would prefer low-risk consensual roles which moved the project on.

6.5.5 How feedback led to change

The facilitator role emerged as highly shared and active in the second cycle. The facilitator is a flexible role which has a relational focus (Quinn, 1988). This may have been owing to the supervisory team discussing increased interaction and may have become more supportive and more focused on relational communication, sharing their concerns about students and also offering supportive comments. Furthermore, following on from results of the action research in 2013, in the second cycle team processes were improved, such as student registration, website and student team mentoring forum as well as generating feedback from lecturers on student progress in stages 3 and 4. This was reflected by the higher activity and subsequent role sharing in the second cycle which suggests participants may have felt more comfortable taking on new roles as relationships developed and the team matured. Other virtual team research found that with improved processes and technology there was improved participation (Walvoord et al., 2008).

²⁵ In 2013 it had an activity rating of 55 with 1-10 sharing; in 2015 activity of 62 with 4-8 sharing. The role sharing and role activity were in balance, that is, the sharing fell with the activity.

This is further supported by there being more overall activity in each role of the second cycle and high activity in the coordinator; producer and facilitator roles were more equally distributed. The higher activity in this cycle suggests that with better processes and more familiarity developing over the previous cycle, a more constructive interaction style arose as the team matured. This is significant as virtual teams have a tendency to show high conflict behaviour and make poor decisions (Balthazard et al., 2008). It could be that the team was developing positively as it was an established team and the highly active facilitator role may have helped the development of the social and behavioural capabilities identified by Mukherjee, Lahiri, et al. (2012) as leadership capabilities needed in this stage. Equally, established groups are believed to have developed the trust, structured work environment, predictable communications and standardised practices which contribute to successful virtual teams (Jang, 2009; Ziek & Smulowitz, 2014).

6.5.6 Position roles and less active roles

Results also showed that those who were delegated position roles (webmaster, conference host, team mentor and president) became overall much more active on both cycles than other leaders, and even though they adopted shared roles they were also the only ones who adopted the less-shared high-risk roles, i.e., director, innovator, broker, monitor and mentor. For example, the president performed the director role and the team mentor performed the innovator role. It could therefore be argued that having an explicit position empowered participants to take on more leadership. Furthermore, the team mentor initiated the emergence of the facilitator role in 2014 through encouraging feedback on student progress. Joshi et al. (2009) argue that more trust within the team allows for more risk-taking, which may relate to taking on more roles, particularly the more visible roles.

This study showed that a narrower repertoire of roles than Quinn (1988) recommends for face-to-face teams can be identified. The most activity was performed by a narrow range of roles, and leaders preferred the control roles, which is similar to findings by Konradt and Hoch (2007), which was based on team leader reports and interviews.

The less active roles of mentor and broker have more relational attributes such as being attentive to subordinates, sensitive to needs (mentor), developing contacts with top management and persuading management (broker), while the innovator role requires

initiative such as developing original and innovative ideas and trying out new concepts (Roy et al., 2006).

These relational and initiative elements may be more difficult in a virtual team which has less interactivity than a face-to-face team. Also the innovator role is associated with generating change, and in this project was associated with technology (arranging online registration, website and forum adaptations), which was consistent with findings by Roy et al. (2006) in a study which applied the competing values framework to a group network focusing on web activities.

However, in the GlobCom project, it was also possible that the communication actions of the less active roles may just not be visible, or they're outside the cycle of activities, incorporated into other roles, lost in the artefacts, or may be simply unique to an educational project. For example, the broker role was involved with securing a client and the budget which was arranged before stage 1. Equally, the innovator role was associated with developing the website and developing team processes as well as developing schedules which also occurred before the project was formally started each year. These were developed early and agreed by the board and delivered to the team which avoided wider team consideration.

6.5.7 Clarifying roles

This study showed that the CVF mentor role (Quinn, 1988) can have low activity and may therefore not be seen as a significant role, which is reflected in two other studies applying the CVF to virtual teams (Konradt & Hoch, 2007; Wakefield et al., 2008). The mentor role is defined by the CVF as attentive to subordinates, showing empathy, interest and sensitivity (Roy et al., 2006).

Konradt and Hoch (2007) suggest that more knowledge is needed of in-team processes for this role to be more valued, that is, there needs to be more information about what is going on within the teams themselves. Other studies show that a mentor is considered a valuable role in virtual teams (Cajander et al., 2009; Kayworth & Leidner, 2001; Mukherjee, Lahiri, et al., 2012; Powell et al., 2004; Vogel et al., 2001), although the role differentiation is unclear (Kayworth & Leidner, 2001). However, despite being valued, team mentoring has been found to be a low activity in virtual teams. This may be because establishing and maintaining relationships is time-consuming in a virtual team where there are already communication delays and may compete with tasks which are creating their own demands (Wadsworth & Blanchard, 2015).

The explicit and delegated role of the GlobCom team mentor, a position role (Turner, 2002), had responsibility for liaising with student team leaders and lecturers, and did not correlate to the CVF mentor criteria of skill building and developing subordinates. Within this team of lecturers, the team mentor shared information, generating joint decision-making and working productively, which represented the CVF roles of coordinator, producer and facilitator, rather than that of the CVF mentor. The study also showed that the activity level of the coordinator role in this study can change in proportion to the activity of the other shared roles (facilitator, monitor and producer), regardless of any critical event, further suggesting the CVF roles may not be well defined for virtual teams and that roles are shaped by the interaction (Turner, 2002).

It is evident from this study that because the work in a virtual team is not visible, using the definitions designed for roles in face-to-face teams can be confusing. The criteria for the monitoring role of examining reports attentively, reading, analysing and using information describe activities that are not immediately visible to the team and can explain why this role was assumed to have such low activity. In contrast, the coordinator role which is in the same internal processes model as the monitoring role, is more collaborative and focuses on ensuring team and task continuity, coherence and currency of activities which would affect the team more than the individualised monitoring role. The study also showed that the roles of director and producer which are both situated within the rational goal model can be easier to differentiate. This may have been because the director role was performed by only one person whose actions were highly visible, e.g., goal and schedule setting, delegating roles and client liaison, whereas the producer role was more collaborative in fostering a work environment and working productively. Role definitions have also been found to possibly overlap in another virtual team study (Lee-Kelley & Sankey, 2008) and lead to ambiguity. Wakefield et al. (2008) who applied only the internally focused roles for their study, found there was ambiguity around the facilitator role and argues that the internally-focused CVF roles are inadequately defined for virtual teams.

6.5.8 Can interaction be in every role?

The lack of face-to-face interaction means that it is hard to monitor progress yet interaction is key to collaboration in a virtual team (Avolio et al., 2014; Balthazard et al., 2008; Iorio & Taylor, 2015; Wickham & Walther, 2009; Ziek & Smulowitz, 2014). In this study, the director role announced plans and a schedule of activities but there was no team feedback so it was not clear that instructions would be followed, or were even

being followed, until later when activity reports showed that the team was progressing. Therefore, kindling engagement and collaboration could be a distinctive leadership requirement.

However, only the CVF facilitator role suggests interaction in its criteria: ‘encouraging team consensus, participative decision-making, sharing ideas and developing team spirit’ (p. 30) and the mentor role which specifies showing empathy and being attentive when others talk (Roy et al., 2006). This minimal attention to interaction in the CVF roles may be because interaction in face-to-face teams is taken for granted as a naturally occurring phenomenon.

This action research project led to a team discussion in 2013 about the lack of interaction. It was agreed the following year for the team mentor to send questions about student attendance to the supervisory team of lecturers. These encouraged responses from the lecturers who asked for guidance, made suggestions and created higher interaction in these stages and the following is an example of a conversation in 2014 regarding student participation:

L2: ... issue with team participation...please remind students to send a report...attached are participation lists...please check...?

L5 I have informed students about weekly reports...do you now have proper feedback from my students...please tell me if you need me to ...

L2: Attached is the team participation list...please let me know...

L6: I shared this with my students...I think most of them...

L7: I reviewed activity this week and students reported steady progress...there is patchy participation in some teams...there was concern about... some are making excellent progress...please advise me of any of my student participation problems and I will follow up...

L8: Sorry I have been busy with their finals...I will update you after I have talked to the students...let me know if you have any questions.

L4: I needed to replace 2 students in teams 6 and 7...their names are...

L9: ...teams 1-4 are participating well...reported to me...5 and 6 have let me down...

L5: I have also noticed some difficulties with teamwork...the teams seem less involved this year...students can't enter password...I think the teams are rushing to tactics...I like GD's idea...

Sharing information on team performance can seem threatening (Cordery et al., 2009) and it would be assumed that this would be emphasised with the asynchronous communication and the comments being seen by others in the group emails. However, the board meeting and subsequent lecturer meetings had discussed the need to develop the team mentor role and the role was made explicit at the beginning of the project. Therefore, asking for feedback on student progress may have been less threatening as the team mentor role was clarified, forms were in place and expertise was assumed, so there was no ambiguity in the role. Furthermore, team identification has also been created through interactive processes such as providing positive feedback, bringing out common goals and working and talking up team activities in face-to-face meetings (Sivunen, 2006). Therefore, a team culture needs to show that interaction is positive.

L2: Here is an excerpt from a team leader regarding your students...her full report you can see on the team leader forum. I wondered if you could help here please?

L9: Thanks for bringing this to my notice. I will take appropriate action. Since the students are also doing their summer internships ...I think they have been a bit erratic.

Similarly, in 2013 the conference host (CP), when performing the facilitator role, provided information about the forthcoming conference and asked for input from the participants which encouraged consensus building and participative decision-making and had responses:

L10: thanks...your hard work...tickets expensive so only four students...

L5: Difficult...is there a possibility to postpone to...thanks for your hard work ...

There was also a difference when lecturers were new to the established team. For example, in 2014 the new lecturer (RT) did not participate in the discussion until the team mentor asked him in a private message how he was getting on. RT's answers showed appreciation of the discussion and he went from being unseen to collaborative:

L2: Hi, I have attached an update on student participation and wondered how you were getting on?

L11: ... some students cannot find a balance ...

L2: ... the team should have a point of contact...

L11: Thank you, that is helpful and reassuring

L2: ...attached is a comment from team 1, ...let me know if you want more information

L11: I will provide you with an update...

The team mentor then hinted that the lecturer's (L11) students were becoming less engaged in the project. As cooperation is needed within this project it was appropriate the team mentor communicated in a way that was affirming and achieved both relationship and task oriented goals of the project. The study showed that communicating with another team member privately can be used as a face-saving gesture according to politeness theory (Brown & Levinson, 1987). A more direct approach could have been used as both were lecturers in the project and there was no apparent social distance. RT did not have more power than the team mentor but was new and the consideration factor in influencing the politeness strategy was that the risk of a more direct statement would hurt his feelings (Brown & Levinson, 1987). Furthermore, this situation highlighted that there were no expectations set on what the lecturers in the supervisory team are expected to do, or when to report and even what to report about their teams until the team mentor asks them.

In the following conversation, some lecturers were previously 'quiet' and situated within the highly shared roles but this questioning by L2, the team mentor, stimulated their interaction. However, it also shows the politeness strategies used. L2 used positive politeness (Goffman, 1972), whereas L1 was much more direct with 'are you giving advice?' and returns with a clear negative answer despite L3, L5 and L12 being affirmative about the change to the team leader selection. L1 was 'bald on record' which shows no attempt to save any of the interactants' face (Brown & Levinson, 1987, p. 60). Consequently, L2, who initiated the question, reverts to a higher politeness strategy which is almost an avoidance of interaction and no change is made or amended as follows in this conversation on team leader elections:

L2: Was wondering if we should have a wider geographical spread of student team leaders this year? [Provided information on last year's team leaders]

L1: Are you giving advice on how team leaders should be appointed?

L4: I am thinking having one team leader per country is a good idea...

L1: I don't think so ... teams have the responsibility

L10: I agree with L4

L12: ...excellent suggestion – everyone can have a team leader

L10: *I have some doubts...should be close to real life as possible...*

L2: *Love the discussion...*

This approach from L1 was decisive and limited further discussion, especially when there was some agreement from L10, which is similar to stage 1 where there was limited feedback following the directional leadership. This transactional approach has been found to reduce cognitive effort by shortening the discussion time which may be welcomed in a virtual team where processing capacity is already overloaded (Kahai, Carroll, & Jestice, 2007) which occurs in the first stage with the technology and other details. Nevertheless, transformational leadership tends to improve decision-making quality while lengthening the discussion, increasing cognitive effort and lowering satisfaction (Kahai et al., 2007). However, transactional leadership is thought to improve task cohesion of the team whereas transformational leadership may improve the cooperative climate of the team, which in turn improves task cohesion which leads to group consensus and satisfaction with discussion (Huang et al., 2010). Therefore, if this is the case, it would suggest that when discussions are taking place a transformational leadership would be more effective in reaching decisions, whereas a transactional leadership would be effective at the beginning to achieve tasks, as occurred in this study.

To gain productive contributions from team members during virtual team meetings it may therefore be appropriate to have team processes to manage online discussions and develop a team culture where interaction is frequent and treated positively.

6.6 Reflection

This study provides empirical findings needed to build virtual team leadership theory particularly in the identification and development of roles. The findings validate and extend existing research on the importance of team stages and their different leadership requirements. The study shows the emergence of shared leadership within the supervisory team where each leader is responsible for moving the project to its conclusion. This conclusion develops theoretical findings of using the CVF in a virtual setting, conceptualises a different approach and discusses practical implications of new roles.

Quinn (1988) recommends adapting roles to the situation, which links to the situational theory (Hersey & Blanchard, 1969) and an adaptation of the CVF has been created with

fewer roles and recommended levels of activity for each stage. However, this study also contends that the CVF is not the best choice for virtual teams. It is later argued that position roles, rather than emerging functional roles, are more relevant to the ambiguity of a virtual team, and these are needed at specific times. A position temporal model relevant to virtual teams is subsequently presented, based on this case study, with specific roles and when they are activated.

6.6.1 Theoretical implications

This study showed variable levels of activity in each role at the different stages which showed different leadership needs can be identified and confirms earlier research regarding different capabilities needed in each (Mukherjee, Lahiri, et al., 2012). The highest activity in both cycles was in stage 1, when the team was ensuring lecturers participated, and stage 4, when lecturers were ensuring that students were finalising proposals. This is significant as although research has confirmed high activity in stage 1 there is very little research on the later team stages (Hertel et al., 2005).

Furthermore, it identifies the stages in which each CVF role is most active which has not been investigated. The first stage showed that the producer role was needed to work productively and the last stage required the collaborative coordinator role to maintain a continuous work flow. Furthermore, roles emerged in stage one, whereas other research has suggested later emergence of roles (Mukherjee, Lahiri, et al., 2012). This may be explained by the early directive delegation of roles by the president (L1) as well as it being an established team and further research would be helpful to investigate this further.

The study showed that fewer CVF roles can be performed in a virtual team than in a face-to-face team and some are less activated than others. This also confirms research by Konradt and Hoch (2007) who found there was a smaller repertoire of CVF roles in virtual teams. The study showed one person can be identified as the overall leader in a virtual team. The president, L1, confirmed his role as the overall leader by having the highest frequency of interaction and was the only one who performed a full portfolio of CVF roles, suggesting that an overall prominent leader can be possible and may be necessary. However, there was also little difference in the remaining CVF roles within the same values quadrant, which Konradt and Hoch (2007) also reported. However, Quinn (1988) argues that a full repertoire of these roles is expected in good leadership of face-to-face teams.

Unlike Konradt and Hoch (2007), this study showed that more roles can be adopted and more activity occurs as the team progresses, which suggests that people can feel more comfortable about taking on roles as the team matures. This could be linked to the development of habitual actions which occur in virtual teams, and ideally need to be encouraged to provide a sense of certainty and lack of ambiguity.

However, the study also showed that different levels of activity can occur in the roles. It showed that the most active roles can be the producer and coordinator (task-controlled roles) and the facilitator (a flexible role). Similarly, Konradt and Hoch (2007) found the most active roles were the director and producer (task-control roles) and facilitator and found that more people may perform the same role as others which is a more consensual way of operating when they have not been delegated a role or are afraid to take a risk.

The study showed that less active roles, i.e., the director, innovator, broker and mentor, can be autonomous roles, that is, they were performed by fewer people, or need less teamwork. These roles required initiative, were unpredictable, could create uncertainty and consequently may result in greater visibility for the participant. The study also showed that the director and producer roles which were both in the rational goal quadrant, can be highly differentiated, which was not observed by Konradt & Hoch (2007). In this study, the director role was not seen as similar to the producer role and it was activated by only one person (L1, the GlobCom president) and in a much higher proportion to any other role. The following table shows the role activation in each stage of 2013 and 2014 with the number of participants and the number of participants in each role, as well as the most active and least active roles.

Table 17 The number of participants performing the most active and most inactive roles in each stage over the two cycles

Stage	1	1	2	2	3	3	4	4
Year	2013	2014	2013	2014	2013	2014	2013	2014
Participants	x8	x7	x5	x8	x10	x9	x12	x9
Most active role	P x4	P x4	P x3	C x5	Cx10	Fx5	Cx10	Cx8
Least active role	Me x1	B x3	Me x0	Me x1 Bx1	Me x0 Bx0 Dx0 Mox0	Ix0 Bx0	Mex0	Bx1
Most shared role	Mo x6	Mo, P, Me, F x4	P x3	C x5 Mo x5	Cx10	Cx6	Cx10	Cx8

P – producer; D – director; C – coordinator; M – monitor; F – facilitator; M – mentor; I – innovator; B – broker.

The weak differentiation between the roles within the three other quadrants (the director and producer roles in the rational quadrant were strongly differentiated), the lower repertoire of roles activated and a prominent director role, suggest that a more simplified and relevant adaptation of the CVF model would be helpful to GlobCom and other virtual teams. Therefore, an adaptation includes an overall director role, as well as fewer roles overall (five) with suggested levels of activation in each stage for each role.

This CVF adaptation recommends the director be a single individual with a full repertoire of roles, which Quinn recommends for a leader. This study shows that the director role, which was not as active as the coordinator, producer or facilitator, can still be highly active despite being exercised by only one person. The director role would be adapted to be in the centre of the model. This singular leader would absorb all the other roles and would therefore perform a full repertoire of roles, be present in all stages but most active in stage 1. More activation of the remaining four roles would reduce the workload on this individual. The two roles in each quadrant would be combined to create one role, although there would be only the producer role in the rational goal quadrant as the director has a more encompassing role.

The producer role would also be constant but has a stronger role in stage 4 which ensures the project meets deadlines. It would augment the director's role in stage 1 in order for the project to gain its own momentum. The coordinator (and monitor role) is present in all stages with its highest activity in stage 2 where it is creating team coherence and continuity in an effort to prevent the low action in the middle stages. The facilitator (and mentor) has a highly communicative role in a functional team and is in stage 2, with high activity in stage 3 to encourage interaction and to continue collaboration in stage 4. An innovator role would have a greater focus on technology which is an integral part of a virtual team and the role would absorb the limited activity needed from the broker role but be active in stage 1 only. In an earlier longitudinal action research study on global virtual teams (Clear & MacDonell, 2011), the technology focus relates to technology use mediation as the team was being established. However, as mentioned before, these roles may be required outside these stages and in fact more role activation would be welcomed to develop team momentum. This research presents a recommended adaptation to the CVF for applying to virtual teams in terms of merging roles and highlighting their level of activity in the different team stages. It shows roles and their temporal requirements recommending fewer roles to avoid the

ambiguity and cross-over of the CVF role definitions shown in the virtual teams of this study.

The following table shows the recommended adaptation of the CVF for each stage of a virtual team, mapped to the goal and activity of each stage. As several roles can be activated in the one stage a level of activation is shown (out of 4 with 1 being the highest) of that role in the stage. As enhancing interaction is the goal, the roles that are expected to generate the most interaction in each stage are shown as the most active.

	Most active	→	Least active
Stage 1 Goal: To ensure lecturers participate in the project and the conference.	Director <hr/> To ensure goals are set	Producer <hr/> To centre on results	Innovator <hr/> Coordinator
Stage 2 Goal: To ensure lecturers register and prepare students.	Coordinator (& monitor) <hr/> Starts team coherence	Facilitator (& mentor) <hr/> interaction	Producer <hr/> Director
Stage 3 Goal: To ensure the lecturers encourage student progress.	Facilitator (& mentor) <hr/> Interaction	Coordinator (&monitor) <hr/> Team coherence	Producer <hr/> Director
Stage 4 Goal: To ensure students' global progress.	Producer <hr/> Achieves goals	Coordinator (&monitor) <hr/> Continuity & coherence	Director <hr/> Facilitator

Figure 17 Adapting the CVF for virtual teams - recommended CVF role activation against each stage.

The following area graph shows the pictorial representation of how much activity there is in each role in each stage. More research would be helpful to test these recommendations.

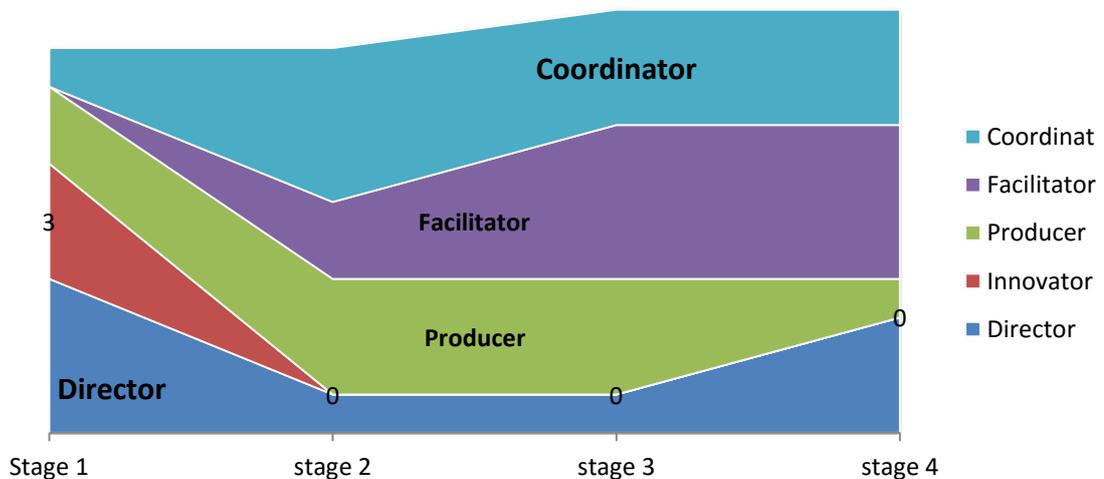


Figure 18 Pictorial representation of the varying level of role activation adapting the CVF to virtual teams.

The limitations of the CVF for virtual teams

Virtual teams have significant and particular challenges, and the existing theoretical frameworks, such as the competing values framework, developed for face-to-face teams, can help to identify and even monitor virtual team leadership activity but they are limited too. The CVF was not developed for virtual spaces and this research shows its limitations in virtual teams, such as the ambiguous criteria for the roles and lack of emphasis on interaction.

Although interaction is a criterion of the facilitator and mentor roles, the increasing interaction was evident in the most active roles of coordinator and facilitator. Therefore, this study suggests that the interaction criteria may need to be in all the roles. In other virtual teams interactivity has a high impact, for example emergent leaders interact more than others (Yoo & Alavi, 2004). Effective virtual team leaders send more messages than non-leaders which moves the project forward (Wickham & Walther, 2009; Ziek & Smulowitz, 2014). Similarly, Walther (2007) and Branson et al. (2008) also argue that team member communication in a virtual team equals engagement. Equally, Cajander et al. (2009) found that the motivator role needed in the study would be most relevant in the human relations quadrant, in order to help move the project forward and maintain positive attitudes.

This study found that individuals in position roles, e.g., the director, conference leader, team mentor and webmaster, were the most active participants and take on the less predictable high-risk roles, suggesting they felt more empowered. The director role manifested as a singular role and the most prominent, as it set up activities and guided the team. The study reveals position roles can be needed in virtual teams, rather than emerging functional roles, in order to encourage interaction, along the lines of previous research (Hertel et al., 2005; Malhotra et al., 2007).

Introducing conscious intervention to virtual teams

Cramton (2001) argues that team cohesion is difficult with a highly complex and interdependent task-related project. However, further research suggests that high task interdependability is considered more likely to encourage team interaction (Hertel et al., 2005; Jang, 2013). As virtual teams are more likely to show passive or defensive behaviour (Balthazard et al., 2008), creating more interaction through positive feedback would help to develop constructive interaction.

The study showed that more task-control roles can progress the team and these were seen, in my role as participant observer, to provide structure in the initial stages, although there was negligible feedback, which may have been because the instructions were very clear and there was low task complexity and therefore minimal task interdependability. The middle stages were quiescent and although the supervisory team members may have been proceeding independently, more interaction would help to maintain a collaborative momentum and pre-empt issues before the final stage. Conversely, in the later stages I generated high and positive interaction which was captured through the data. This was generated through my role as team mentor as I sent team processes (updates on student progress, student registers and lecturer update forms) in my delegated role.

In 2014, drawing on the previous chapter's research in 2013, I was able to provide better feedback which was more empathetic, which I noticed as participant observer. This conscious socioemotionally-driven intervention which included activities involving the whole team increased task interdependability through feedback and participation which then encouraged team cohesion, which is consistent with research on task interdependability creating team cohesion (Hertel et al., 2005; Jang, 2013). Although the data showed greater interaction, as participant observer, I noticed a more engaged and enthusiastic response once I provided more feedback and information on the student teams. Jarvenpaa and Leidner (1999) argue that increasing the communication about activities in a virtual team helps to make them visible and develop trust. This builds on a study by Crisp and Jarvenpaa (2015) who found that swift trust can lead to late trust but only if there is structuring and monitoring, as trust mediates performance as well as being needed for normative actions. However, I was aware that feedback had to be tactful and as the previous chapter showed, interaction may become limited if members are not cognizant of face-saving issues. Furthermore, being too direct, which can be perceived as being impolite, risks capitulation or disinterest (Brown & Levinson, 1987) and can result in poor collaborative decision-making.

However, uncertainty, which is considered high in virtual teams (Wadsworth & Blanchard, 2015) can be lowered through developing processes driven by socioemotional factors and can help to develop the habitual team actions which are found in an established virtual team (Bell & Kozlowski, 2002). Therefore, it is recommended to delegate roles with strong and clear responsibilities allocated to the specific stages. Explicit positions with clear criteria can be empowering and lead to

visible activity rather than roles which change with the situation and may lead to confusion. Empowering team members is a key leadership capability which ensures flexibility and self-managing which scholars of face-to-face teams have found is needed in times of uncertainty (Cameron et al., 2014b). Equally, Wickham and Walther (2009) found that having more roles may help create more shared leadership within the team.

The study showed that more interactivity can occur as the team progresses and team members take on roles that are consensual, e.g., the coordinator role, rather than taking on a role where initiative is required. Therefore, goals and strategy need to be arranged before the beginning of the project and are not suited for interactive shared leadership. In this study the second cycle showed more relational roles were activated, e.g., the facilitator in the later stages of the team development suggesting that people felt more comfortable with each other.

Although the CVF has benefits in measuring leadership activity and role sharing in virtual teams, it requires too much adaptation to be effective, and the adaptation itself is uncertain, unpredictable and difficult to monitor in a virtual environment. Therefore, on reflection, a CVF adaptation is unsatisfactory. Role clarity may help the team to operate effectively and move toward goals once they know the behaviour required.

A positional temporal model for this project is being developed and is shown below (Table 18) as a work in progress which maps new roles and activities to the relevant stages where they have the most interactivity and can move the project forward. These roles are specific with defined activities and are easily transferrable to other virtual teams, unless there were roles that were unnecessary, e.g., a conference organiser. However, there are also activities conducted outside of this timeframe, e.g., securing of client, sponsorship, budgeting, client brief, client liaison, board meetings and meeting minutes.

Table 18 Recommended new positional roles for team leaders in the different team stages (work in progress)
 Recommended for the GlobCom supervisory team which can be applied to supervising other projects and similar online educational projects

	Director/client liaison	Conference organiser	Team leader mentor	Student liaison	Technology	Pedagogy
Stage 1 Goal: To ensure lecturers participate in the project and the conference	Announce goals and schedule	Ascertain dates and attendance	Introduce team leaders to forum and processes		Set up blog for students	Check brief fits learning requirement Brief students on deliverables
Stage 2 Goal: To ensure lecturers register and prepare students.		Develop conference programme	Announce stage Liaise with TLs re weekly reports Feedback to lecturers re TLs	Survey students re progress and teamwork	Maintain blog	Get deliverables from students; updates assessment criteria
Stage 3 Goal: To ensure the lecturers encourage student progress			Request feedback from lecturers Liaise with TLs	Feedback survey to supervisory team Survey 2	Maintain blog	Feedback to Ls Students to send deliverables
Stage 4 Goal: To ensure students' global progress	Announce evaluation process	Confirm dates and attendance	Announce stage 4 Liaise with TLs Report to Ls	Feedback to Ls	Maintain blog	Feedback to Ls

TL – team leader; L - leader

6.6.2 Practical implications

This chapter has explored roles and suggested that position roles are more suited to a virtual team. Although the CVF could be a useful leadership measuring tool, it is unable to predict or guide virtual team leadership. The functional role criteria are ambiguous and suited to face-to-face teams where the work is visible and there is little differentiation with some roles.

In a virtual team the situation is unpredictable and changing and the undefined roles may not have the same level of certainty as seen in position roles. Furthermore, position roles empowered team members, have more legitimacy and arguably build telepresence, which suggests they are better to use and encourage the interaction which helps form a more constructive team style, which is lacking in virtual teams.

By the second cycle, as a result of this action research and the need for more position roles the following roles are being introduced or developed further as shown in Table 18 as a work in progress and explained below:

- Director/Client liaison: Develops brief with client and sends to all for input. Liaises with client throughout project and arranges student–client meeting.
- Conference organiser: Arranges conference at own university with client and lecturers with pedagogical topic related to proposal PR.
- Team leader mentor: Develops increasing feedback opportunities and encourages team leader activity on forum.
- Student liaison: Surveys students in stage 2 and stage 4 and report results to the team.
- Technology support: Sets up and maintains a blog for all students.
- Pedagogy lecturer: Assesses student project deliverables at stage 2 and stage 3, checks against the brief and reports to the team; updates assessment criteria, informs students and lecturers of evaluation processes and dates.

Having these recognised position roles provides a model that can help to provide guidance to a team and enable the project, rather than expressing what has happened. These two chapters have analysed the supervisory lecturers' team, the first chapter explored one cycle and the second chapter explored two cycles. The next chapter explores the student teams and seeks to investigate how student team leaders encourage participation over three action research cycles.

CHAPTER 7

GREAT EXPECTATIONS²⁶

The previous two chapters investigated the supervisory lecturer team which oversees the seven-to-eight student teams²⁷ each year to understand what interaction styles elicited actions and whether face-to face roles could be applied to virtual teams. This chapter offers a different perspective. It explores the student team leader interactions over three years to understand how leaders influence team participation.

This research analyses how student team leaders perceive participation and influence participation in their virtual teams. The research context highlights the issue of team participation and the research overview explains how the study exposes these and the theory considered. The research results are provided showing the team stages with an input-output model and the key communication issues team leaders identified. The discussion analyses the results in terms of team stages, leaders, expectations and interactions in terms of leadership theory. The reflection presents the theoretical and practical constructs which include criteria for a team leader and proposed roles for student teams and the lecturer teams.

7.1 Research context

One of the most significant issues in virtual team leadership is poor participation (Avolio et al., 2014; Lee-Kelley & Sankey, 2008; Malhotra et al., 2007; Nicol et al., 2003). It is difficult for a leader to assess participation owing to the distance, asynchronous communication and the lack of visual cues in these teams (Avolio et al., 2014; Morgan et al., 2014; Nicol et al., 2003). In addition, no research has systematically clarified the causes of poor participation in these teams and existing theories may not be developed adequately to support research in virtual environments (Biocca et al., 2003).

Some researchers believe that a team can be weakened and fail to reach a high level of effectiveness when members have differing and often competing priorities and objectives (Morgan et al., 2014). Also team cohesion may be affected by the fast but unpredictable development of trust in virtual teams (Jarvenpaa & Leidner, 1999). This

²⁶ The team leader criteria identified in this work is licensed under the Creative Commons Attribution 4.0 International License. To view a copy of this license, visit <http://creativecommons.org/licenses/by/4.0/> or send a letter to Creative Commons, PO Box 1866, Mountain View, CA 94042, USA.

²⁷ All team numbers in this study have been randomly reallocated and names have been changed to respect students' anonymity.

swift trust is described as ‘how virtual teams might accomplish tasks without first having developed personal feelings’ (Pauleen, 2003a, p. 244), which suggests its fragility. Scholars have suggested that relational communication should take preference over task-based interactions in virtual teams (Joshi et al., 2009; Kayworth & Leidner, 2001; Nauman et al., 2010) and positive affect is considered a critical factor in virtual team cohesion (Avolio et al., 2014). However, relational processes are believed to take longer in computer-mediated communication than in face-to-face teams (Walther, 2010; Walvoord et al., 2008). For example, it is argued that empathy, which is linked to trust in virtual teams, may be too time-consuming to develop (Avolio et al., 2014; Crisp & Jarvenpaa, 2015; Wadsworth & Blanchard, 2015). Confusion can arise as the peer-to-peer interaction creates a flattened hierarchy where each member can influence the team (Daim et al., 2012; Yukl, 2013). On the other hand, high-task interdependence, where more of the team depend on each other, and high interactivity, may lead to better awareness of team activities, influence team trust and team cohesion and subsequently improve team performance (Jang, 2009).

The virtual team leader role requires planning and building relationships and generating ideas which boost collaboration in order to achieve the team goal, according to Pauleen (2003a) who draws on group theory (Bales, 1950). Yet there is some difficulty in determining a leader. Some scholars believe a strong online presence which is created through high team interactivity defines a leader (Biocca et al., 2003; Brahm & Kunze, 2012; Iorio & Taylor, 2015; Zigurs, 2003), but it is still not certain how this interactivity can be generated (Avolio et al., 2014).

7.2 Research overview and contribution

This research determines how a leader perceives participation; how it affects them and how they influence it, therefore looking at the mutual interaction of the leader and the team. Leaders were identified by student team members as an important factor of success and the main communication conduit in earlier research on students in the GlobCom project (Picherit-Duthler, 2011). Therefore, this study follows by reviewing three years of GlobCom student team leaders.

These student teams are newly formed every year and are therefore ad hoc teams, that is, teams assembled for a specific project and then dissolved, with virtual team members having no prior experience of working together and not meeting face-to-face (Connaughton et al., 2010). These were also large teams of over 20 students which may

have created management difficulties which is already more challenging in student teams where leaders have no authority compared to the organisational authority leaders have in professional teams (Cajander et al., 2009). Long-term or established teams are believed to be more likely than face-to-face teams to have more habitual and collaborative actions (Bell & Kozlowski, 2002; Wilson et al., 2006). This may be because over time, people are more likely to identify with a group and develop consistent behaviours (Sproull, 2005; Zaccaro et al., 2001; Ziek & Smulowitz, 2014). These habitual actions can enable a team and mean that predictability may be a contributing factor for success (Bell & Kozlowski, 2002; Ziek & Smulowitz, 2014).

In this study, how leaders deal with participation is interpreted through leadership theory which draws on the leadership styles of socioemotional and task-related interactions, which are the key factors of leadership theory (Bales, 1950; Bass, 1999; Burns, 1978). It also investigates how these socioemotional factors are manifested online to improve participation. Furthermore, uncertainty and time pressures create information-seeking behaviour (Savolainen, 2006; Wilson, Ford, Ellis, Foster, & Spink, 2002), so it is reasonable to assume that the uncertainty of the virtual environment, new team and project, as well as time pressures, would demand high information-seeking behaviour from leaders. Therefore this study also applies the expectation violation theory and interaction adaptation theory (Burgoon et al., 2007) which argue that behaviour is contingent on, or directed by, the other participant in the communication so can predict the most probable interactions.

7.3 Research methods and data management

A longitudinal field study is recommended by virtual team researchers to provide more substantial findings which can build virtual team leadership theory (Hoch & Kozlowski, 2014; Mukherjee, Lahiri, et al., 2012). The research analyses three consecutive years of GlobCom cycles (2012, 2013, and 2014) in an effort to understand how the 23 student team leaders influence participation in their ad hoc virtual teams, comprising more than 20 students a team. These team leaders are elected by their team members each year and then given access to the team leader forum, where team leaders can ask for support and post comments to share with other team leaders, and which I, as the researcher and team mentor, hosted. They are advised to forward the team mentor meeting minutes and regular reports and send questions. The data was drawn from student team leaders' emails to the team mentor and their posts on the team mentor forum.

The research collected the following three years of data from GlobCom:

- Team leaders' emails to the team mentor over the course of each cycle from stage 1 to stage 4 (some team leaders included student registers and comments, meeting minutes, reports and updates).
- Team leaders' posts on the team leader forum, which included updates, questions and discussions.

Each year the number of posts and emails was variable but the stages and their activities were similar. The focus of analysis was on the team leader forum posts as well as the team leader emails to the team mentor. Some team leaders attached meeting reports and student registers to their emails which was requested but not enforced. The frequency and timing of this communication followed the process of comparative analysis which allowed checking of variables to understand what was distinctive in particular years, what was common to all years and the mutual development and influence of team stages on the communication.

In order to structure the research and also identify the relationship of leadership to the team lifecycle, the data was organised into team stages based on virtual team stages research (Duarte & Snyder, 2006; Hertel et al., 2005; Mukherjee, Lahiri, et al., 2012; Salmon, 2004; Zander et al., 2013), which identified the inputs and outputs required during the project.

The unit of analysis was an email or a post and the analytical unit was an interaction sequence which was of varying length; for example, it could be a comment on the team leader post of one sentence or a page-long email which was an interaction or part of a conversation. This focus on interactions as the analytical unit for studying leadership is in line with group theory interaction theory (Bales, 1950; Balthazard et al., 2008; Gibb, 1958).

The posts and emails and associated collateral were mapped chronologically against each individual team leader to identify the team stages. The analysis was data-driven and inductive. As recommended by Braun and Clarke (2006), the analysis progressed from descriptive to interpretive to theorise on the significance of patterns and their broader meanings. This meant that initially the team leader communication described what was happening and the theoretical framework allowed for changes to progress the subsequent cycle.

A thematic analysis (Braun & Clarke, 2006) identified recurring themes using an interpretive repertoire to identify team issues, what was distinctive in particular years, and what was common to all years. As the coding process continued, new, emerging codes were compared to the previous data and guided the analysis further and redefined the categories. The frequency of topics was used more to ensure the categories were robust rather than indicating any statistical significance (Miles & Huberman, 1984, p. 216). The next section presents the results followed by findings with discussion and includes direct quotes and general descriptions of the virtual team leaders' interactions to answer the research question.

7.4 Results

This section presents results which show how the team stages were formed against the activities and presents an input, output and processes model. This is followed by the team leaders' interaction patterns and topics.

7.4.1 Team stages and input output mode

This study showed that similar functional stages created by student team leaders can be identified across all three cycles, based on the critical development project tasks. Similar stages have been seen in virtual team research (DuFrene & Lehman, 2012; Hackman & Johnson, 2009; Hertel et al., 2005; Mukherjee, Lahiri, et al., 2012). However, the stages in this study are more defined, more detailed and show more functions and are suited to project management, as well as this educational project, with their specific activities. As shown in the table below, each stage lasted two to three weeks and completed an essential developmental task of the proposal: research, framework, body and finale. These differed from the supervisory lecturers' cycle where the stages were focused on guiding the project and overseeing all student teams. The student cycles do not include stage 5, shown in the lecturer supervisory team research in chapter five, as this was about final evaluation, marking and conference arrangements which did not require student participation.

Table 19 Stages and activities of the student team

Date	Functional stage and activities
February - March 4	Enrolment Students meet and socialise and work out procedures and wait for all students to register owing to the differences in the academic years.
Stage 1 March 4 -24	Research and processes Develop project timeline Research and create a situation analysis. Elect team leader, deputy, country leaders and develop team processes and roles Identify team goals and norms (see below)
Stage 2 March 25 - April 15	Framework of proposal Develop objectives, strategy, publics, concepts
Stage 3 April 16 - April 29	Body of proposal Confirm strategy, implementation, action plans
Stage 4 April 30 - May 6	Proposal finale Develop budget, proposal evaluation and submit presentation

The data was reviewed to identify the input, the processes and the outcome. This offered deeper insight into the activity taking place within each team stage and could be relevant to other pedagogical projects as well as project management. Processes were defined as activities needed to ‘convert inputs to the task-related outcomes’ through interacting with others (Marks, Mathieu, & Zaccaro, 2001, p. 357). This allowed a more detailed look at the inner workings of the teams. The following shows the input and output table with the team stages showing what was produced in each stage.

Table 20 Input output model showing the student team stages

Stage	Input	Process	Output
Stage 1 Research and processes	Enrolment Students registered x20+ in each team Client brief Review proposal writing guidelines	Team leader election Research TL: access team leader forum Meeting reports Allocating tasks Completing student registers	Virtual platforms in place Situation analysis Team processes and roles
Stage 2 Framework of proposal	Situational analysis Team processes	Some teams split into groups to create the proposal Meetings Virtual platforms and frequency of communications agreed.	Objectives, strategy, publics
Stage 3 Body of proposal	Proposal framework	Collaboration Posting of work and discussions	Creative concepts and implementation
Stage 4 Proposal finale	Creative concepts	Budgets, evaluation, edits Agree proposal	Final proposal

This input-output model was reviewed annually to ensure that it was based on the team leaders' communication and has since been provided to teams for their guidance.

7.4.2 Team leader interaction patterns including topics and frequency

The following results outline the different levels of interaction the team leaders had in each team, each stage and each cycle, and also identify the communication topics and questions presented.

The student team leader forum was generated in response to the technical issues regarding student team registration on the GlobCom website, and offered immediate support to the team leaders who had questions regarding their team's members. Therefore, there was high early interaction by the team leaders regarding team registration in 2012 but less in the following years. The team leaders were pleased with the team leader forum, e.g.,

I do find the team leader site helpful and supportive ...simple to use and I like it.

I am glad we have the discussion board (sic) as it is another form of support for GlobCom

Although the team leaders used the team leader forum they continued to email me with questions and updates. As team mentor and participant observer, I responded to messages and followed up issues, although my own communication is outside the remit of this study and is forming future research. This communication focuses on the team leader interactions, rather than the team mentor's input, although that is being developed for another research project. Admittedly, the team mentor may have influenced the team leader interactions but this would have been collectively. Posts from the team mentor were visible to all the team leaders, emails were responded to by the team mentor and therefore there was no individual variation from the team mentor to the team leaders. However, more research of the team mentor role is certainly an area of interest in improving virtual teams and this research provides an opportunity for it to be developed further. The team mentor role involved feedback to the lecturers who, in turn, advised their students. In addition, I was supervising my own classroom of students who offered insights about each of the teams. This emphasises that there are many communication channels within a virtual team which may have varying effects.

In the first year of the team leader forum (2012) the webmaster, responsible for student registration matters, was not active and that year shows as having the most communication, particularly regarding student registration. In 2013 the team leader forum was moved onto the GlobCom site, but did not have the same interactive capabilities for the team mentor or the students and the team mentor was unable to update it. This created limitations in the team mentor's interactivity with the student team leaders and there were fewer posts and emails than the previous year. As a result, the webmaster worked with the team mentor to develop more functions which meant the team leaders' forum worked efficiently in 2014.

The team stages are used to group the team leader interactions on the team leader forum and team leader emails to the team mentor. This helps to structure the data and link it to the expected team activities which can help to understand the needs of the team leaders.

The following bar chart shows the team leaders' emails and posts with the highest interaction in 2012 and the lowest in 2013 (this is explained under the relevant figure).

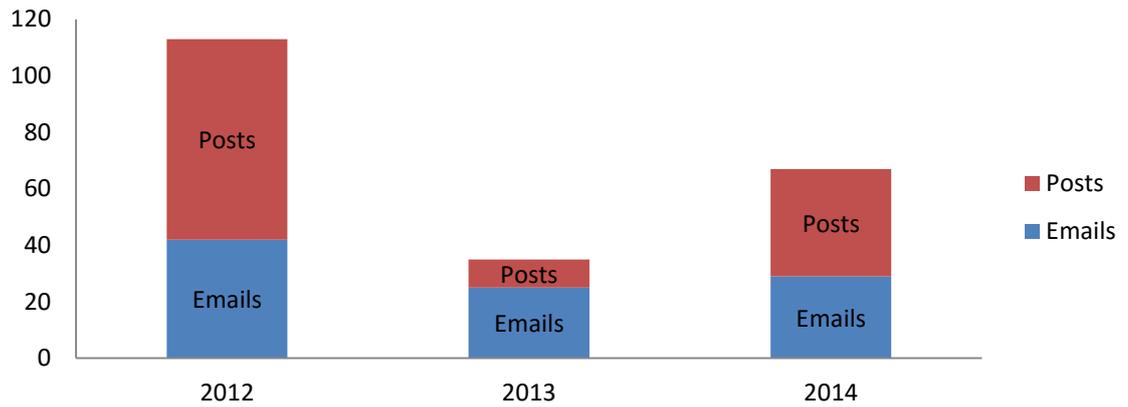


Figure 19 Total emails and posts in each year.

The team leader interaction on the forum, and with the team mentor, was most active in stages 1 and 2 of 2012 and 2014. In 2013 it was most active in stage 4. In 2012, team leaders (8) were the most interactive in stages 1 & 2, largely because the team leader forum was set up to address the initial student registration issues which were of concern to the team leaders.

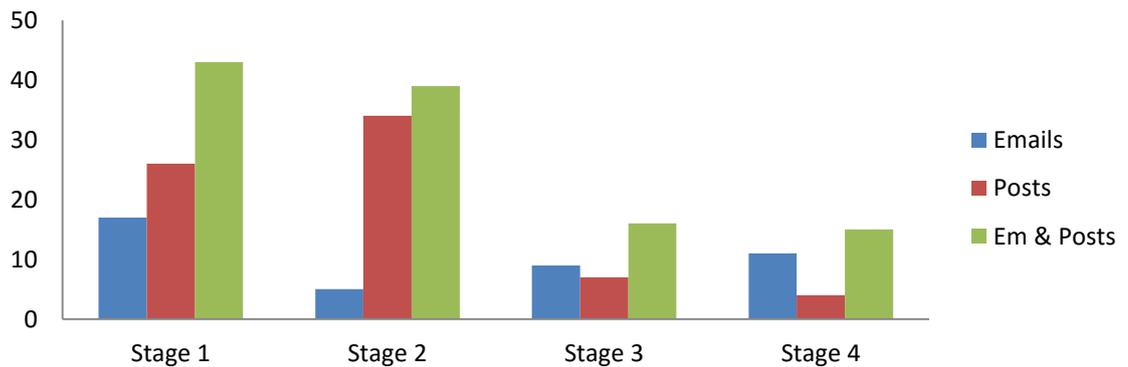


Figure 20 Overall team leader emails and posts in each stage of 2012.

In 2013, interaction from all team leaders (7) showed a slow growth towards stage 4. The team mentoring site had been transferred to the website but had no interactivity and the team leaders did not post.

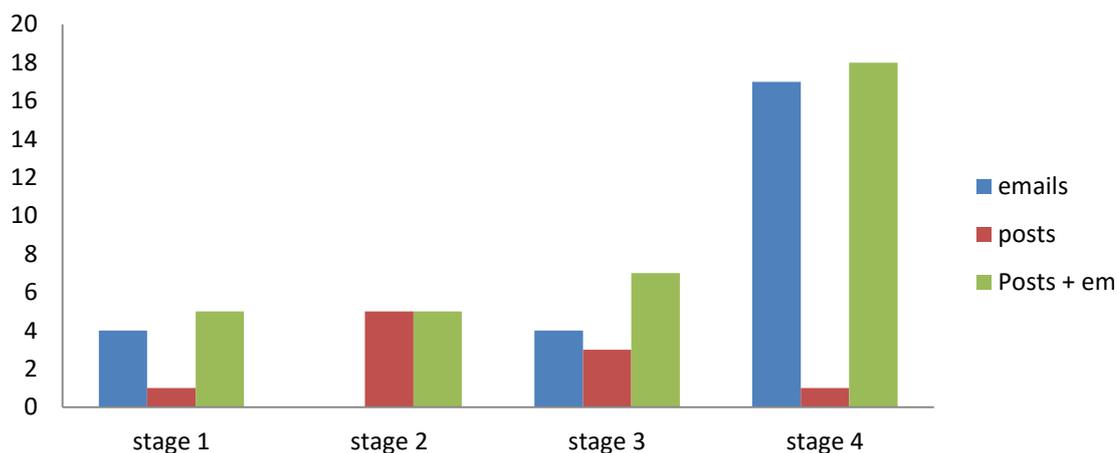


Figure 21 Overall team leader emails and posts in each stage of 2013.

In 2013 the team leader forum was moved to the GlobCom website which was at first clunky with less interactivity. By 2014 this was addressed and the interactivity had a similar pattern to 2012. This suggested a trend of a higher need for support in the beginning and more task-related needs at the end.

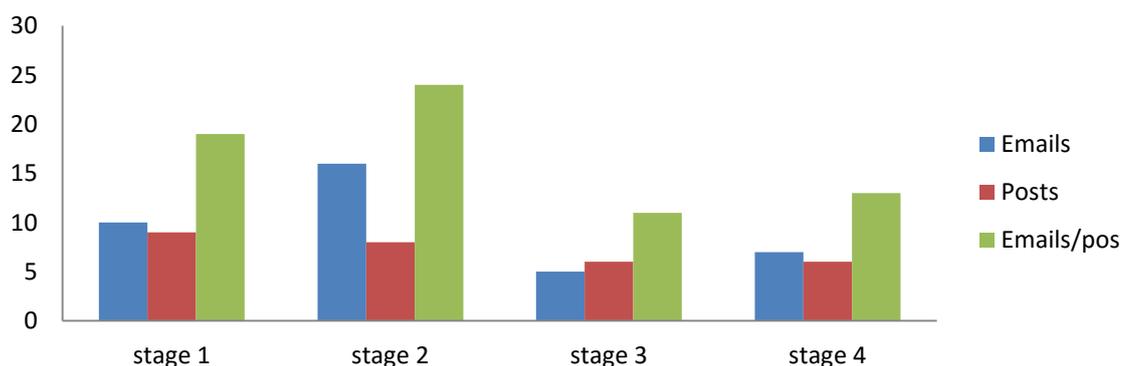


Figure 22 Overall team leader emails and posts in each stage of 2014.

In 2014 there were three team leaders from Germany and they reported that as the team progressed they built peer-support with each other and had less need to share on the team forum. This could mean the supervisory team had lower awareness of the teams and was less alert to issues as they arose. I recommended to the board that we encourage team leaders to be spread across the countries, i.e., no more than one team leader a country, which was agreed.

The emails and posts were inductively analysed, using a thematic analysis (Braun & Clarke, 2006), to identify the topics which formed themes. These were grouped by their frequency, team stage and team leader which was not wedded to any theoretical

framework, and therefore a thematic analysis was developed (see appendix for examples of the analysis of the team leader communication). This was an analysis at a semantic level looking at explicit or surface meanings rather than for any latent meaning for underlying ideas or assumptions. However, it also linked to the overall question that was driving the project, that is, how leaders can improve interaction. Although this is a simple coding it was adequate for the exploratory nature of the study.

There were seven distinct discussion topics by team leaders in order of frequency: participation, which focused on students registering on the teams and concerns about the team's level of activity and the level of responses; project and proposal development, which discussed the project and its development such as its format, the ideas and the client brief; technology, which involved discussions about the platforms used for sharing, difficulties with Skype calls and preferred chat; leadership issues, which focused on the responsibility of the leader and the choosing of a deputy and leader; greetings, which included introductions and welcomes by the team leaders to each other; discussion on submission, which focused on technical issues of the final project; deadlines and schedules, which focused on the project's dates. The following table shows the frequency of each topic in each cycle:

The study showed that participation can be identified as the main communication topic among team leaders. Participation was most frequently discussed in stages 1 and 2 which suggest that is when participation is of the most concern. The most frequent conversation topic on posts and emails concerned team participation, e.g.,

According to my counts, our group is missing Singh from India and Marla from the UAE and Tara from Australia, I will email them tonight. Do you know if we have Russians in our team?

Table 21 Communication topics by team leaders

Topic	2012	2013	2014
Participation Comments about students registration, level of activity, responses.	53 [49 in stages 1&2]	18 [12 in stages 3&4]	35 [27 in stages 1&2]
Project Discussed the proposal and its development	26	2	22
Technology Discussed virtual platforms and issues with technology	20	4	9
Leadership Discussed leadership duties and processes	4	10	8
Greetings Team leaders introduced themselves	7	6	1
Submission Discussed proposal formats	4	4	2
Deadlines/schedule Discussed the timing and deadlines	2	3	0
Total in each cycle	116	47	77

The following bar chart shows participation as a key and constant topic for virtual team leaders.

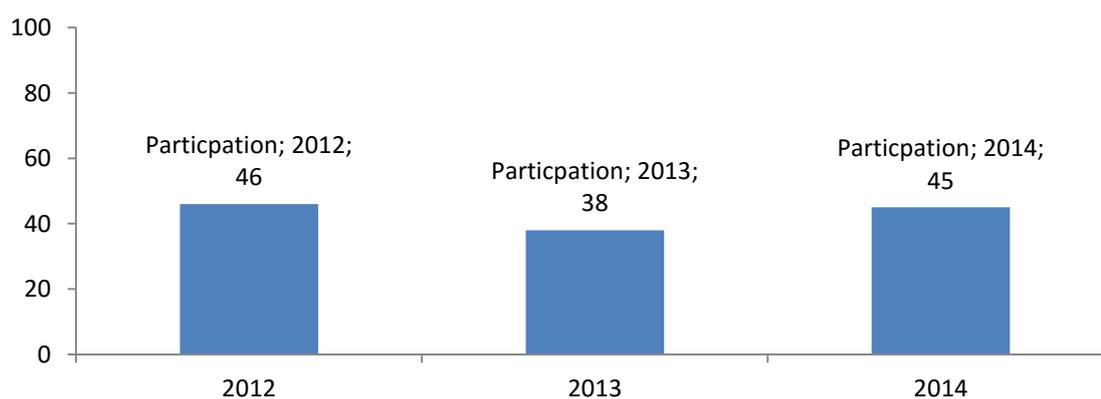


Figure 23 Team leaders' discussion on participation as a percentage of all topics over three cycles.

The research also revealed that the team leaders' focus on participation and their expectation of team participation evolved over the team stages and the data shows it was less frequently discussed as the project developed; except in 2013 when it was discussed in stages 3 and 4, and this was likely to be owing to the earlier technical communication

issues in this year which did not encourage earlier communication. This suggests that if participation is not discussed in the early stages, it can continue as an issue. As the team leader forum was not as functional in 2013, and there was subsequently less contact with the team mentor in the early stages, it validates the use of the team mentor forum and the team mentor role in having a forum and advisor for this issue.

There was also a high use of indirect questions embedded in most interactions which is assessed further in the discussion section. The following table shows the percentage of direct questions in the total number of interactions over the three cycles. In 2012 there were issues with initial student registration which generated questions on this topic.

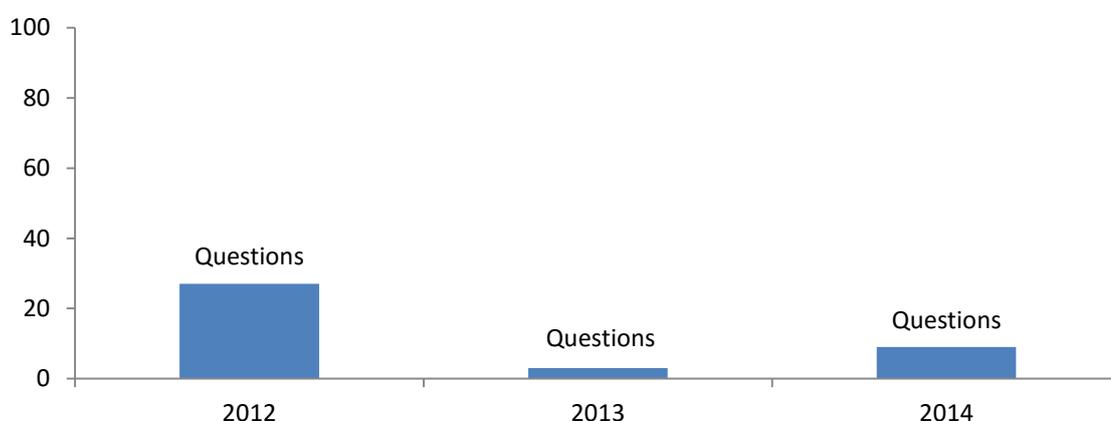


Figure 24 Percentage of questions in all interactions from team leaders over the three cycles on team leader forum and to team mentor.

The following discussion section considers these results to help assess the leaders influence on team participation.

7.5 Discussion

This longitudinal study provides insights to the inner workings of a team and is framed by team stages. The study shows that functional stages can be formed by the key developmental events of a project which included the proposal writing: research and development, proposal framework, body of proposal and proposal finale. These four stages were formed by each team but may have been influenced by the final deadline, their own lecturer's guidance and the proposed schedule posted on the team mentoring webpage. This development of the virtual team stages reflects earlier research that virtual teams follow a lifecycle and form developmental stages (Hertel et al., 2005; Mukherjee, Lahiri, et al., 2012; Salmon, 2004; Zander et al., 2013).

This section advances the knowledge about how leadership interaction influences participation, and is influenced by participation during the different team stages. The discussion first highlights the initial uncertainty team leaders experience in virtual teams. It then reveals how team leaders perceive team participation and their changing expectations about participation as the team moves through its lifecycle. The study shows that three different types of leaders can be defined by their attitudes to participation. It then focuses on the most successful team leaders who use empathetically-driven processes.

7.5.1 Early leadership interaction

This study showed that team trust, uncertainty and participation can be identified as the main initial focus of the team leaders. In stage 1 the students started the project through research, allocating tasks, identifying a virtual platform and reviewing proposal guidelines. This study showed that leaders have initial positive affect and assume team cohesion at the beginning of the project which reflects the argument by Jarvenpaa and Leidner (1999) that swift trust occurs at this stage.

I'm confident

I'm pleased they recognise my talents

Most of the team are eager and excited

We are really looking forward to getting started and most of our team are registered and ready to go.

We are doing great...more or less we are working the same.

The study showed that in stage 1, team leaders make efforts to reduce uncertainty which is a recognised element of virtual teams (Jarvenpaa & Leidner, 1999; Wadsworth & Blanchard, 2015). This may be due to limited knowledge of what is going on in the virtual team, coined 'awareness deficit' (Jang, 2009, p. 399). The team leaders' interactions to reduce uncertainty and improve their understanding of the team were similar to other studies in both face-to face teams and virtual teams and included high socialising to find out about each other (Jarvenpaa & Leidner, 1999; Mukherjee, Lahiri, et al., 2012); high interactivity assessing their team members (Hertel et al., 2005); responding to questions and comments, (Berger & Calabrese, 1975) and information seeking, which also suggests leaders were task-related (Bales 1950).

Information-seeking interactions show an indirect style by being absorbed into conversations (Miller & Jablin, 1991), rather than through direct questions, suggesting leaders are reluctant to ask directly for support or reassurance and are attempting to save face (Goffman, 1972). This can lead to difficulties in supporting leaders when they appear more confident than they actually are, and this may be because they don't know what they actually need in these early stages.

The team is working well but we have some concerns, some parts of the brief are not clear. We don't know whether we should work on it now or wait until we hear from the client.

I guess it's normal that things first need to get into full swing.

I'm curious to know how it will work out.

I'm a bit nervous because I have to balance work with the university.

I am trying to find a good technique but it's complicated...only 5 countries helping.

Do you know how to motivate them to work with us and attend meetings?

If anyone has any suggestions, I thank you in advance 😊.

Team leaders posted greetings, messages of support and questions, on the team leader forum which were warm, friendly and positive. They engaged other team leaders and interactions showed an appreciation of the peer-to-peer interaction and developing relationships. This further indicates that relationships may be an important element in helping to reduce the uncertainty.

I look forward to getting to know you [other team leaders] all better and meet in Abu Dhabi.

I like to have a glass of wine in front of the fireplace...go for long walks on the beach.

It is great to read other team leader comments as I can definitely relate to them.

This study also found that setting up routines, collaborative structures and plans may also be an attempt to reduce uncertainty. It may also help to prevent the cognitive overload that is also seen to occur in virtual teams, especially when these teams have a reduced preparation time (Walther, 2007).

We already divided the first tasks.

...we will hold meetings once or twice a week, depending on our team's progress.

From the beginning, team leaders' interactions show that they experience uncertainty within virtual teams and attempt to reduce this through initial trust, face-saving interactions, setting up plans and reach out to supportive peers.²⁸

7.5.2 Expectations and assessment of team participation

Despite the trust the leaders' communicated about their team, the leaders' major conversational topic was team participation. This showed that leaders had an early and intense focus on participation which suggests they valued participation highly from the beginning, that is, participation had a high valence for them (Burgoon et al., 1993).²⁹ Conversely, some team members did not participate early or at the same level as others, and showed weak reciprocity which suggested participation had a lower valence for them than the team leaders (Burgoon et al., 1993).

A variation in expectations has been found to be a consistent problem in virtual teams (Lee-Kelley & Sankey, 2008). The expectation violation theory has been applied to the expectations people have of mind reading in intimate relationships (Wright & Roloff, 2015). The results showed similarities to virtual teams where people may expect others to understand their needs and feelings without expressing them as there is a lack of social and visual cues and external influences. When applied to traditional teams, the expectation violation theory argues that if the behaviour is different from expected, the team leader would try and bring it into alignment through compensation, which may mean excessive activity (Grover et al., 2014). This was seen with these virtual teams in the early stages only. When faced with low communication responses from some team members in stages 1 and 2, the study showed that team leaders can be highly compensatory for this weak reciprocity (Burgoon et al., 2007) and engage more intensely and frequently with the less active team members. All team leaders carried out compensatory behaviour to generate participation such as emailing low responding participants more often, which is a relational activity. e.g.,

Thanks Marcia!! [Another team leader on the site] I've sent Eugenia an email inviting her to participate. I'll wait a little more, maybe she's gonna answer 😊

I have emailed Deepi asking him to talk to the UAE lecturer ...I have also emailed Elizaveta encouraging her to get involved in our team work...Jessica in Australia has already joined our team and we are looking forward to Jennie's response anytime today.

²⁸ Similar results were found in Hertel et al. (2005) and in the leadership capabilities presented by Mukherjee, Lahiri, et al. (2012) who explored team stages and leadership capabilities.

²⁹ Valence refers to the positive or negative level of an affective evaluation (Walther, 1997, p. 346).

@Averill: please check what is going on with James and Ben from the UK and Yuliana from Russia. We had contact with them at the beginning but even after an email I wrote to them they do not reply anymore. I will also send you the email addresses of Novita and Georgia later today.

I have sent dozens of messages to the USA team...

I've sent an email to every member of the Spanish team and two failed and the other had not response until today...

No contact with the UK, I will try and contact their county leader and ask...

Leaders even spent extra time updating those who did finally communicate:

I am waiting for three more members to join.

I have emailed each one a few times...as soon as they join I will brief them ...

The US and Spain are still not communicating at all and don't get back to me no matter how I try to reach them. I told everyone that I need to hand in the attendance record but even this didn't help...I'll keep on trying to reach them...

They don't answer any questions

We decided not to reach them anymore

Tried and tried to involve them

In traditional teams, the level of shared leadership has been assessed by identifying the shared purpose, emotional support and contributions (Carson et al., 2007). In virtual teams, this may be more difficult to ascertain and in this study leaders assessed their team members' involvement through categorising them into different levels of participation. This study builds on earlier research where virtual team members were categorised into three levels of low, medium and high as an indication of how much a leader could trust them (Pauleen, 2003a). The thematic analysis showed that three distinct levels of participation can be identified in the team leader's emails and posts. These signify that team leaders defined participation in terms of the participants' level of engagement:

1. Engaged: Those who were active, attending meetings, meeting deadlines and constantly communicating;
2. Diffident: Those who were less engaged, that is responding intermittently, and submitting work that is perceived as being of an inadequate standard by the team leader;
3. Inactive: Those who were not engaged and did not communicate or respond.

The following table shows the direct quotes from team leaders which formed the three levels of team participation, based on observations regarding the members' level of engagement.

Table 22 The three levels of participation observed by team leaders in stage 1 using a sample of direct quotes

Engaged	Diffident	Inactive
Joining meetings	Reading posts and listening	No communication
Getting work done in time	Responding to emails	Non-delivery
Good ideas without being asked	Agree to do task but don't submit satisfactory work	Non-response Still no response
Contribute to the group	Not speaking in meetings	Don't contribute with their opinion
Working hard	Answer sporadically	
Always active	Were demotivated and now they seem to be on track	I'm not sure if they read any of my posts
Good results		I don't know what to do or how to motivate them
Inform of absence beforehand		
Re contributing and working as good as they can		
Very reliable		
Doing a great job		
Doing a fantastic job		

Stage 2 involved the writing of the proposal framework and included identifying the objectives, the publics and the strategy of the campaign. There was more discussion by team leaders about building trust and considering the team's development, which is also reflected in research by Mukherjee, Lahiri, et al. (2012). There were positive comments about the team showing a more relational focus and there was a greater sense of progress. On the other hand, at this time, participation issues were discussed intensely by all leaders. The team leaders were challenged in connecting with their team and had difficulty assessing the social presence of the team members. This showed that effective relationship building skills may be very important for team leaders at this stage.

Although, the team leaders had their own schema of group participation it was evident that leadership interaction may need to be different in virtual teams (Pauleen, 2004b)

This became an emotional topic as they discussed how they could motivate the team and were concerned about wanting responses:

Things are moving on and get sense of progress

We are now on track

The team is working, in general everything is fine

How can I increase motivation and reach them better?

...have sent dozens of messages to the US, they read it but no response

Don't know how to motivate them to respond

In stage 3, the body of the proposal was being written. The study showed that in this stage, team leaders became concerned they were not meeting the deadlines. Even though writing PR proposals was a familiar exercise to many of the student team members, the team leaders reported several versions of variable quality. This excessive communication owing to the easy virtual posting and emailing of material has also been observed by Lee-Kelley and Sankey (2008).

GlobCom is a slow-moving beast

Now we're thinking of strategy

I know we are behind

The study showed that leaders reframed participation in stage 3 in terms of their productivity levels rather than their level of engagement.

1. Productive: Those who were constantly active and attending meetings
2. Less productive: Those who were submitting work but with less enthusiasm
3. Least productive: Those whose work was less satisfactory

A sample of the categorising of these direct quotes is shown below.

Table 23 Categorising of participation showing how team leaders reframed participation in stage 3, based on team members' productivity

Very productive	Less productive	Least productive
Active	Working well and trying to help out	Submitting but work inadequate
Wonderful	Have a different way of approaching tasks	Do not meet deadlines
Supportive	Contributing but not always meeting deadlines	Little contribution
Attending all meetings	Not respecting deadlines but doing work	
Stepped up		
Active contributor		

McGrath (1991) identifies production within the team as problem solving and task performance functions in the 'Time Interaction Performance' (TIP) model. The other team functions are listed as member support and group wellbeing which relate directly to team development. The team leaders' reports do not show this differentiation of

functions which suggest it is difficult to separate activity in a virtual team. The most participative members were perceived as active and contributing and relational terminology was also used to describe them, e.g., *supportive*, *wonderful*, which suggested relationship building with the team leader and team progress. These terms suggest there was more trust in this stage which is consistent with the view that more trust is seen with a high level of action (Crisp & Jarvenpaa, 2015; Jarvenpaa & Leidner, 1999). Although the emphasis on productivity would suggest team leaders moved to being more task-oriented as the team progressed, they referred to the more productive participants in warm relational terms, suggesting they had also built relationships and were moving the team on together.

The middle group (less productive members) in stage 3 appears to be more active than the former middle (diffident) group in stage 1. This is most likely because, by stage 3, the inactive team members (although they existed as they were mentioned in the final team leader reports) were no longer reported, suggesting the team leader was focusing on the other team members. However, when previously inactive members started to participate, albeit minimally, towards the end of the project (stage 3 and 4), the team leaders simply reciprocated and were not compensatory (Burgoon et al., 2007). This is an example of how virtual team members need to exhibit their enthusiasm to gain cohesion and how responding is as critical as initiating behaviours (Jarvenpaa & Leidner, 1999).

Peta and Stig haven't worked from the beginning. I kind of gave up trying to include these teams but now try to rely on the teams I know are working well and [who] pay attention to the deadlines.

I have the same problem. Russia finally didn't say anything, USA is absent too and India is on an internship...

NZers working very well ...Australia, Germany and now Portugal is trying too. The other countries sometimes they are and sometimes not.

... working well together. We have not heard anything from the US team – but we are now working under the assumption that at this late stage they will not be joining the group.

SA is participating again and we are slow hearing from the UAE.

By stage 3, most team leaders had tangible feedback on team performance and participation, focused on moving the team forward and had reconciled themselves to some members not participating. This suggested they were accepting the ambiguity of

team participation, which Wadsworth and Blanchard (2015) would argue shows knowledge of people and the potential areas of misinformation. They also showed they had relationships with high-contributing team members at this time. For example, they referred to their more productive members by name, but referred to less productive participants by their country.

No choice but to proceed without them

I gave up trying to include them and now rely on those I know who are working and pay attention to deadlines.

Russia and India have been a bit off...they submit their part but it's not very detailed, very insufficient.

Some answer sporadically otherwise we are doing a lot of work together.

Most countries involved and active and now on track.

In the last 2 weeks participation increased

They started contributing a lot more

Stage 4, the final stage, involved finalising the proposal and preparing the proposal for submission. The data show that stage 4 in every year had high communication. In 2014, the leaders' interaction on the forum and with the team mentor was less frequent but issues had been resolved over the cycles. This suggests that less support was needed, which is also reflected by there being less conflict reported, and there were no deposed leaders. In every year, stage 4 focused on technical issues for project submission such as the size or format of the presentation and clarifying submission dates, which showed technical uncertainty rather than project uncertainty which was evident in stage 1. There were more direct questions in stage 4 than in stage 1 of each year, which suggested that the team leaders felt less likely to feel exposed owing to their earlier uncertainty.

Most leaders, except for those who had consistently focused on participation, no longer discussed participation as an issue, despite it being identified as an ongoing issue in their final reports. The activity in the team stages of this study may be more applicable to ad hoc teams than the model recommending performing and finalising (Hertel et al., 2005). However, there was a more task-directed approach than in the other stages which suggests cognitive and behavioural capabilities are needed, as proposed by Mukherjee, Lahiri, et al. (2012), in the attempts to ensure the team completed the project. Although leaders appear highly relational at the beginning, this may be a compensatory process to encourage participation. Equally, their apparent task-related (productivity) outlook in

the later stages is also combined with their relational interactions with the higher-performing participants. Once again these divisions may not be applicable to a virtual team where there is need for a constant thread of positive affect.

This study showed that team leaders' assessment of participation is not precise, and it is arguable that this may create unclear expectations of participation. Equally, Walther (1997) found that virtual teams have a tendency to resort to categorising and over attribute on minimal social cues. In this study, team leaders mentally categorise their team members, presumably to ascertain their level of support. The team leaders' identification of strong participants means they can form trusting relationships with them and mutually move the team on. It is also important for the team members to know that they have little opportunity of being supported later in the team if they have not been active earlier.

However, some of the categorisations could be (or could lead to) attribution where leaders may blame failure on shortcomings of followers rather than any other factors, which has been seen in traditional teams (Hackman & Johnson, 2009). Poor participation in virtual teams arises from diverse reasons (Nicol et al., 2003) and more awareness of this as a problematic team issue may be helpful as well as awareness of team leaders' expectations. Furthermore, as a guide for the team leader in assessing and addressing participation more accurately and systematically, it would be worth developing criteria for different levels of participation as well as the potential contributing factors.

7.5.3 The forming of three different groups of leaders

Drawing on the thematic analysis, the study showed that three distinct groups of leaders can be identified based on their attitude and approach to team participation. This analyses their practices and identifies the most effective in managing participation. There were team leaders who were positive (these included the winning leaders of each year); discussed participation the least, which suggests they were less affected by it, reported less team conflict and were more active and more positive. Some leaders focused on participation throughout the whole project and created a hierarchical leadership; they became dispirited and frustrated and experienced slower progress. A third group appeared less engaged with a lower online presence and were deposed in stage 3 when the deputies emerged as leaders.

Visionaries

The first group of leaders were forward-looking and able to ‘define a future desired state’ by indicating what is possible and sharing that vision with the team (Bass & Bass, 2008, p. 629). In this study, these leaders, coined *visionaries*, set up processes and schedules early, planned and reported frequent interaction with their team, recommended by Malhotra et al. (2007), and showed a positive interaction style (Balthazard et al., 2008). They had a more transformational interactional style with their positive affect and emphasis on building relationships, although they were also task-related and directional. A virtual team study on transactional and transformational styles found that teams preferred a transformational leadership (Ruggieri, 2009).

The team leaders used inclusive speech, appeared empathetic and had fewer participation issues, e.g., *our team; we* and *I will suggest it to the team and if everyone agrees*. In stage 1, one of the winning team leaders anticipated participation issues so she set a meeting agenda, wrote action plans and shared virtual platforms in an effort to help everyone. Another leader reported on the specific virtual platforms which kept everyone informed early on. Leaders reported consulting with their team on processes, which is indicative of a constructive style of interaction and helps group decision-making (Balthazard et al., 2008).

Keeping everyone together and participating is crucial to progress...giving everyone tasks is good and coming together so everyone can comment on others' work.

We are using google docs and had our first meeting via google hangout, the information on the collaborative online tools are a great help.

Only 14 people have voted for the strategy so far, therefore we are keeping the voting open until Monday

I recognised the confusion.

They were also active in contacting non-attendees and used inclusive speech in their reports suggesting that was their preferred interactive style *our team; we; suggest it to the team; if everyone agrees*. These team leaders reported using collaborative decision-making and discussed synchronous communication, such as Skype and Google+, in order to simplify the high task complexity of the project:

I will see what everyone thinks

I love it but will see what the team wants

The NZ students have suggested we use wiggio [a virtual platform] and I am happy with it but will see what the rest of the team want.

We will use Skype ...for all meetings. Dropbox for exchanging files and Facebook for quick notices ...for exchanging documents we use Dropbox ...the simpler the communication for the team the better, just a few tools on the same platform

These conversations show an awareness of the need for processes as well as for the members to feel involved, and can help to encourage team awareness which leads to the sharing of a task and team cohesion (Jang, 2009). It suggested they were using both task-related and socioemotional interaction. They created team cohesion, as necessary for team success (Bell & Kozlowski, 2002), and the relational and considerate interaction suggested empathy which is considered to help lower ambiguity and overcome participation issues (Wadsworth & Blanchard, 2015). This builds on recent virtual team research which suggested that leaders need to understand the followers' expectations and use this to present clear initial goals (Avolio et al., 2014).

...they might be too shy to say they don't understand

The *visionaries* included the three leaders of the annual winning teams. These winning leaders reported the fewest issues throughout the project, and reported setting up team schedules early and delegating tasks to encourage everyone to feel responsible for the team's success. This study showed that high-performing leaders can be identified as highly constructive. They maintained regular communication, wrote detailed and frequent meeting minutes in which they showed responsibility, were open to new ways of working, suggested solutions, offered to help others, had positive affect, and they developed processes which were linked to consideration for others. All of which show they use both task and socioemotional capabilities to lead their team and which are considered signs of a successful virtual leader (Malhotra et al., 2007). Their responses focused on helping team cohesion and being more empathetic to their team rather than being task driven, e.g.,

Only 14 people have voted for the strategy so far, therefore we are keeping the voting open until Monday.

...everybody is extremely motivated and we are progressing well.

You asked for us to complete the student attendance form. Is it okay if I forward you the minutes from the meeting please, it gives more details.

We work as a global team...all members take part in the decisions... we are in constant contact with each other...review each other's work, add to it and make amendments to ensure all members play a role.

...everyone seems to be participating and reading the posts. I established at the beginning of our work a timetable/deadline to every part of the project so that every member has an idea of what could happen and what to expect in advance.

I am thoroughly enjoying this experience and must thank you for your hard work as team mentor.

[Team members] been amazing and really stepped up.

Giving countries their own tasks is good and coming together so everyone can comment on each other's work.

A further example of socioemotional communication is a team leader who valued discretion within the team, and preferred to deal with a participation issue internally rather than having it reported to the students' lecturer:

We decided to deal with it [participation issues] internally and that worked well.

The contents page of a weekly report is below, showing a simple and clear structure which was similar to each report. All of this team leader's reports included an encouraging message to the team which suggested he had a motivational style:

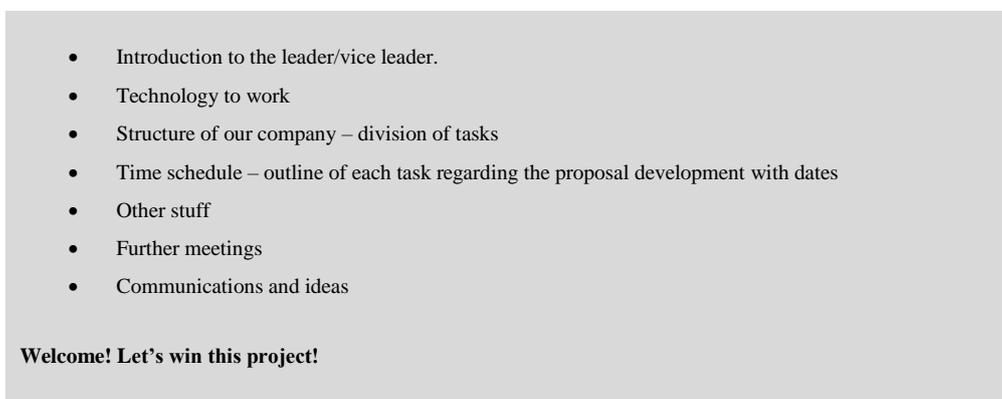


Figure 25 Contents page of a report (abridged) from a winning team leader.

An example of a final status report (below) to the team mentor from another winning team leader also shows positive affect and reports on participation from the team members:

Country A - they picked up the slack

Country B - Have been amazing, active contributors and ready to help out

Country C - Wonderful and stepped up

Country D – met deadlines and all contributed

Country E - He is a great active contributor

Country F – not contributed any work, always an excuse, did not complete

Country G – have not contributed and I emailed them back asking them to

Details of strong structure within the group which led to its cohesiveness

Everything was minuted so everyone was aware of what was going on and what everyone was doing.

Meeting minutes sent to all group members with follow up

If unable to make any meeting I would organise one-on- one to update them

Figure 26 Final status report from a winning team leader
(abridged with names and countries omitted).

The team leaders were focused on developing processes, i.e., a flow of linked activities, which help to advance the task, and it is arguable that, with the ambiguity and uncertainty of virtual teams, there is a greater need for more processes to reduce ambiguity, increase awareness and team communication and therefore provide both task and socio-emotional support. The winning leaders reported the fewest issues throughout the project, and showed that they had overcome this challenge and reported setting up team schedules early and delegated tasks to encourage everyone to feel responsible for the team's success, e.g.,

...everybody is extremely motivated and we are progressing well.

...everyone seems to be participating and reading the posts. I established at the beginning of our work a timetable/deadline to every part of the project so that every member has an idea of what could happen and what to expect in advance.

Hierarchical leaders

The study also showed that a hierarchical style of leadership can be identified. This second group of leaders were directive, task-related and unable to generate interaction or team cohesion. However, they also showed early optimistic comments which suggested the development of swift trust (Jarvenpaa & Leidner, 1999) in stage 1:

I love this course and the project, love, love, love it!

I am sure this project will help us become really valuable PR individuals

These hierarchical team leaders were more self-focused, intent on giving information and set up hierarchical practices which the IPA classify as task-related interaction rather than being relational (Bales, 1950). These provided fewer team processes and did not encourage discussion about the actions. For example, one of these team leaders sent a hierarchical chart with herself at the top to the team without prior discussion. This suggests a greater emphasis on a personal agenda than concern for the group outcome and is considered to be aggressive (Hambley et al., 2007). However, even though the hierarchical leaders had a task-related focus, they also used more socioemotional language when reporting their disagreement. These leaders became increasingly negative and dissatisfied and focused on poor participation. They used non-inclusive expressions, e.g., 'my team' and had a transactional style without any constructive comments:

I am extremely disappointed by the organisation of this project...leading a team with such bad organisation is just not possible.

Students from xx are very defensive blaming us for having a wrong perception about the ...)

Instead of being helpful and working towards the same goals, people tend to criticise...

They [the team] recognise my talent for chaos control

I think I spoke too soon (regarding the lack of participation)

I am officially assigning roles.

The team is struggling...

This study shows the hierarchical leaders demonstrated initial, highly-compensatory behaviour similar to the first group of leaders and when this was not reciprocated they showed divergent behaviour (Burgoon et al., 1995) and did not alter their expectations of participation. They became angry and excluded those they viewed as non-participants which is an example of the non-constructive behaviour seen in virtual teams (Balthazard et al., 2008).

I have not excluded anyone from the group I have just added a new platform...there is no communication on the first platform anymore.

Should I kick her out?

These leaders later expressed regret and recognised the need for more socioemotional communication.

I thought I had to be business-like and respected. I put a team structure in place which was too complicated and based on hierarchy...a team member said it was disempowering and I got rid of the structure but that then created uncertainty within the team...there is much I would change...mostly around my interactions with people showing more compassion, a better plan and letting the team know where we were.

These leaders were preoccupied with participation. This may be because they were directive and needed to have a more predictable team, which is challenging as virtual teams are prone to ambiguity (Wadsworth & Blanchard, 2015). They became angry and uncommunicative, becoming a 'faulty interactant' (Goffman, 1972, p. 113), alienated from the group and no longer spontaneously involved. However, they were highly communicative on the team leader forum and in emails, but were more concerned about issues and participation compared to the winning leaders, suggesting anxiety. Although these leaders assumed trust at the beginning, scholars suggest it has to be fostered to last over the long term with discussion about the actions being carried out, with monitoring and structuring (Crisp & Jarvenpaa, 2015; Jarvenpaa & Leidner, 1999). For example, the visionaries were able to foster the trust with their team processes showing a task and relational orientation.

The study suggests that a transactional approach only, in an ad hoc team, may not be successful at the beginning although Huang et al. (2010) found that it improved task cohesion when the media richness was low. Both transactional and transformational leadership have been found to have different manifestations in a virtual team (Balthazard et al., 2009). However, this study shows that these divisions may be too simplistic an approach to understanding the leadership of a virtual team.

The study showed that hierarchical team leaders, despite their poor team cohesion and negative reporting, can continue as leaders, which builds on studies that suggest hierarchical leadership may have less effect with increasing virtuality (Hoch & Kozlowski, 2014). For example, one leader reported later that she had sent a highly vituperative email to her team, which was essentially flaming, that is, when an email can be interpreted as antagonistic or unpleasant (Turnage, 2007). Although team communication with her stopped for a while, the project continued and she stayed in place as leader.

Scholars suggest that aggressive interactive styles may not be as damaging as expected because technology makes it easier for all members to contribute rather than being dominated by one aggressive team leader (Hambley et al., 2007). Additionally, email may filter out negative personality characteristics, as it may do with positive characteristics, (Monzani et al., 2014). The minimising and filtering effects of technology on virtual team leader interaction may also have an impact on a less forceful leader.

Laissez-faire leaders

The study showed that a third group of leaders with a laissez-faire style of leadership (Bass & Bass, 2008) can be identified. Although these leaders had been elected by their team, they did not show commitment by submitting regular student attendance sheets or minutes or reporting on any team processes. They were the only leaders who were not compensatory regarding participation at the beginning, or at least appeared to be much less compensatory than the others. They only briefly introduced themselves to the other team leaders on the team leader forum. This is an important practical finding, as if a laissez-faire leader can be predicted there can be early intervention to ensure team cohesion.

These leaders were later reported by their deputies to be slow to interact, did not create structure or encourage meeting attendance, and became increasingly absent from team meetings and discussions. In these five teams more work was carried out by the deputy in each team. These deputy team leaders sent emails to me in my role as team mentor and indicated that the team expected their leader to be present consistently, progress the project, provide direction, attend meetings and be highly communicative. In traditional teams, followers are considered vulnerable and trust the leader to have integrity and to do things in the interest of the followers (Grover et al., 2014), and therefore it is arguable that this would be even more desired in the challenging virtual team environment.

I am deputy team leader but have been working mostly in the team leader role, our team leader has been unable to attend meetings and I have completed the bulk of the work and we feel abandoned by the elected team leader.

When the team members' expectations of their leaders were not met, the trust was withdrawn because they could no longer depend on the leader's competence, integrity or commitment. Also, as the teams were new (ad hoc) and the students had not met their

team leaders before, there was no reservoir of trust which usually occurs over time in a face-to-face team (Andiappan & Treviño, 2011). At the same time, the laissez-faire leaders had not expected to commit so consistently:

...past three weeks I've been away a little, but I've lost my motivation, my suggestions were rarely accepted.

Therefore, both the laissez-faire team leaders and their team members had their expectations violated (Burgoon et al., 1995). Over the three cycles, the laissez-faire leaders were deposed and replaced by their deputies at the end of stage 3 (when the main part of the proposal was being written). This is a time when issues are believed to be more pronounced and leadership capabilities are needed to sustain the team (Mukherjee, Lahiri, et al., 2012). The deputy team leaders had been very active and arranged meetings, as this comment from a deposed TL conceded, e.g.,

Sophie [deputy and now leader] was fully involved from the beginning

Having a laissez-faire leader would create ambiguity in a team and the emerging leaders were shown to arrest this. This builds on findings showing that reducing ambiguity may require empathy (Wadsworth & Blanchard, 2015). It also reflects findings in a study showing emerging leaders were more task-oriented and initiated meetings which suggested that socioemotional activities may need to be reconceptualised (Yoo & Alavi, 2004; Ziek & Smulowitz, 2014). Equally, the team may have been more motivated in the final stages owing to the impending deadlines, as explained by the punctuated equilibrium model (Gersick, 1988).

This chapter has reviewed the inner workings of the student teams based on the team leader reports to the team mentor and the team leader postings on the team leader forum which have also helped to build a model of the team stages. It shows participation as a key issue and how leaders can improve interaction through being highly interactive; having a positive affect and creating early team processes which are driven by a directive yet concerned agenda.

7.6 Reflection

The team mentoring role allowed the team leaders to be closely monitored and gave information about their inner workings which allowed for change. The study revealed that participation was a consistent issue over all the stages in each cycle. Different types of leaders were identified which revealed constructive and destructive interactions,

particularly focusing on participation. Based on the ongoing data there were no hierarchical leaders after 2013, there were no deposed leaders after 2014 and 2014 had the most interaction of all the leaders' teams, with a more interactive team leader forum.

7.6.1 Theoretical implications

The results expand situational leadership in virtual teams by showing the need for a leader to be cognizant of the different and unexpected levels of participation in each stage and how these can be influenced. Equally, the stages require different leadership capabilities and this study advises against transactional leadership as a single approach, despite research preferring it in the early stage (Mukherjee, Lahiri, et al., 2012). It shows that relational activities are effective although they cannot be divorced from the more task-related activities.

The research found that efficient communication with positive affect can indicate successful team leaders. For example, these leaders had positive and effective interaction, well-defined guidelines, a detailed and well-instructed first stage, established roles and processes by empathizing with the needs of the team, positive affect, frequent interaction, and directive but not hierarchical interactions. In the early stages, the leaders also overcompensated in their efforts to interact with their team. This study is also consistent with findings that team leaders need to develop processes that connect to relational issues while building relationships in the initial stage which gives their team a sense of direction (Hertel et al., 2005; Malhotra et al., 2007; Salmon, 2004).

This study shows that teams inspired from the beginning can be identified as more effective suggesting that setting standards and goals is crucial at the beginning and reflects the need for transactional skills. Therefore, transactional capabilities of developing tasks, schedules and team processes may need to originate from a transformational, or relational, stance. These activities could help achieve telepresence, which currently has uncertain origins (Biocca et al., 2003). The study shows that a low telepresence can indicate a laissez-faire leader, even though the leader may feel they are active.

It builds on research which establishes virtual leaders as highly interactive (Iorio & Taylor, 2015) with clear writing and linguistic prolixity (Balthazard et al., 2009; Huffaker, 2010). The findings from this study suggest that both transformational and transactional leadership can continue throughout all the stages, and other research

recommends transformational leadership in the middle stages Mukherjee, Lahiri, et al. (2012).

This study shows that the final stages, along with the first stage, can also demand task-related capabilities as members were categorised on how productive they were. This may be because the team appears to become intrinsically motivated by stage 3, based on the team leaders' comments about participation and a team leader may need to move to a more transactional style in stage 4 to get the task completed. This also links to research that found team members have an urge to complete as deadlines approach (Gersick, 1988). This may also help to explain why the leaders who are perceived as less present, and less effective, are deposed by the team in stage 3.

Furthermore, the different levels of participation were not expected by the team leaders and as other researchers have found, it is difficult for a team leader to assess participation (Avolio et al., 2014; Morgan et al., 2014; Nicol et al., 2003). In addition, the study showed a clearly defined view of virtual team participation by team leaders is not evident and it is difficult to ascertain. For example, team members who are engaged may not be working and vice versa and this could be a valuable topic for more research. The study also showed that in the early stages, the team leaders were highly compensatory in encouraging interaction but they were not by stage 3, relying on the participants who have cooperated earlier. This is an issue for the recalcitrant team members who may have been expecting the same level of team leader support as they had earlier. However, by stage 3, the team leaders simply reciprocated communication (Burgoon et al., 1993), that is they were agreeable and inclusive but the team members had to be more proactive in catching up.

The study shows that participation can be a key issue in virtual teams. The use of the expectation violation theory (Burgoon et al., 2007) helps to explain team leader reactions to participation and shows that team leaders highly value the participation in the early stages. The team leaders themselves showed initial uncertainty and relational needs with their peer activity, where they interacted with other leaders developing camaraderie through exchanging ideas, or even giving advice to each other, despite the competitiveness of the project. Team leaders were not always overt about asking for help, suggesting they were face-saving (Goffman, 1972). For example, their questions to the team mentor and on the team leader forum were largely indirect and presented as conversations. Therefore, a supervisor may not realise team leaders need guidance in this critical stage. This style of reducing uncertainty may also be observed in the team

members and go unrecognised by the team leaders themselves, creating greater uncertainty. This further emphasises that highly socioemotional skills by leaders to develop task-related practices to reduce uncertainty are important in the early stages.

Furthermore, this socioemotional interaction of team leaders such as high reciprocity, and frequency of communication, is significant in creating relational effects and could be codified as team processes such as detailed minutes, regular feedback, clear schedules and virtual team platforms to encourage visibility of team collaboration.

This role links to the explanatory and directing interactive styles of DEPIQA identified in Chapter Five and shows how a combination of directive (which is more task-related) and explaining (which shows a concern for others) can build team cohesion and lead to task goals. It suggests that the socioemotional and task-related divisions of leadership may need to be reconceptualised as they are difficult to disentangle in virtual team leadership interactions. This study also helps to explain the low frequency of the questioning interactive style identified in Chapter Five as this research shows the leaders preferred a more face-saving style of indirect questions.

This showed that team leaders need to create interaction through having early well-defined guidelines and high early and ongoing interactivity with high empathy as well as being directive without being hierarchical. This links to the directive role in DEPIQA which showed that a directive style may work in an established team but was less likely to be effective in an ad hoc team where the team members were unfamiliar with each other and had many other contextual issues such as distance and technology to manage. This suggested a situational style of leadership would be more effective which allowed a leader to be flexible.

The research is helpful in understanding team leadership as it identifies three types of leaders that are likely to arise: visionary, laissez faire and hierarchical. The laissez-faire leaders are more likely to become deposed leaders and their deputy leaders the most likely to emerge as the new leaders. The laissez-faire leader shows a low telepresence that affects leadership. Although the laissez-faire leader is not apologetic, low telepresence also occurred in the apologetic interactive style identified by DEPIQA in Chapter Five. This emphasises how important it is for a leader to show direction and high interaction online, as well as show concern for the team members.

7.6.2 Practical implications

This study helps to shine a light on the different types of leadership within a team and what leadership interactive style can encourage more interaction and, subsequent to that, more participation. Visionary leaders have a constructive team interaction, the hierarchical team leaders can be aggressive or have a defensive interaction style, and the laissez-faire leaders are unable to hold on to their leadership.

It reinforces the view that leadership needs are different in each team stage, and especially needed in stages 1 and 4, and that leaders change their perception of participation as the team progresses. The research shows that ongoing interaction can be a significant element of their success, which is also argued by Iorio and Taylor (2015). The practical elements for this research identified the team stages which were consistent each year and allowed more efficient monitoring and support of the teams by understanding expectations during each stage. The team leader forum and the team mentor role provided a valid and unobtrusive monitoring system as well as support of team leaders which could be developed further with the tools such as the student attendance forms, which also worked as relational support for the team leaders. It was also successful in demonstrating the value of the team leader forum, having it adopted on the GlobCom site by the GlobCom board, as a support system for team leaders. It also validated the role of the team mentor with the lecturers replying to requests for information as well as the team leaders communicating with the team mentor.

This monitoring provided a view of the deposed leaders and a communication channel to the internal workings of the team and identified the likelihood of deposed leaders and offered support to the new leaders. It showed that a leader needs to be consistently present and engaged through all the stages and even in the last stage. It also shows that a hierarchical stance is ineffective and that a leader needs to reach out to the most active participants rather than focus on those who are not participating. However, an effective leader will ensure high communication at the beginning and the development of processes to ensure ongoing engagement.

Winning leaders showed high interaction and empathetic responses. However, strong direction also needs to be set as weak processes affect relational elements and lead to poor task cohesion. Team processes such as schedules, meeting minutes, and brainstorming are directive processes; these affect relational elements of the team, largely because they reduce ambiguity and uncertainty and provide a motivating factor.

Processes need to be developed from an empathetic stance, i.e., to improve collaboration and help team cohesion rather than form a task-related view. It builds on research that processes are relational in virtual teams and achieve both task and relational outcomes (Wickham and Walther, 2009).

Therefore, leadership must combine socioemotional characteristics as well as task-related behaviour. Team leaders also need to have positive affect and high socioemotional language, be sanguine and liaise with other team leaders in order to develop their own support systems but this should be developed at the beginning. Team leaders also need to be well organised, they have to ensure team stages are clear and established through marking the stages by the goals and develop team processes which help make it easier for everyone to communicate in order to create team cohesion and consequently participation, that is, processes which encourage communication rather than processes which encourage reporting. Therefore, it is recommended that team leader criteria be developed which encompass these qualities.

Based on the research, the following are proposed criteria for selecting a team leader. They are based on the need for high empathy, ability to be organised and directive and develop processes as empathetic responses, and be conversant with technology as well as constantly available. The following provides criteria, with rationale, for team leaders based on the above study. The checklist can be used for self-selection and or peer selection. The criteria can be graded and a final total calculated for comparisons to other potential team leaders.

The team leader has to delegate roles, but needs to avoid a hierarchical approach, and use explicit criteria to create the position roles, discussed in Chapter Five, to ensure the team can be self-managing. It is recommended the team has explicit position roles, as identified in the previous chapter to avoid ambiguity. It is also advisable that there are at least two people in each role, which Malhotra et al. (2007) also recommends. The previous two chapters found that team members did not take on unfamiliar or highly visible roles and therefore pairing students in roles may help to empower and legitimise their roles as well as lessen the workload. Ideally, the two students should be from different universities and even time zones in order to provide 'round the clock' input as well as a collaborative and interactive culture. The following team roles (with two people a role) are recommended for a virtual project management team and those participating in similar educational virtual teams.

Table 24 Team leader criteria using a grade of 1-5 (strongly disagree to strongly agree)

Team leader	Criteria	Grading
Availability	Have the time and willingness to carry out this very time-consuming role; this is often the limiting factor for student team leaders who over commit in their enthusiasm but later let the team down.	/5
Collaborative	Enjoys collaborative teamwork and is non-hierarchical but has the ability to make decisions, give feedback and lead.	/5
Discreet	Discreet and respects other people's privacy; this is important as personal communication should not always be shared with the team.	/5
Flexible	Comfortable with ambiguous and fast-moving situations; often the uncertainty of the project can be very frustrating.	/5
Relational	Feels rewarded by good friendships; when the proposal is challenging the friendships are mutually sustaining.	/5
Personable	Friendly and understated; not necessarily an extroverted or charismatic person.	/5
Multicultural	Has a multicultural appreciation, is not nation or hemispheric-centric, and understands how to work with time zones.	/5
Technological	Likes to develop online team processes to help others collaborate and be organised. Uses diverse virtual platforms in collaboration with the team without feeling overwhelmed and must have constant online access and availability over time zones.	/5
Total assessment		/40

Team leader and deputy team leader: The team leader needs to communicate with the team; the deputy needs to be responsible for structuring reports, coordinating meetings and sending the team mentor the meeting reports and student registers each week.

Editors: to collate presentation, update and edit it as required.

Virtual platformers: Set up virtual platform for document sharing, scheduling and job allocation and maintain its functionality. This requires some technology user mediation skills (Clear & MacDonell, 2011).

Designers: Format and design the presentation.

Researchers: Outline and collate the team research needed from the team.

The initiation of more roles is likely to encourage more interaction and activity and have students take more responsibility within the team rather than waiting for roles to emerge.

7.6.3 Supervisory team

This study, as well as those presented in the previous chapters, validates the role of the team mentor and the structures set up around it, such as the team leader forum and the regular reports which need to be formalised to ensure the feedback and monitoring that is seen to help virtual team interaction (Yoo & Alavi, 2004).

In summary, this chapter has shown the inner workings of ad hoc student-led virtual teams, based on reports from the team leaders. It has highlighted the challenges for team leaders and presented their leadership approaches. However, a team leader has more demands than a face-to-face leader and needs to convey telepresence which may develop through an early relational, flexible and directive approach as well as high interaction and a constant presence. This study also suggests more shared leadership roles need to be delegated within the team to ensure its ongoing functioning and help prevent the non-participation that occurs. The following chapter is a discussion of the full project outlining the research aims, theoretical and research context with an analysis of all the results followed by recommendations.

CHAPTER 8 CONCLUSION

8.1 Recapitulation of purpose

Virtual teams are recognised for their opportunities to share information globally, source expertise from around the world, cross geographical boundaries and be economically advantageous. However, despite their benefits, virtual teams are renowned for underperforming, poor participation and not reaching their goals. This study set out to determine how leaders could improve interactions³⁰ in virtual teams, within a PR organisational context, in order to ensure better team functioning, taking into account that traditional leadership models do not transfer easily to virtual teams. The second aim of this study was to improve GlobCom as a pedagogical project and to conceptualise leadership in virtual teams in the light of interactions performed. The first objective was done through implementing the results of the findings to improve the practical outcomes, the second is offered in developing the theoretical framework based on these findings.

Although a lack of interaction and consequent weak participation is recognised as a constant feature of virtual teams it is not clear whether it is because team members don't want to participate, are afraid to participate or are just thinking about it (Malhotra et al., 2007; Nicol et al., 2003). Established teams with their habitual actions have developed the trust and habitual practices to operate successfully, although there is uncertainty about what these are (Bell & Kozlowski, 2002). Virtual team leaders struggle to build team trust and although it occurs with higher interaction which leads to team progress, it is unknown how this can be consistently achieved.

According to group theory, leaders achieve team goals through ensuring the team maintenance, the meeting of individual needs and the achievement of the task (Bales, 1950; Benne & Sheats, 1948; Gibb, 1958). However, scholars recognise that face-to-face leadership does not always apply to virtual teams. This may be because leadership manifests differently in virtual teams. Although socioemotional aspects have been identified as crucial to these teams there is very little understanding of how to develop these relational aspects online as, despite their significant value, they are time consuming and interfere with the task-related orientation of a virtual team. For example, in a virtual team transformational leadership relies less on personality and more on written expression; trust arises quickly but can be short-lived, and some leaders are

³⁰ Interactions – sustained patterns of communication.

unable to convey authority. Equally, virtual teams show less relational activity and a less constructive interaction style and are therefore less likely to reach their goals (Balthazard et al., 2008; Branson et al., 2008). Leadership researchers have argued for distinctive roles to be implemented in these teams but it is uncertain what they are (Avolio et al., 2014). Even with various recommendations on new ways of working it is not clear how leadership should be performed and although virtual teams show stages with specific leadership requirements, there is little research on the later stages (Hertel et al., 2005; Mukherjee, Lahiri, et al., 2012). Consequently, researchers lament the dearth of leadership research in virtual teams and have called for more research to help identify new styles of leadership (Avolio et al., 2014; Hertel et al., 2005; Malhotra et al., 2007; Zander et al., 2013).

This action research project, undertaken on the international, experiential, longitudinal and authentic learning initiative, GlobCom, explored two years of an established supervisory virtual team and three years of ad hoc student virtual teams, and provides new insights into virtual team leadership. The sustainability of GlobCom is now (2017) crucial to the curriculum of PR degrees in more than 15 countries. This chapter highlights these findings, discusses their significance, the practical outcomes and contribution to academic scholarship in the field. It offers a reflection on the action research and recommendations for further research.

8.2 Research questions and research findings

The overall aim of this study was to investigate how team leaders could improve virtual team interaction. There were three interim research questions asked over the three-year project which formed three chapters. The first two questions focused on the established supervisory team of lecturers. The final question focused on three years of newly elected student team leaders running ad hoc teams, newly established each year. The following presents each question and a synopsis of the findings.

The first question aimed to determine how leaders elicit actions. The research involved identifying the specific action-eliciting emails and their interactive styles. This used a qualitative content analysis to identify both the action-eliciting emails and the interactive styles. These were mapped against the team stages which were identified through their functional events. The study used emails within one cycle of the supervisory team.

The research revealed new virtual team interaction styles, taking existing virtual team research beyond the simple division of constructive and passive interaction styles. This study identified that six specific leadership interactions are used to elicit actions in a virtual team. Each interactive style has a different level of success in eliciting actions and at different times. A directive and explanatory style is the most effective and most frequent and an apologetic style weakens leadership. However, a directive style used on its own did not generate feedback and more relational styles were needed to create the interaction which improves team awareness. The personalising interactive style was frequent by stage 4, when the students were finalising their proposals for submission, and was exercised to get feedback from the lecturers on their students' progress, which suggests that exercising a relational interactive style may help collaboration for individual tasks, even in an established team. Also a questioning style was found to work when associated with delivering information. A supervisory strategy comprising the directive and explanatory styles is effective but needs to be augmented with another specific style suitable for the activity in order to elicit actions and interactions.

The second major finding from this research question was the identification of an empirically-derived unique content analysis tool from the action-eliciting emails which identified six interactive styles: Directive, explanatory, personalising, questioning, immediacy and apologising to form the acronym DEPIQA. This was used to define interaction patterns and their effect within the distinct team stages. The research also indicated that stage 1, where the students were analysing the brief and planning their project, and stage 4, where students were preparing to submit their proposals, were highly active whereas earlier research has only identified high activity in stage 1.

The second question was to assess whether face-to-face roles could be applied to virtual teams. This applied a recognised model of traditional leadership roles to explore virtual team roles and how they emerged. The study mapped the competing values framework, a managerial tool of eight face-to-face leadership roles (Quinn, 1988) against the content of each leader's emails in order to identify roles, their frequency and timing as well as who performed them. This study used two cycles of the supervisory team, one of which was also used for the previous study.

The research showed that, when applying the competing values framework, the repertoire of roles is narrower in virtual teams than in face-to-face teams. Virtual team members perform the task-oriented control roles (coordinator, producer) more

frequently than the relational-style roles. As the team progressed and following action research intervention there was more interaction, more roles were performed and the relational role (facilitator) was performed frequently.

The research also showed that only those who had assigned roles (webmaster, conference host, team mentor and president) had the highest interaction and performed the riskier more visible roles requiring initiative (broker, innovator, director and mentor).³¹ One of the more significant findings to emerge from this study is that the face-to-face roles were interpreted differently in the virtual teams; therefore, the definitions were not all applicable to each role. The research also indicated, as in the former question, that stages 1 and 4 were highly active in both cycles.

The third question was to evaluate how leaders encourage participation in virtual teams and examined the traditional socioemotional and task-related leadership focus of leadership. The three-year action research of the student team leaders used a qualitative content analysis and thematic analysis to explore how team leaders perceive team participation and how they influence it, and the degree of relational skills versus task-related skills required to encourage participation. Data were from three cycles of student team leader emails to the team mentor and student team leader posts on the student team leader forum. These were formed into team stages which were identified through the functional stages of the proposal writing project.

The most obvious finding is that leaders who used relational team processes, as well as a directive approach were more effective in gaining team cohesion and were more satisfied. An example of a relational approach is ensuring that people are not isolated, improving communication rather than dictating direction, scheduling meetings to ensure everyone is informed, producing early minutes after a meeting to reduce uncertainty and ambiguity, rather than as an action plan, being discreet regarding interpersonal issues, and waiting for the team to make shared decisions before moving on.

The second major finding was that participation was the main concern for all student team leaders. This is shown in their being highly compensatory with team members at the beginning in an effort to encourage participation. The leaders became less compensatory as the team progressed, and by stage 3 showed they were relying on team members who were productive and whom they trusted. However, the leaders' attitude to

³¹ For example, only the president performed the director role and L3 performed the team mentor role.

participation changed over the team lifecycle and these attitudes suggested three types of leaders: the visionaries, who were more positive and became less worried about participation, hierarchical leaders who stayed focused on participation issues and reported ongoing team dissension, and laissez-faire leaders who were less engaged and later deposed by their team.

The study also showed that the student team leaders changed their perceptions about participation as the project progressed. Initially they focused on individual engagement but this changed to team members' individual productivity as the team progressed. The study also found that team members expect their leader to be fully engaged and accessible; otherwise team leaders are likely to be deposed and superseded by the deputy. The study also indicated that leaders required socioemotional support at the beginning but used face-saving techniques which made their needs less evident. These findings have significant implications for the understanding of how team leaders can elicit interactions, renegotiate face-to-face roles and improve participation.

8.3 Implications of the research findings

This action research on a pedagogical project has both practical and theoretical implications which can be applied to other virtual teams as well as used to build theory. It shows how leaders can elicit actions, identify roles and improve participation. On a practical level it identifies and recommends new virtual team leadership interaction behaviours, leadership management tools and roles. For example, it provides criteria for choosing a team leader, proposes new team leader roles and specific interactional leadership styles. These show that leaders can achieve tasks when they use relational and directive interactive styles which are about anticipating and addressing the team members' needs for interaction. On a theoretical level, the study provides foundational research which builds on virtual team leadership and provides a platform for further research on leadership interaction. The principal theoretical implication of this study is that affect is an important factor in driving interaction. Although both relational and directive leadership are important, they are used differently in a virtual team than a face-to-face team and therefore, it is questionable as to whether such a division should continue to exist in the virtual environment. The full implications of this study are presented under each research question and the following section then summarises their significance as a whole.

8.3.1 RQ1 What do team leaders do to elicit actions?

The study identifies specific and new interaction styles for team leaders to use when eliciting actions in virtual teams. These styles are directing, explaining, personalising, questioning immediacy and apologising. These have different levels of effectiveness depending on how they are used in combination with the other interaction styles which is significant for team leadership. These interactive styles are also found to have different levels of effectiveness during each team stage which means a team leader can know not only the best interaction style or styles needed but also when in the project they are most effective.

Furthermore, the research develops a leadership instrument, DEPIQA, which is formed from an acronym of these interaction styles. DEPIQA represents the full repertoire of the action-eliciting interactive styles used by leaders. This instrument can be used to identify the most effective leaders, the frequency of their different interactive styles and when they are used. DEPIQA can therefore function as a leadership instrument which can identify leadership styles, monitor leadership and also be used in coaching the team.

A significant finding is that some of these interaction styles are more effective than others which is helpful to leadership studies and leadership practice. For example, the high frequency of the explaining and directive styles were effective in eliciting actions whereas apologising was not and appeared to weaken the leader's telepresence. The directive style was task-related and provided direction, whereas the explaining style showed concern for others in the sense of offering help to the members. When the directive style was exercised alone, which the president did in stage 1, when students were planning their proposals, to announce roles and guidelines, it may have progressed the team but it did not generate feedback. However, in a virtual team feedback is understood to be needed to increase awareness and lower uncertainty (Jang, 2009).

This may mean that leaders may need to have the high interactivity of explaining and directing styles in combination. Although Jarvenpaa and Leidner (1999) argue that trust is developed with socialising, this study suggests that it is showing concern and helping that builds trust. This has some link to the later study which argues that actions need to be discussed to build trust. But interaction is necessary to find out what is happening in the team which reduces uncertainty (Jang, 2009). Knowing what other people are doing is a relational concept as it involves thinking about what others are doing. Additionally, directing and explaining in combination may be effective as they reduce ambiguity,

considered to be endemic in virtual teams (Wadsworth & Blanchard, 2015). However, in an established team where the norms are known, the directive and task-related style that was used at the beginning of this team may be suitable. Conversely, members may join an established team, as in this case, and they risk being isolated with the lack of interaction.

Although the apologising interactive style would seem to suggest a relational approach involving concern for others, it does not appear to be effective in eliciting actions in a virtual team. This may be because it is time-consuming and its perceived passivity doesn't engage the other person. Moreover, its lack of impact can reduce the sender's telepresence which makes the style even less likely to be effective. Equally it creates ambiguity, already considered to be endemic in a virtual team, which needs clarity. It may also be that a more assertive style is needed to gain attention in a virtual team. The questioning style can be used to reinvigorate the middle stages but only when associated with information, otherwise they are not effective in prompting interaction. Giving information is a relational concept in that it shows awareness and anticipation of what the other person needs as well as a need to move forward. The personalising style was helpful in getting feedback and may be useful in encouraging collaboration.

It became evident that those who were most interactive became more relational and increased their more collaborative interaction in the later stages. Additionally, only those who had been delegated explicit roles exercised the action-eliciting interaction styles. This suggests that the delegated roles legitimise their leadership among the team. However, this presents a framework which builds on interactive styles and more research would be helpful to further investigate their frequency and use over several virtual team cycles.

8.3.2 RQ2 How are face-to-face roles renegotiated in virtual teams?

The study showed that some leadership roles which are effective in face-to-face teams are not transferable to virtual teams. The functional roles of the competing values framework, which are traditionally recommended for leadership in face-to-face teams, are shown to become variable and unpredictable in virtual teams. In fact, definitions of face-to-face roles are seen to be ambiguous when used in virtual teams, and fewer roles are needed in virtual teams than face-to-face teams. This study shows that in virtual teams, the delegated roles, or position roles, are more effective than the functional roles of traditional teams,

This research builds on leadership theory, particularly the development of roles. It outlines and recommends new and distinct leadership roles which will also build telepresence, for which there are few guidelines (Biocca et al., 2003). This study offers unique insights into how relational roles, combined with directive roles, can encourage interaction in virtual teams, which builds on the results of the last research question regarding how leaders can elicit action.

This two-year study complements and validates the one-year study for research question 1, on the first cycle of this study. The smaller repertoire of roles manifested in the virtual teams than occurs in face-to face teams may be because it is harder to discern the difference between roles, unless they are pronounced, in the virtual environment. Alternatively, it may be that people were more comfortable in shared consensual roles rather than being innovative and risk being exposed. This suggests they were more interested in continuity and coherence to the team, rather than showing initiative. In a virtual team the situation is changing and the undefined roles may not have the same level of predictability or certainty as position roles. This may also explain why they did not take on the riskier roles unless they had a delegated position. This further develops the argument that delegated roles are important in a virtual team to encourage interaction and avoid ambiguity.

The task-related CVF roles of producer and coordinator were the most frequent whereas the relational roles, which were less frequent, may take longer to perform and their effects are not evident, and this builds on earlier research on the mentor role and the empathy in virtual teams (Wadsworth & Blanchard, 2015; Walvoord et al., 2008). Also, the task-related roles are more visible as they achieve something tangible, which helps overcome team ambiguity. However, the relational facilitator role became more frequent in the second cycle as it was performed in order to engage the team in more feedback. Equally, the higher activity in the second cycle of this study suggests that with better processes developed following team discussions and intervention, and more team familiarity, a more constructive interaction style, showing more relational roles and more interactivity, can arise as a team matures. This builds on established team research where team processes are considered better but it is uncertain how they are better (Bell & Kozlowski, 2002).

The director role was performed by only one person, the president. It was highly active and showed high initiative and high visibility. This may have discouraged others to take

on this role. Both cycles showed that the director role did not encourage feedback, as was seen in the directive interactive style of the previous study of the first cycle. However, a highly active role can mean the leader may overwork which is not sustainable. Therefore, despite an individual carrying out this role effectively there is a need for support. Rather than another person in this role, which appears to be effectively carried out by a highly directive and relational individual leader, support could be achieved through more activity in the other roles. Equally, although a strong director may move a project forward, interaction is still needed to make work visible and therefore encouraging engagement should be a feature of all roles. Although stimulating team interactivity is an important activity in a virtual team it is not listed as a criterion in the CVF, possibly because it is taken for granted in a face-to-face team.

The need for defined roles

Clarifying roles is essential in order to avoid ambiguity and ensure progress and they may not be the same as for traditional teams. Virtual teams need their own definitions to avoid this confusion and misinterpretation. Furthermore, position roles empower team members, have more legitimacy and arguably build telepresence, which suggests it would be better to stipulate position roles than wait for emerging roles to form, which can be unpredictable and also risk momentum loss in a virtual team. For example, the CVF mentor role criteria did not fit the GlobCom mentor role as the mentor more frequently performed the facilitator and coordinator roles. Also some roles are not able to be manifested in the virtual team stages that were studied, e.g., innovating and brokering occur outside the virtual team lifecycle or as singular roles and they are less visible in terms of their frequency of interaction.

8.3.3 RQ3 How can team leaders encourage participation?

The results of this three-year study of virtual team leadership further support the understanding that different leadership is needed from face-to-face teams. In addition, the practical outcome of this study has provided criteria which identify a team leader and can also be used to help develop a virtual team leader. The study also identifies team member roles which work in concert with the team leader roles developed in the previous chapter on the supervisory team.

Leaders are advised to take both a relational and directive approach to gain team cohesion in order to get team members to relate to the team and collaborate.

Additionally, the team leader is expected, by their team, to show positive affect, be fully

engaged and accessible. Previous research has noted the importance of tasks and processes in virtual teams, but has not identified how they can be established. These findings show that team cohesion and progress towards goals is better when processes are set up with a relational agenda, that is, helping the team members to communicate within the team, rather than providing impersonal action plans. These include developing team processes which keep team members informed and avoid ambiguity and uncertainty. Furthermore, the socioemotional interaction of team leaders, such as high reciprocity and frequency of communication, is significant in creating relational effects and could be codified as team processes such as detailed minutes, regular feedback, clear schedules and virtual team platforms to encourage visibility of team collaboration. Team leaders must also be empathetic and understand and respect personal issues and take time to ensure shared decision making, rather than adopting a hierarchical interactive style which is ineffective. Equally, discretion can be a form of empathy. For example, instead of discussing a team member's lack of participation with the team mentor, a team leader later reported that he wanted to deal with it internally, therefore allowing the potential non-participants to 'save face'.

The study also identified that participation was a common issue for team leaders. It is of particular concern at the beginning of the project and leaders show they are more likely to help their team members at this time. However, effective leaders are less likely to be concerned after the middle stage of the team lifecycle and rely on proven team members. This is significant in leadership strategy as it shows that employing new team members later in the project is not likely to be effective in building the team.

This is shown in the study when leaders initially categorised their team members in terms of participation which was linked to how much they trusted or valued them which may have been an effort to reduce their uncertainty. However, the team leaders' view of participation changes over the team stages to being more task-related. Leaders were highly compensatory at the beginning in attempts to encourage team participation and referred to members in terms of engagement. Attitudes changed from this relational terminology to being more relaxed although more task-related at the later stages, referring to team members in terms of productivity.

However, the team leaders also referred to the more productive team members in socio-emotional terms, suggesting trust was commensurate to perceived interaction, which is consistent with the view that more trust is seen with a high level of action (Crisp &

Jarvenpaa, 2015; Jarvenpaa & Leidner, 1999). This meant that when team members who had not participated earlier, finally made contact with their team leader in stage 3, the team leader simply reciprocated rather than over compensated, as they had done earlier. The recalcitrant team member was therefore expected to catch up with the team.

The more effective leaders were able to move on from the issue of team participation to focus on the project and were able to form a supportive cohort of team members. Leaders who stayed focused on team participation were consistently dissatisfied. Action research on virtual teams has already indicated that leadership may be more about developing and building relationships (Pauleen, 2003b) and in this study, leaders who reported focusing on relational activity reported less conflict in their teams than other leaders.

Team leaders are also shown to need support and this is more evident at the beginning of the project. However, the leaders' face-saving strategies can prevent coaches, team mentors or other supervisors from recognising the need for this support. The findings of this research expands the knowledge about the importance of socioemotional support at the beginning of a team for both the leader and team members which have significant implications for setting up team processes. It also correlates with the previous studies on the supervisory leadership team

These findings highlight the importance of pre-empting behaviour that undermines leadership of the team. For example, a hierarchical stance is ineffective with its task-related but limited relational quality. Other studies suggest that hierarchical leadership may have less effect with increasing virtuality (Hoch & Kozlowski, 2014).

Although high interactivity is recognized as signifying a leader (Iorio & Taylor, 2015) which this research corroborates, leaders who were highly interactive and hierarchical were not successful, which indicates that interactivity must also consider content. The study showed that a team expects their leader to be consistently present and engaged through all the stages and even in the last stage. A laissez-faire leader has less interactivity, is not engaged with the team and is likely to be deposed and supplanted by the deputy. The study identifies criteria for selecting a team leader and these are based on a leader's need to be empathetic, organised and the ability to develop processes which are directive and relational, as well as conversant with technology.

Additionally, team roles are identified for the GlobCom project which can be adapted to other ad hoc virtual teams which can include those involved in pedagogical projects, as well as virtual teams that are concerned with project management. These roles focus on encouraging interaction and making progress rather than letting team members wait for roles to emerge.

In summary, the student teams were ad hoc teams and showed more diverse leadership, a greater need for socioemotional support at the beginning and more evidence of weak participation than the established supervisory team. These ad hoc teams may need more emphasis on relational roles and ensuring that task processes are relationally driven, that is set up to encourage inclusion and communication. Ad hoc teams need to also consider setting up positional roles to ensure that there is full team engagement. However, more importantly, as these ad hoc teams are temporary, the appointment of a leader may be haphazard; therefore, the recommended criteria for a virtual team leader ensure that a more appropriate candidate is selected.

8.3.4 Stages in the team lifecycle

The study identified functional team stages, each showing different levels of interactivity, which can be transferred to other virtual teams. Although different leadership capabilities have been recommended for each team stage (Mukherjee, Lahiri, et al., 2012), this study identified variable levels of interaction in the different stages. These findings have significant implications for virtual team leadership and can be used to develop leadership in the different stages and help with understanding leadership needs such as knowing that, including a high level of leadership is required in the later stages, as well as in the initial stages. The study shows that functional team stages are formed by the key developmental events of a project. It showed that team stages 1 and 4 were more active than the other stages, whereas previous research has identified only stage 1 as highly active. The middle stages were consistently lower in activity and risked becoming quiescent. Therefore, interaction may need to be invigorated through the middle stages in order to ensure ongoing team cohesion and task achievement.

Overall, this study also strengthens the need to be aware of the distinct team stages and their specific needs. Stages are valuable in contextualising both the theoretical and practical constructs in terms of when and how interactions are most effective.

8.4 Significance

The research extends our knowledge of virtual team leadership and provides new evidence that it is different from face-to-face leadership. It argues that virtual team research needs to use empirically derived virtual team data to determine its own leadership needs rather than adapting traditional models to a new environment.

This research identified new interaction styles which take the research beyond the simple division of constructive and passive interaction styles currently discussed in virtual team theory. It also builds on leadership theory with the development of new roles rather than relying on the emerging functional roles which can create ambiguity because of their lack of definition. Most importantly, it offers insights into how relational processes, combined with a directive approach, can encourage interaction in virtual teams. The findings enhance our understanding of participation and how it is perceived and defined by team leaders, for whom it is a concern and an expectation, and how their view changes over time and affects their actions.

Although the importance of directive leadership is already accepted in virtual teams, the importance of socioemotional leadership has not been assessed previously and it was not clear how this is manifested. This study demonstrates that both relational and directive leadership is essential in a virtual team and relational leadership can be manifested in the developing team processes. These processes need to build relationships and communication within the team, rather than being task-directed.

The need for directive and explaining styles suggests that the task-related directive style creates interaction when it is combined with the explaining interactive style which is thinking about other people through providing clarity and direction. A directive style on its own does not encourage interaction which is needed in a virtual team to encourage awareness of the teamwork and reduce the uncertainty, which can affect team cohesion and prevent the team from reaching its goals. Equally, an explaining style on its own without the directive style can create cognitive overload and slow down interaction.

The face-to-face roles are less likely to transfer to virtual teams as fewer roles are needed and the definitions become ambiguous in a virtual team setting. Roles in virtual teams need to be clearer and relate to specific activities, that is, they need to be position roles rather than functional roles. The recommended and detailed specific position roles can also help to avoid a hierarchical approach and encourage the team to be self-

managing. Also the virtual team roles need to be more conscious of interaction as an essential element in all roles. Team leaders perform consensual control-related roles which show they prefer acting in a collaborative way, without the riskier roles which require more initiative and more visibility. This also means that the socioemotional roles defined by the CVF are not performed as frequently. However, this relational element may be manifested differently in a virtual team, with more focus on helping, creating relationships and collaborating, which is evident in the preference for the consensual roles. Equally, an apologetic style which seems relational does not manifest as caring or helpful (relational) in a virtual team as it does not move anything along and only demands attention from the receiver. This is further evidence of how virtuality can change interactive styles.

The study provides criteria for selecting a virtual team leader, as well as roles for team leaders and team members which is important in building a virtual team as well as in the training of leaders. Furthermore, understanding leadership issues can help support leaders and pre-empt potential issues, and avoid the risk of a deposed leader later in the team lifecycle.

The empirical findings in this study provide a new understanding of virtual team leadership in that it is difficult to create a firm division between socioemotional and task-related leadership. Although some scholars believe that virtual teams mean reconceptualising socioemotional processes, this study questions whether the traditional task-related and socioemotional divide is relevant to virtual team leadership.

8.4.1 This research has several practical applications

The empirical findings in this study provide guidelines for those who are supervising these teams overall.

The leadership management tool DEPIQA, recommends specific leadership interaction styles and can be used for monitoring purposes, intervention and for additional research. Specific virtual team position roles are recommended for team members who can then enhance the team leader role as well as ensure both task-related and socioemotional leadership. Equally the ineffective hierarchical and laissez-faire leadership styles can be observed early and the leader counselled on a different approach. The inventive team mentor forum and team mentor role, both developed as a result of the action research, is an effective virtual team process as it is relationally driven. It provides discreet monitoring opportunities as well as the potential for supporting team leaders by

generating opportunities for peer communication as well as supervisory support. For example, it is worthwhile to be mindful that the team leaders need support at the beginning of their team, but owing to their face-saving behaviour, e.g., indirect questions, this may not be evident. It also identifies criteria for a virtual team leader which takes into account the virtual team leadership challenges.

The development of the team stages model provides more succinct and practice-based functions than other studies have provided, which can be adapted to other virtual teams. It also shows the need for leadership in stage 4 which is a highly active stage. Attention is also drawn to the risk of a denouement in the middle stages, which may be acceptable if the work is internal to each team member or team, but also shows that there needs to be an interactivity to create team awareness so as not to lose momentum and effective activity in stage 4.

8.5 Reflection on the action research methodology

A key strength of this study was the use of action research as its methodology. It allowed for conscious intervention to improve practice as well as observe improvements in leadership. This action research, designed as a PhD project, has allowed for the deliberative and reflective engagement which Crawford, Morris, Thomas, and Winter (2006) argue is part of the reflection process to develop capabilities and knowledge. This has also allowed for the research to be presented to the GlobCom management team in a considered manner rather than suggesting rushed and unconsidered changes. Being a researcher in the project created a better understanding of my role in professional practice and the practice of others, and helped to validate my findings and understandings as well as the applicability to GlobCom.

Action research allowed, with the underlying pragmatic epistemological approach, a flexible and diverse means of collecting and analysing data. This included the development of a content analysis tool for interactive styles, the application of face-to-face roles to virtual teams and evaluation of how team leaders perceive and manage participation. The action research also benefited from the additional insights of analysing leaders in both an established supervisory team and the ad hoc student teams, over two cycles and three cycles respectively. The practice and research cycles meant that instead of looking at isolated cases it required waiting to reflect on both action research cycles over several cycles of the actual project. In this study, I acted largely as a qualitative researcher, as defined by Marshall and Rossman (2011), by observing

social phenomena holistically, systemically reflecting on my role in the research, was sensitive to my own biography and how it shaped the research, and used complex reasoning that was multifaceted and iterative.

However, as researcher, I was also performing the role of team mentor, and that of a lecturer of my own students and within the supervisory team of lecturers. Each role had conflicts within them and between them, and gave me often contrary perspectives which fed into the research. My role as team mentor meant I was supporting the student team leaders and communicating their team issues to the lecturers to help resolve with their students in the participating teams. However, unexpectedly, I found that when I had team leaders in my class, they were reluctant to share any issues they experienced as they thought it would affect their grades. This is indicative of the uncertainty the team leaders face at the beginning of the project and their early 'face-saving' acts (Goffman, 1972). Secondly, some student team leaders did not want lecturers informed of team issues as they were afraid any issues would be communicated by the lecturers directly to the students, and may not be handled diplomatically. At times this did happen and further emphasised the need to be explicit about these issues at the annual meeting where face-to-face communication helped to prevent any ambiguity. Additionally, I changed the team leaders' team forum and feedback forms to reduce the amount of information sought from the team leaders, thereby avoiding cognitive overload.

An advantage of action research is that it allows time to reflect on issues and compare several cycles with changes. Some of these were outside the remit of this study but still provided depth to the research. For example, I perceived the loneliness and frustration of the virtual team leader when my own students told me that they (and their other team members) were waiting for directions from the ('slow', 'inadequate') team leader. At the same time, I knew that the said team leader was frustrated that their team was not contributing. Additionally, it showed that student team leaders themselves may have felt they could not be too pushy and yet the team felt their leader should be more directive. On the other hand, if leaders were directive the team members were often resistant. All of these factors, plus the literature, reinforced the need for socioemotional skills at the beginning of team work, which really was only observed after several cycles and reflection on how to improve interactions.

Similarly, I had assumed some lecturers were more involved than they were. However, more surprising was the research evidence that some were more communicative than I

had realised. I perceived the leadership roles before doing the analysis but often didn't want to allocate them based on my own perceptions, e.g., I hadn't been aware of an apologetic interactive style. Consequently, I had to be very clear about my interpretations and ensure these were solidly grounded. Therefore, the development of the content analysis tool (DEPIQA) helped as did the CVF which had detailed role criteria.

Action research proved useful in addressing issues and reflecting on the outcome of intervention. However, changing things in virtual teams is a slow process and it was only in 2016 that the GlobCom team agreed that the team stages needed to be explicitly communicated to the students. It was also only then that the lecturers became aware that they had access to the team leader forum (although this had been emailed to them previously) suggesting that despite the familiarity with the virtual team, face-to-face communication is still a more reliable form of communication.

For example, in 2013, I held back the student team elections as the literature had argued that socialisation is needed at the beginning of these teams (Jarvenpaa & Leidner, 1999) and roles are not formed until stage 2 (Malhotra et al., 2007). However, this served to delay the team activity, which left me with less data owing to lower interaction from the team leaders who started later. Furthermore, the team elections were a habitual action to the lecturers and my delay served to frustrate them. This also suggested that processes and schedules needed to be planned in advance of the project to create the opportunity for feedback at that time. The following year the previous process for electing team leaders was maintained, i.e., for them to be elected when the teams decided, rather than waiting. This also meant that lecturers did not experience any changes from the routine. Changes from routine arrangements were always difficult to implement as it meant ideas needed explaining and simplifying and justifying. Even then they may not be agreed or even adhered to with many continuing on the same and previous processes. This is relevant to an established team where it has been found that habitual actions are important in team cohesion. It can suggest that team members stay with habitual actions rather than adopting new ways of doing things. This situation was a reminder to link both practice with the theory, rather than relying on just one of these cycles.

It also showed that ideas need testing and reflection with the other lecturers before implementing. As another example, I presented the CVF to the team at a lecturer meeting but there was minimal interest in it being adopted. I posted it on the team

mentoring website and went through it with my own students. They valued it only as an icebreaker exercise. Finally, through applying it to two years of virtual teams, I discovered it was not the ideal model for virtual teams whereas positional roles were more effective. On reflection I would not have proposed this model until I had my research results as a validation of the way forward. In this case, however, the action research allowed opportunity to explore the concept of roles further.

Furthermore, more recent presentations of this action research has led to more enthusiastic adoption of leadership roles and use of the proposed models, e.g., team leader criteria and team leader roles. A student introduction pack was developed following the most recent presentation of findings to the GlobCom board, and is now being implemented. This means that all students will follow the same guidelines which are endorsed by the lecturers. Previously, it was difficult to get all lecturers agreeing but with reiteration of research results and success of implementing recommendations, lecturers have become more enthusiastic and understanding about virtual teams.

So a slow approach to changes in a virtual team may be appropriate. Also there is a need for team consensus to create change as change needs to have a rationale which means exploring the observation and then codifying it into action. However, monitoring through the action research cycles meant we could report on small changes and improvements. Changes were addressed at the board meetings such as the construction of teams, when to elect team leaders, and delegating more roles. However, changes also mean more team involvement and willing participants. In fact, it is only in the last year that participants have come forward saying they wanted to be more involved and perform explicit roles. This may be because the action research has had the effect of helping them feel more involved and recognised their own role.

The situational leadership theory argues that leaders need to be flexible and adapt to the situation (Hersey & Blanchard, 1969), and the situation offers significant challenges for virtual team leadership. Group size can also affect leadership perception by influencing the amount of attention paid to the leader and too much input from others can mean there is less attention paid to the leader (Kahai, 2012). Keeping the team sizes equal and even limited each year was a challenge as universities had different size classes, some too small and some too large, making for variable numbers of participants in each team. The action research has noted the problems of oversized teams or ‘flooding’ of teams with too many students from one university and there are now explicit instructions that

there are two registered students a team. If a university has more students, they cannot be registered as GlobCom participants but can help their colleagues as an 'internal team' (see student introduction pack in appendix).

Specifically, in this project the situation changed depending on the client brief. For example, if the students perceived it as an interesting brief they were more engaged. If the conference was in a place they wanted to go it was more exciting. This can affect the leadership by influencing the amount of attention paid to the leader (Kahai, 2012). The different clients and different conferences extend the situational perspectives of leadership as they create different motivations.

The academic years also affected the situation. For example, the academic years were different. Germany always started earlier (although the GlobCom official starting date was later but they could organise their German team beforehand and prepare).

Therefore, there were more German team leaders than any other nationality. The US finished earlier so they effectively left before the project finished which became rather dispiriting for their team.

Although developing structure is significant in virtual teams, I saw that this was not effective through hierarchical management. It showed me that team satisfaction was crucial, especially if teams are to continue. Also team satisfaction is important simply for reputation reasons. Although performance is considered indicative of team success, this research suggested to me that satisfaction was more important as it ensured a positive reputation, attendance at the conference, empowered teams and a supervisory lecturer team that stayed together; important factors for any project.

However, the space for reflection and my growing understanding of virtual teams changed the way I was thinking about them. I had moved from trying to identify key performance indicators and building stronger processes to thinking about success in different terms.

By being more involved with the team and working with them and the team leaders more closely, I started to see success as sustainability. The milestone of having the proposals completed with cohesive teams who enjoyed the experience as well as working with lecturers who valued everyone's contribution became the main success factor and the grades students received appeared less important as they started valuing

the global experience in order to learn about themselves and others and reflect on the chaos, rather than try to conquer it.

The research has changed my thinking about success in a different way, rather than wanting immediate change. In GlobCom it came to mean valuing satisfactory and ongoing relationships where the teams were cohesive and the project was achieved and people felt they contributed. This represents the view of Bales (1950) where success is when the task, team cohesion and individual needs are in balance. The research explored how this balance can be achieved and the research insights build on existing theory as well as providing insights into the sustainability of GlobCom. More importantly, it has given me new ways to think about the project, and to reflect on possible changes. In the end, the success criteria were that another cycle had concluded, it had been pedagogically and culturally of benefit to the students and we were able to continue to the next cycle, with some improvements.

8.6 Contribution

The research provides empirical data which builds on existing theory in virtual teams and expands the multidisciplinary theoretical framework of PR. This is a foundational study that introduces a new platform to investigate virtual teams. The study offers a view into the inside workings of virtual teams which Gilson et al. (2015) notes is lacking in the literature and this in-depth knowledge and understanding of patterns allows a rich understanding of virtual teams with valid recommendations to improve their practice.

Overall, it shows the use of action research to build theory and shows how to create a more constructive interactive style in virtual teams and how interaction can be increased through a blending of task and socioemotional interactions. It adds to the research about leadership influence tactics by introducing a new leadership management tool, DEPIQA, which recommends the leadership interaction styles which elicit action. It also identifies the best combination of these styles and their timing during the team lifecycle. This research also confirms the importance of relational factors in encouraging interaction which have been advanced tentatively in earlier research (Wadsworth & Blanchard, 2015).

It applies the recognised face-to-face leadership roles of the competing values framework (Quinn, 1988) and finds these roles cannot be adapted to virtual teams, owing to

ambiguity, lack of visibility and the different manifestation of roles. New and specific position leadership roles, and their use within each team stage, are proposed which build on the need for a socioemotional approach. Roles are shown to develop in the initial team stage as opposed to previous research showing they developed in the second team stage. The research validated the use of conscious intervention to increase interaction in a team through improving processes if they originated as answering a socioemotional need.

The research also confirms and builds on earlier research regarding team stages as requiring different levels of interaction and leadership requirements. Most significantly, stages 1 and 4 are seen as highly active, whereas only stage 1 had been identified as highly active (Hertel et al., 2005; Malhotra et al., 2007).

It shows that the team leaders are primarily concerned about participation although they become more focused on productivity as the project progresses. Equally, leaders who are both relational and directive from the beginning have a more cohesive team and report more satisfaction, compared to hierarchical and laissez-faire leaders. The study identified new criteria for selecting a virtual team leader, which would also help in coaching and training team leaders. The study also identifies roles for team members that help progress the team.

The study confirmed the validity of the team mentor's role which provides discreet support and guidance to leaders, as well as being able to monitor the team leaders and create interaction among the team leaders through specific processes. It highlights the value of the team leader forum where team leaders can get advice and support and gauge their own progress by interacting with other team leaders as well as with the team mentor. Both the team mentor role and the team leader forum could be adapted to create a monitoring or coaching role within an organisation.

Furthermore, the study adds to the public relations body of knowledge in developing the understanding of virtual team leadership in global PR projects. This helps to ensure PR practitioners can take an effective leadership role in delivering global programmes via virtual teams and also presents the PR discipline as taking a lead in developing the theoretical framework for these teams.

8.7 Limitations

The study is drawn from the emails and team leader posts of a global PR pedagogical project. Although it is set up as an industry project, the student team leaders are not employees and nor are their student team members. This means there are not the same organizational responsibilities that can be enforced in the industry, such as accountability, authority and formal delegation of roles or reporting procedures. This may have affected how the team members performed in response to the team leaders and also may have meant the team leaders had less support than they would have in an industry situation. In addition, it may suffer from an uncertain student culture as opposed to a specific organizational culture.

Equally, as academics, the supervisory team did not have commercial imperatives and this may have affected the lecturers' individual participation, allowing some to be less involved than others depending on their goodwill towards the project and personal involvement. Also instead of urging students to deliver the most commercially advantageous project, lecturers may have been influencing a more academic approach in an effort to meet their own learning outcomes.

Furthermore, the schedule did not fit all the participating universities and this may have influenced motivation of some team members, for example the US students finished several weeks in advance of the project's completion and left the team. This may have affected the overall motivation in some of the teams, depending on the impact of the student. Equally, not all universities used the same weighting or marking for the project, which meant that students may have resented that more marks were at stake for them compared to others, or perceived that some universities were seen to value the project more than others.

There is a limited research on virtual team leadership interaction so this study had very few studies to build on or contrast, in terms of both methodology and theory. Therefore, action research was used to create the reflection cycle and build theory and practice.

Additionally, because of the lack of a virtual team theoretical platform on which to build theory, this study was exploratory and rather than imposing existing face-to-face leadership models it used these to explore virtual team leadership interaction, focusing on the interaction itself. The study developed a theoretical framework of leaders'

interaction in face-to-face teams to explore the dynamics of the communication over time. It takes a chronological view of leadership and how it is applied in traditional teams and then applies this to virtual teams, along with existing virtual team research. The study considers current leadership research findings and the widely-accepted theoretical models to build its own leadership interaction framework based on interpersonal and organisational theory. Therefore, it has not critically analysed leadership to create new face-to-face models but has used current theory to critically analyse and build virtual team leadership. This means it is not relying on the critical analysis of leadership in face-to-face teams but uses existing models to develop new virtual team leadership models. A more critical analysis of face-to-face leadership may have created different leadership perspectives and a different framework to apply to virtual teams, but it is questionable whether these would have had any greater validity.

The data is limited to email and TL forum posts to identify interactions and the pattern of interactions over time. Other interactions, although limited, took place. There were annual meeting notes and face-to-face meetings with the supervisory team and occasional phone calls but these were not part of the research and the majority of communication was the emails included in this study. There are also limitations as to what emails can tell us, especially the student team leader emails as these report on conversations with team members. This means that although the researcher did not have access to the conversation within the student teams themselves she did have access to the virtual student team leaders' emails to her as team mentor and the posts on the team mentoring site. This meant it was the team leaders' perceptions which were researched. This is appropriate as the research looks at the leader themselves although further research may wish to investigate the actual communication between the student team leaders and the students.

The project is continuous which has implications for virtual team processes and interactions. The virtual team processes are developed each year. The student teams are ad hoc teams and the supervisory team is an established team. Therefore, the results need to be considered within this context. For example, the established teams have developed the trust and practices to operate successfully. The continuing established nature of the yearly project along with the implications of this for a broader range of virtual team processes and interactions meant that the project had its own momentum which may also have affected the team processes.

Technology has not been investigated separately in this study, although it enables the virtuality of the teams. This may be seen as a limitation, especially in the light of the growing number of technology-user mediation studies. However, it was thought that foundational research on virtual team leadership interaction was needed as a baseline before investigating the impact of technological variables. Nevertheless, this is certainly an area for future research.

8.8 Recommendations for further research work

This longitudinal study has allowed a much-needed inside view of virtual teams. The results can be generalised to virtual teams in industry and other educational projects to help elicit actions, determine roles and encourage team participation. The exploratory approach of virtual leadership means that this research is foundational and provides a platform for further research and as a consequence has generated a number of questions in need of further investigation. Most obvious is the need to examine the findings of this study against global virtual PR teams in the industry.

The development of new interaction styles as outlined by DEPIQA needs to be reviewed in actual virtual team PR projects to determine the extent an industry environment affects the virtual team. Additionally, it would be helpful to identify the degree of similarity of the action-eliciting emails in this study to those in industry, particularly their frequency, style and timing. It would be useful to leadership theory to know who performs these styles and why, such as seniority, initiative or perceived responsibility. It would also be helpful to identify the effect of the other emails, that is apart from the action-eliciting emails, such as the socio-emotional emails, on actions.

Equally, the recommended position roles and team processes warrant more investigation in order to confirm the proposed model showing the roles against the team stages. There is also potential for deeper research into socioemotional and task-related interactions which would help clarify the importance, differentiation and effects of these styles. Research is needed to determine the different levels of leadership and how these relate to socioemotional and task activities. That is, how the activities generated by the leaders can be used not only to improve the socioemotional needs of the team but also to improve the project requirements. For example, this research showed that leaders can arrange effective meetings that are driven by the need to share information, which in turn leads to the development of tasks, and more understanding of creating more effective processes would be valuable to leaders. Overall, there needs to be more

research on specific relational and task-related interactions and how and when they are exercised in a virtual team and how they are blended and communicated.

The provisional study identified hierarchical leaders, laissez-faire leaders and visionaries, who included the winners. It would be valuable to assess the large visionaries group, who has a rather wide definition of positive team leaders. These could be assessed minus the winning team leaders, in order to identify any other groupings within these team leaders and more accurately assess team leader performance. Equally, the team leader criteria are new and would benefit from more research so it could be validated in different contexts. It would be useful to understand the degree to which the team leader criteria helped virtual team interaction. Additionally, it would be helpful to compare the leader's self-assessment, using the team leader criteria, compared to their peers' assessment and also that of the supervisory team, or equivalent.

Technology too has not been examined in this study and a foray into the use of virtual platforms and other technological initiatives would be of great benefit in understanding and improving virtual team leader interaction.

Although team stages are significant and show high activity in stages 1 and 4, more research could define these further by identifying how these stages are created and the activity and needs within each stage. This would allow for a more defined measurement of leadership interaction within each stage and a closer look at the different influences of the activity, and how they affect interaction.

More research would help the development and success of the team processes and action research would be recommended as the ideal methodology owing to its opportunities for reflection and practice cycles. Although field studies are recommended to ensure authentic research material, interviews may be helpful in determining perceptions from the various team leaders and team members in order to build an overall comprehensive picture of virtual teams.

REFERENCES

- Allport, G. W., & Odbert, H. S. (1936). Trait-names: A psycho-lexical study. *Psychological Monographs*, 47(1), 23-35. doi: 10.1037/h0093360
- Altheide, D. L. (1987). Reflections: Ethnographic content analysis. *Qualitative Sociology*, 10(1), 65-77. doi: 10.1007/BF00988269
- Altman, I., & Taylor, D. (1973). *Social penetration theory*. New York, NY: Holt, Rinehart & Minston.
- Altrichter, H., Kemmis, S., McTaggart, R., & Zuber-Skerritt, O. (2002). The concept of action research. *The Learning Organization*, 9(3), 125-131. doi: 10.1108/09696470210428840
- Andiappan, M., & Treviño, L. K. (2011). Beyond righting the wrong: Supervisor-subordinate reconciliation after an injustice. *Human Relations*, 64(3), 359-386. doi: 10.1177/0018726710384530
- Archer, C. J. (2009). *Internationalisation of the marketing curriculum: Desired in theory but what about practice?* Paper presented at the Australian and New Zealand Marketing Academy Conference, Melbourne Australia.
- Avolio, B. J., Kahai, S. S., Dumdum, R., & Sivasubramaniam, N. (2001). Virtual teams: Implications for e-leadership and team development. . In M. London (Ed.), *How People Evaluate Others in Organizations*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Avolio, B. J., Sosik, J. J., Kahai, S. S., & Baker, B. (2014). E-leadership: Re-examining transformations in leadership source and transmission. *The Leadership Quarterly 25th Anniversary Issue*, 25(1), 105-131. doi: 10.1016/j.leaqua.2013.11.003
- Avolio, B. J., Walumbwa, F., & Weber, T. (2009). Leadership: Current theories, research, and future directions. *Annual Review of Psychology*, 60, 421-449.
- Bainbridge, W. S. (2011). *The virtual future*. New York, NY: Springer.
- Bales, R. F. (1950). *Interaction process analysis*. Cambridge, MA: Addison-Wesley.
- Bales, R. F., & Strodtbeck, F. L. (1951). Phases in group problem solving. *Journal of Abnormal and Social Psychology*, 46, 485-495.
- Balthazard, P., Waldman, D., & Awater, L. (2008). The mediating effects of leadership and interaction style in face-to-face and virtual teams. In S. P. Weisband (Ed.),

- Leadership at a distance: Research in technologically-supported work* (pp. 127-149). New York, NY: Lawrence Erlbaum.
- Balthazard, P. A., Waldman, D. A., & Warren, J. E. (2009). Predictors of the emergence of transformational leadership in virtual decision teams. *The Leadership Quarterly*, 20(5), 651-663.
- Barrett, T., & Moore, S. (2011). *New approaches to problem-based learning: Revitalising your practice in higher education*. New York, NY: Routledge.
- Baskerville, R., & Myers, M. D. (2004). Special issue on action research in information systems: Making IS research relevant to practice: Foreword. *Mis Quarterly*, 329-335 Retrieved from <http://www.jstor.org/stable/25148642>.
- Bass, B. M. (1999). Two decades of research and development in transformational leadership. *European Journal of Work and Organizational Psychology*, 8(1), 9-32. doi: 10.1080/135943299398410
- Bass, B. M., Avolio, B. J., Jung, D. I., & Berson, Y. (2003). Predicting unit performance by assessing transformation and transactional leadership. *Journal of Applied Psychology*, 88(2), 207-218.
- Bass, B. M., & Bass, R. (2008). *The Bass handbook of leadership: Theory, research, and managerial applications* (4th ed.). New York, NY: Free Press.
- Belasen, A., & Frank, N. (2010). A Peek Through the Lens of the Competing Values Framework: What Managers Communicate and How. *Atlantic Journal Of Communication*, 18(5), 280-296. doi: 10.1080/15456870.2010.521475
- Belbin, R. M. (1985). *Management teams. Why they succeed or fail*. London, England: Heinemann.
- Belbin, R. M. (1993). *Team roles at work* (1st ed.). Oxford, England: Butterworth-Heinemann.
- Bell, B. S., & Kozlowski, S. W. J. (2002). A Typology of Virtual Teams: Implications for Effective Leadership. *Group & Organization Management*, 27(1), 14-49. doi: 10.1177/1059601102027001003
- Benne, K. D., & Sheats, P. (1948). Functional roles of group members. *Journal of Social Issues*, 4(2), 41-49. doi: 10.1111/j.1540-4560.1948.tb01783.x
- Berger, C. R., & Calabrese, R. J. (1975). Some explorations in initial interaction and beyond: Toward a developmental theory of interpersonal communication. *Human Communication Research*, 1(2), 99-112. doi: 10.1111/j.1468-2958.1975.tb00258.x

- Biocca, F., Harms, C., & Burgoon, J. K. (2003). Toward a more robust theory and measure of social presence: Review and suggested criteria. *Presence-Teleoperators And Virtual Environments, 12*(5), 456-480. doi: <http://mitpressjournals.org>
- Bjørn, P., & Ngwenyama, O. (2009). Virtual team collaboration: building shared meaning, resolving breakdowns and creating translucence. *Information Systems Journal, 19*(3), 227-253. doi: 10.1111/j.1365-2575.2007.00281.x.
- Blake, R. R., & Mouton, J. S. (1964). *Managerial grid: Key orientations for achieving production through people*. Houston, Texas: Gulf Publishing.
- Botan, C. H., & Taylor, M. (2004). Public relations: State of the field. *Journal of Communication, 54*(4), 645-661. 10.1111/j.1460-2466.2004.tb02649.x
- Brahm, T., & Kunze, F. (2012). The role of trust climate in virtual team. *Journal of Managerial Psychology, 27*(6), 595-614. doi: 10.1108/02683941211252446
- Branson, L., Clausen, T. S., & Sung, C.H. (2008). Group differences between virtual and F2F teams. *American Journal of Business, 23*(1), 65-70.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology, 3*(2), 77-101. doi: 10.1191/1478088706qp063oa
- Breuer, C., Hüffmeier, J., & Hertel, G. (2016). Does Trust Matter More in Virtual Teams? A Meta-Analysis of Trust and Team Effectiveness Considering Virtuality and Documentation as Moderators. *Journal of Applied Psychology, 101*(8), 1151-1177. doi: 10.1037/apl0000113
- Brewer, P. E., Mitchell, A., Sanders, R., Wallace, P., & Wood, D. D. (2015). Teaching and Learning in Cross-Disciplinary Virtual Teams. *IEEE Transactions on Professional Communication, 58*(2), 208-229. doi: 10.1109/TPC.2015.2429973.
- Brown, P., & Levinson, S. C. (1987). *Politeness: Some universals in language usage* (Vol. 4). Cambridge, England: Cambridge University Press.
- Burgoon, J. K. (1993). Interpersonal expectations, expectancy violations, and emotional communication. *Journal of Language and Social Psychology, 12*(1-2), 30-48. doi: 10.1177/0261927X93121003
- Burgoon, J. K., Dillman, L., & Stern, L. A. (1993). Adaptation in dyadic interaction: Defining and operationalising patterns of reciprocity and compensation. *Communication Theory, 3*, 295-316. doi: 10.1111/j.1468-2885.1993.tb00076
- Burgoon, J. K., Stern, L. A., & Dillman, L. (1995). *Interpersonal adaptation*. Cambridge, England: Cambridge University Press.

- Burgoon, J. K., Stern, L. A., & Dillman, L. (2007). *Interpersonal adaptation: Dyadic interaction patterns*. (pp. 81-111). Cambridge, England: Cambridge University Press.
- Burns, J. M. (1978). *Leadership* New York, NY: Harper & Row
- Cajander, A., Clear, T., & Daniels, M. (2009, 18-21 Oct.). *Introducing an external mentor in an international Open Ended Group Project*. Paper presented at the Frontiers in Education Conference, 2009. 39th IEEE.
- Cameron, K. S., Quinn, R. E., DeGraff, J., & Thakor, A. J. (2014a). *Competing values leadership: Creating value in organizations*. (2nd ed.). Cheltenham, England: Edwin Elgar.
- Cameron, K. S., Quinn, R. E., DeGraff, J., & Thakor, A. V. (2014b). *Competing values leadership* (2nd ed.). Cheltenham, England: Edward Elgar
- Cardno, C. (2003). *Action research: A developmental approach*. Wellington, New Zealand: New Zealand Council for Educational Research.
- Carlyle, T. (1840). *Heroes, hero-worship and the heroic in history*. London: England: Chapman and Hall.
- Carr, W., & Kemmis, S. (1986). *Becoming critical: Education, knowledge and action research*. London, England: Routledge.
- Carson, J. B., Tesluk, P. E., & Marrone, J. A. (2007). Shared leadership in teams: An investigation of antecedent conditions and performance. *Academy of Management Journal*, 50(5), 1217-1234. doi: 10.2307/AMJ.2007.20159921
- Cheshin, A., Rafaeli, A., & Bos, N. (2011). Anger and happiness in virtual teams: Emotional influences of text and behavior on others' affect in the absence of non-verbal cues. *Organizational behavior and human decision processes*, 116, 2-16. doi: 10.1016/j.obhdp.2011.06.002
- Clear, T. (2010). Exploring the notion of 'cultural fit' in global virtual collaborations. *ACM Inroads*, 1, 58-65.
- Clear, T., & MacDonell, S. G. (2011). Understanding technology use in global virtual teams: Research methodologies and methods. *Information and Software Technology*, 53(9), 994-1011. doi: doi:10.1016/j.infsof.2011.01.011
- Conchuir, E. O., Holmstron Olsson, H., Agerfalk, P. J., & Fitzgerald, B. (2009). Benefits of global software development: Exploring the unexplored *Software Process Improvement and Practice*, 14, 201-212.

- Connaughton, S. L., & Shuffler, M. (2007). Multinational and multicultural distributed teams: A review and future agenda. *Small Group Research*, 38(3), 387-412. doi: 10.1177/1046496407301970
- Connaughton, S. L., Williams, E. A., Linvill, J. S., O'Connor, E. J., & Hayes, T. (2010). Temporary virtual teams: An empirical examination. In S. D. Long (Ed.), *Communication, Relationships and Practices in Virtual Work* (pp. 123-143). Hershey, PA: Business Science Reference.
- Cordery, J., Soo, C., Kirkman, B., Rosen, B., & Mathieu, J. (2009). Leading parallel global virtual teams: Lessons from Alcoa. *Organizational Dynamics*, 38(3), 204-216. doi: 10.1016/j.orgdyn.2009.04.002
- Cramton, C. D. (2001). The mutual knowledge problem and its consequences for dispersed collaboration. *Organization Science*, 12(3), 346-371. doi: 10.1287/orsc.12.3.346.10098
- Crawford, L., Morris, P., Thomas, J., & Winter, M. (2006). Practitioner development: From trained technicians to reflective practitioners. *International Journal of Project Management*, 24(8), 722-733. doi: 10.1016/j.ijproman.2006.09.010
- Crisp, C. B., & Jarvenpaa, S. L. (2015). Swift trust in global virtual teams: Trusting beliefs and normative actions. *Journal of Personnel Psychology*, 12(12), 45-56. doi: 10.1027/1866-5888/a000075
- Crotty, M. (1998). *The foundations of social research: Meaning and perspective in the research process* (2nd ed.). Thousand Oaks, CA: Allen & Unwin.
- Crowther, D., & Lancaster, G. (2009). *Research methods: A concise introduction to research in management and business consultancy*. (2nd ed.). Amsterdam: Butterworth-Heinemann.
- Daft, R. L., & Lengel, R. H. (1986). Organizational information requirements, media richness and structural design. *Management Science*, 32(5), 554-571. doi: 10.1287/mnsc.32.5.554
- Daim, T. U., Ha, A., Reutiman, S., Hughes, B., Pathak, U., Bynumd, W., & Bhatia, A. (2012). Exploring the communication breakdown in global virtual teams. *International Journal of Project Management*, 30, 199-212. doi: 10.1016/j.ijproman.2011.06.004
- Dani, S. S., Burns, N. D., Backhouse, C. J., & Kochhar, A. K. (2006). The implications of organizational culture and trust in the working of virtual teams. *Proceedings of the Institution of Mechanical Engineers, Part B: Journal of Engineering Manufacture*, 220(6), 951-960. doi: 10.1243/09544054JEM415

- Davis, A., & Khazanchi, D. (2007). Does mutual knowledge affect virtual team performance? Theoretical analysis and anecdotal evidence. *American Journal Of Business*, 22(2), 57-65. doi: 10.1108/19355181200700010
- Dehghani, M., Shakery, A., Asadpour, M., & Koushkestani, A. (2013). A learning approach for email conversation thread reconstruction. *Journal of Information Science*, 39(6), 846-863.
- Denscombe, M. (2010). *The good research guide for small-scale social research projects* (4th ed.). Berkshire, England: Open University Press.
- Denzin, N. K. (1994). The art and politics of interpretation. In N. K. Denzin & Y. S. Lincoln (Eds.), *Handbook of qualitative research* (pp. 500-515). Thousand Oaks, CA: Sage Publications.
- Denzin, N. K., & Lincoln, Y. S. (1998). Entering the field of qualitative research. In N. K. Denzin & Y. S. Lincoln (Eds.), *Collecting and interpreting qualitative materials* (pp. 1-34). Thousand Oaks, CA: Sage Publications.
- Dewalt, K. M., Dewalt, B. R., & Wayland, C. B. (2000). Participant observation. In R. H. Bernard (Ed.), *Handbook of methods in cultural anthropology* (pp. 259-299). Lanham, MD: AltaMira Press.
- Dewey, J. (1932). Philosophy and civilization. *Philosophical Review*, 41(324). doi: 10.2307/2179154
- Dill, D. D. (1982). Management Teams: Why they succeed or fail. Author: R. Meredith Belbin. Heinemann, 1981. *R&D Management*, 12(3), 147-148. doi: 10.1111/j.1467-9310.1982.tb00500.x
- Drake, R. M. (1944). A study of leadership. *Journal of Personality*, 12(4), 285-289. doi: 10.1111/j.1467-6494.1944.tb01964.x
- Duarte, D. L., & Snyder, N. T. (2006). *Mastering virtual teams: strategies, tools, and techniques that succeed*. San Francisco, CA: Jossey-Bass.
- DuFrene, D. D., & Lehman, C. M. (2012). *Managing virtual teams*. New York, N.Y.: Business Expert Press.
- Ebrahim, N. A., Ahmed, S., & Taha, Z. (2009a). Virtual R&D teams in small and medium enterprises: A literature review. *Scientific Research and Essays*, 4(13), 1575-1590.
- Ebrahim, N. A., Ahmed, S., & Taha, Z. (2009b). Virtual teams: A literature review. *Australian Journal of Basic and Applied Sciences*, 3(3), 2653-2669.
- Elo, S., & Kyngäs, H. (2008). The qualitative content analysis process. *Journal of Advanced Nursing*, 62(1), 107-115. doi: 10.1111/j.1365-2648.2007.04569.x

- Fairclough, N. (2009). Critical discourse analysis as a method in social scientific research. In R. Wodak & M. Meyer (Eds.), *Methods for critical discourse analysis*. London, England: Sage.
- Falkheimer, J. (2007). Anthony Giddens and public relations: A third way perspective. *Public Relations Review*, *33*, 287-293. doi: 10.1016/j.pubrev.2007.05.008
- Falkheimer, J., & Heide, M. (2014). From Public Relations to Strategic Communication in Sweden: The Emergence of a Transboundary Field of Knowledge. *Nordicom Review*, *35*(2), 123-138.
- Falkheimer, J., Heide, M., Nothhaft, H., Platen, S. v., Simonsson, C., & Andersson, R. (2017). Is Strategic Communication too important to be left to Communication Professionals? Managers' and coworkers' attitudes towards strategic communication and communication professionals. *Public Relations Review*, *43*, 91-101. doi: 10.1016/j.pubrev.2016.10.011
- Ferguson, Y. H., & Mansbach, R. W. (2012). *Globalization: the return of borders to a borderless world?* Oxon, England: Routledge.
- Ferrazzi, K. (2014). Managing yourself: Getting virtual teams right. *Harvard Business Review*, *92*(12), 120-123 Retrieved from <https://hbr.org/2014/2012>.
- Festinger, L. (1957). *A theory of cognitive dissonance* Stanford, CA: Stanford University Press.
- Fiedler, F. E., & Chemers, M. M. (1967). *A theory of leadership effectiveness*. New York, NY: McGraw Hill.
- Flammia, M., Cleary, Y., & Slattery, D. M. (2010). Leadership roles, socioemotional communication strategies, and technology use of Irish and US students in virtual teams. *IEEE Transactions on Professional Communication*, *53*(2), 89-101. doi: 10.1109/TPC.2010.2046088
- Galton, F. (1883). *Inquiries into the human faculty and its development* (1st ed.). London, England: Macmillan
- Gersick, C. J. G. (1988). Time and transition in work teams: Towards a new model of group development. *Academy of Management Journal*, *31*, 9-41. doi: 10.2307/256496
- Gibb, C. A. (1958). An interactional view of the emergence of leadership. *Australian Journal of Psychology*, *10*(1), 101-110. doi: 10.1080/00049535808255958
- Gilson, L. L., Maynard, M. T., & Bergiel, E. B. (2013). Virtual team effectiveness: An experiential activity. *Small Group Research*, *44*(4), 412-427. doi: 10.1177/1046496413488216

- Gilson, L. L., Maynard, M. T., Young, N. C. J., Vartiainen, M., & Hakonen, M. (2015). Virtual teams research 10 years, 10 themes, and 10 opportunities. *Journal of Management*, 41(5), 1313-1337. doi: 10.1177/0149206314559946
- Glasser, B., & Strauss, A. (1967). *The development of grounded theory*. Chicago, Ill: Alden.
- Global Alliance for Public Relations and Communication Management. (2012). Melbourne mandate. Retrieved 10 May 2013, 2013, from <https://melbournemandate.wordpress.com/>
- Goffman, E. (1972). *Interaction ritual: Essays on face-to-face behaviour*. London: England: Penguin Press.
- Goldkuhl, G. (2004). *Meanings of pragmatism: Ways to conduct information systems research*. Paper presented at the Second International Conference on Action in Language, Organisations and Information Systems (ALOIS 2004), Linköping University, Sweden.
- Goldkuhl, G. (2012). Pragmatism vs interpretivism in qualitative information systems research. *European Journal of Information Systems*, 21(2), 135-146. doi: 10.1057/ejis.2011.54
- Gonzalez-Perez, M. A., Velez-Calle, A., Cathro, V., Caprar, D. V., & Taras, V. (2014). Virtual teams and international business teaching and learning: The case of the Global Enterprise Experience (GEE). *Journal of Teaching in International Business*, 25(3), 200-213. doi: 10.1080/08975930.2014.925738
- Gordon, A. (2011a). *Student virtual team challenges*. Paper presented at the GlobCom VIII International symposium on global corporate communication, University of Lluís Ramon, Barcelona, Spain.
- Gordon, A. E. (2011b). *Public relations* (1st ed.). Oxford, England: Oxford University Press.
- Gordon, A. E., & Picherit-Duthler, G. (2009). *Teaching and practicing international public relations in virtual teams*. Paper presented at the Stirling 21 - CIPR Academic Conference, 2009., University of Stirling, Scotland.
- Graen, G. (1976). Role-making processes within complex organizations In M. D. Dunnette (Ed.), *Handbook of industrial and organizational psychology* (pp. 1201-1245). Chicago, IL: Rand-McNally.
- Graen, G. B., & Uhl-Bien, M. (1995). Relationship-based approach to leadership: Development of Leader-Member Exchange (LMX) theory of leadership over 25

- years: Applying a multi-level multi-domain perspective. *The Leadership Quarterly*, 6(2), 219-247. doi: 10.1016/1048-9843(95)90036-5
- Gray, D. E. (2009). *Doing research in the real world* (2nd ed.). London, England: Sage.
- Gregory, A. (2011). The state of the public relations profession in the UK: A review of the first decade of the twenty-first century. *Corporate Communications: An International Journal*, 16(2), 89-104. doi: 10.1108/13563281111141633
- Gregory, A., & Halff, G. (2013). Divided we stand: Defying hegemony in global public relations theory and practice? *Public Relations Review*, 39(5), 417-425
- Gregory, A., & Watson, T. (2008). Defining the gap between research and practice in public relations programme evaluation—towards a new research agenda. *Journal of Marketing Communications*, 14(5), 337-350.
- Grover, S. L., Hasel, M. C., Manville, C., & Serrano-Archimi, C. (2014). Follower reactions to leader trust violations: A grounded theory of violation types, likelihood of recovery, and recovery process. *European Management Journal*, 32(5), 689-702. doi: 10.1016/j.emj.2014.01.002
- Grunig, J. E. (2006). Furnishing the edifice: Ongoing research on public relations as a strategic management function. *Journal of Public Relations Research*(2), 151-176. doi: 10.1207/s1532754xjpr1802_5
- Grunig, J. E. (Ed.). (1992). *Excellence in public relations and communication management*. Hillsdale, NJ: Lawrence Erlbaum.
- Grunig, J.E., & Grunig, L.A. (2008). Excellence theory in public relations: Past, present and future. In A. Zerfaß, A., Amsterdamska, O., Sriramesh, K. (Eds.). *Public relations research: European and international perspectives in innovation*. Weisbaden, Germany: Springer. 327-347
- Grunig, J. E., & Hunt, T. (1984). *Managing public relations*. Fort Worth: Holt.
- Guest, G., MacQueen, K. M., & Namey, E. E. (2012). *Applied thematic analysis*. Thousand Oaks, CA: Sage Publications.
- Guinalfú, M., & Jordán, P. (2016). Building trust in the leader of virtual work teams. *Spanish Journal of Marketing*, 20(1), 2058-2070. doi: 10.1016/j.reimke.2016.01.003
- Hackman, M. Z., & Johnson, C. E. (2009). *Leadership: a communication perspective*. Long Grove, IL: Waveland Press.
- Hallahan, K., Holtzhausen, D., Van Ruler, B., Verčič, D., & Sriramesh, K. (2007). Defining strategic communication. *International journal of strategic communication*, 1(1), 3-35. doi.org/10.1080/15531180701285244

- Hambley, L. A., O'Neill, T. A., & Kline, T. J. B. (2007). Virtual team leadership: The effects of leadership style and communication medium on team interaction styles and outcomes. *Organizational Behavior and Human Decision Processes*, 103(1), 1-20.
- Hersey, P., & Blanchard, K. H. (1969). *Management of organizational behavior*. Englewood Cliffs, NJ: Prentice-Hall.
- Hertel, G., Geister, S., & Konradt, U. (2005). Managing virtual teams: a review of current empirical research. *Human Resource Management Review*, 15, 69-95.
- Hoch, J. E., & Kozlowski, S. W. (2014). Leading virtual teams: Hierarchical leadership, structural supports, and shared team leadership. *Journal of Applied Psychology*, 99(3), 390-403. doi: 10.1037/a0030264
- Hodges, C. (2013). Cultural imagination in public relations education. *Public Relations Inquiry*, 2(27), 27-50. doi: 10.1177/2046147X12459988
- Hollingshead, A. B. (1998). Communication, learning, and retrieval in transactive memory systems. *Journal of Experimental Social Psychology*, 34(5), 423-442. doi: 10.1006/jesp.1998.1358
- ¹ Holmström, S. (2007). Niklas Luhmann: Contingency, risk, trust and reflection. *Public Relations Review*, 33 (Special Issue on Social Theory), 255-262. doi:10.1016/j.pubrev.2007.05.003
- House, R. J., & Aditya, R. N. (1997). The social scientific study of leadership: Quo vadis? *Journal of Management*, 23(3), 409-473. doi: 10.1016/S0149-2063(97)90037-4
- House, R. J., Hanges, P. J., Javidan, M., Dorfman, P. W., & Gupta, V. (2004). *Culture, leadership, and organizations: The GLOBE study of 62 societies*. Thousand Oaks, CA: Sage Publications.
- Huang, R., Kahai, S., & Jestice, R. (2010). The contingent effects of leadership on team collaboration in virtual teams. *Computers in Human Behavior*, 26, 1098-1110.
- Huffaker, D. (2010). Dimensions of leadership and social influence in online communities. *Human Communication Research*, 36(4), 593-617. doi: 10.1111/j.1468-2958.2010.01390.x
- Humphrey, D. (2002, 24-26 June). *Intercultural communication: a teaching and learning framework*. Paper presented at the Setting the Agenda: Languages, Linguistics and Area Studies, Manchester Conference Centre, UK

- Ihlen, Ø., & van Ruler, B. (2007). How public relations works: Theoretical roots and public relations perspectives. *Public Relations Review*, 33(Special Issue on Social Theory), 243-248. doi:10.1016/j.pubrev.2007.05.001
- Iorio, J., & Taylor, J. E. (2015). Precursors to engaged leaders in virtual project teams. *International Journal of Project Management*, 33(2), 395-405. doi: 10.1016/j.ijproman.2014.06.007
- IS (information system or information services). (2015). *Computing fundamentals*. Retrieved July 10, 2015, from <http://whatis.techtarget.com/definition/IS-information-system-or-information-services>
- Jackson, B., & Parry, K. (2011). *A very short fairly interesting and reasonably cheap book about studying leadership* (2nd ed.). London: Sage.
- Jang, C.Y. (2009). Facilitating trust in virtual teams: The role of awareness. *Competition Forum*, 7(2), 399-407.
- Jang, C.Y. (2013). Facilitating trust in virtual teams: The role of awareness. *Journal of Competitiveness Studies*, 21(1/2), 61 Retrieved from <http://www.eberly.iup.edu/ASCWeb/>.
- Jarvenpaa, S. L., & Leidner, D. E. (1999). Communication and trust in global virtual teams. *Organizational Science*, 10(6), 791-815.
- Jarvenpaa, S. L., Shaw, T. R., & Staples, D. S. (2004). Toward contextualized theories of trust: The role of trust in global virtual teams. *Information Systems Research*, Vol. 15(3), 250-267. doi: 10.1287/isre.1040.0028
- Johansson, C. (2007). Goffman's Sociology: An Inspiring Resource for Developing Public Relations Theory. *Public Relations Review*, 33 (3). doi: 10.1016/j.pubrev.2007.05.006
- Joshi, A., Lazarova, M. B., & Liao, H. (2009). Getting everyone on board: The role of inspirational leadership in geographically dispersed teams. *Organization Science*, 20(1), 240-252. doi: 10.1287/orsc.1080.0383
- Kahai, S., Jestire, R., & Huang, R. (2013). Effects of transformational and transactional leadership on cognitive effort and outcomes during collaborative learning within a virtual world. *British Journal of educational technology*, 44(6), 969-985. doi: 10.1111/bjet.12105
- Kahai, S. S. (2012). Leading in a digital age: What's different, issues raised, and what we know. In M. C. Bligh & R. E. Riggio (Eds.), *Exploring Distance in Leader-Follower Relationships: When Near is Far and Far is Near* (pp. 63-108). New York, N.Y: Routledge/Taylor Francis Group.

- Kahai, S. S., Carroll, E., & Jestice, R. (2007). Team collaboration in virtual worlds. *ACM SIGMIS Database*, 38(4), 61-68. doi: 10.1145/1314234.1314246
- Kayworth, T. R., & Leidner, D. E. (2001). Leadership Effectiveness in Global Virtual Teams. *Journal of Management Information Systems*, 18(3), 7-40. doi: 10.1080/07421222.2002.11045697
- Kirschner, P., Strijbos, J. W., Kreijns, K., & Beers, P. J. (2004). Designing electronic collaborative learning environments. *Educational Technology Research and Development*, 52(3), 47-66.
- Klein, H., & Myers, M. (1999). A set of principles for conducting and evaluating field studies in information systems. *MIS Quarterly*, 23(1), 67-93.
- Kock, N. (2005). *Business process improvement through e-collaboration: Knowledge sharing through the use of virtual groups*. Hershey, PA: Idea Group Publishing.
- Kock, N. F., McQueen, R. J., & John, L. S. (1997). Can action research be made more rigorous in a positivist sense? The contribution of an iterative approach. *Journal of Systems and Information Technology*, 1(1), 1-23. doi: 10.1108/13287269780000732
- Kolb, D. A. (2014). *Experiential learning: Experience as the source of learning and development*. (2 ed.). Upper Saddle River, N.J: Pearson.
- Konradt, U., & Hoch, J. (2007). A Work Roles and Leadership Functions of Managers in Virtual Teams. *International Journal of e-Collaboration*, 3(2), 16-35. doi: 10.4018/jec.2007040102
- Krippendorff, K. (2013). *Content Analysis: An introduction to its methodology* (3rd ed.). Thousand Oaks, CA: Sage.
- Krumm, S., Kanthak, J., Hartmann, K., & Hertel, G. (2016). What does it take to be a virtual team player? The knowledge, skills, abilities, and other characteristics required in virtual teams. *Human Performance*, 29(2), 1-20. doi: 10.1080/08959285.2016.1154061
- L'Etang, J. (2008). *Public relations: Concepts, practice and critique*. London, England: Sage.
- L'Etang, J. (2013). Public Relations: A Discipline in Transformation. *Sociology Compass*, 7(10), 799-817. doi: 10.1111/soc4.12072
- Lave, J. (1988). *Cognition in Practice: Mind, mathematics, and culture in everyday life*. Cambridge, England: Cambridge University Press
- Ledbetter, A. M., Mazer, J. P., DeGroot, J. M., Meyer, K. R., Mao, Y., & Swafford, B. (2010). Attitudes toward online social connection and self-disclosure as

- predictors of Facebook communication and relational closeness. *Communication Research*, 38(1), 27-53. doi: 10.1177/0093650210365537
- Lee-Kelley, L., & Sankey, K. (2008). Global virtual teams for value creation and project success: A case study. *International Journal of Project Management*, 26, 51-62.
- Lee, A. S., & Baskerville, R. L. (2003). Generalizing generalizability in information systems research. *Information Systems Research*, 14(3), 221-243. doi: 10.1287/isre.14.3.221.16560
- Lee, M. R. (2013). *Leading virtual project teams: adapting leadership theories and communications techniques to 21st century organizations*. Baco Raton, FL: CRC Press.
- Lewin, K. (1944). A research approach to leadership problems. *The Journal of Educational Sociology*, 17(7), 392-398. doi: 10.2307/2262546
- Lewin, K. (1946). Action research and minority problems. *Journal of Social Issues*, 2(4), 34-46. doi: 10.1111/j.1540-4560.1946.tb02295.x
- Lewin, K., & Heider, G. M. (1936). *Principles of topological psychology*. New York, NY: McGraw-Hill.
- Lindesmith, A. R., Strauss, A. L., & Denzin, N. K. (1975). *Social psychology* (4th ed. Vol. 4th). Hinsdale, IL: Dryden Press.
- Littlejohn, S. W., & Foss, K. A. (2010). *Theories of human communication* (10th ed.). Long Grove, IL: Waveland Press.
- Liu, X., Magjuka, R. J., & Lee, S.-H. (2008). An examination of the relationship among structure, trust, and conflict management styles in virtual teams. *Performance Improvement Quarterly*, 21(1), 77. doi: 10.1002/piq.20016
- Maddux, H. C., & Donnett, D. (2015). John Dewey's pragmatism: Implications for reflection in service-learning. *Michigan Journal of Community Service Learning*, 21(2), 64-74 Retrieved 16 July 2015 from <http://hdl.handle.net/>.
- Malhotra, A., Majchrak, A., & Rosen, B. (2007). Leading virtual teams. *Academy of Management Perspectives*, 21(1), 60-70. doi: 10.5465/AMP.2007.24286164
- Malone, T. W. (2008). Foreword. In S. Weisband (Ed.), *Leadership at a distance: Research in technologically-supported work* (pp. 2). New York, NY: Lawrence Erlbaum.

- Manley, D., & Valin, J. Laying the foundation for a global body of knowledge in public relations and communications management. *Public Relations Review* (2016), <http://dx.doi.org/10.1016/j.pubrev.2016.10.018>
- Margerison, C., McCann, D., & Davies, R. (1986). The Margerison-McCann team management resource - theory and applications. *International Journal of Manpower*, 7(2), 2-32. doi: 10.1108/eb045060
- Marks, M. A., Mathieu, J. E., & Zaccaro, S. J. (2001). A temporally based framework and taxonomy of team processes. *Academy of Management Review*, 26(3), 356-376. doi: 10.5465/AMR.2001.4845785
- Markus, M. L. (1994). Electronic mail as the medium of managerial choice. *Organization Science*, 5(4), 502-527. doi: 10.1287/orsc.5.4.502
- Marshall, C., & Rossman, G. (2011). *Designing qualitative research* (5th ed.). Thousand Oaks, CA.: Sage.
- Mathiassen, L. (2002). Collaborative practice research in information technology and people. *Technology & People*, 15(4), 321-345.
- Mayer, R., Davis, J., & Schoorman, F. (1995). An Integrative Model of Organizational Trust. *The Academy of Management Review*, 20(3), 709-734. Retrieved from <http://www.jstor.org/stable/258792>.
- Maynard, M. T., Mathieu, J. E., Rapp, T. L., & Gilson, L. L. (2012). Something (s) old and something (s) new: Modeling drivers of global virtual team effectiveness. *Journal of Organizational Behavior*, 33(3), 342-365. doi: 10.1002/job.1772
- McGrath, J. E. (1991). Time, interaction, and performance (TIP): A theory of groups. *Small Group Research*, 22(2), 147-174. doi: 10.1177/1046496491222001
- McKay, J., & Marshall, P. (2000). *Quality and rigour of action research in information systems*. Paper presented at the Proceedings of the European Conference on Information Systems.
- McKay, J., & Marshall, P. (2001). The dual imperatives of action research. *Information Technology & People*, 14(1), 46-59.
- McKie, D., & Heath, R. L. (2016). Public relations as a strategic intelligence for the 21st century: Contexts, controversies, and challenges. *Public Relations Review*, 42 298-305. doi:10.1016/j.pubrev.2015.04.003
- McKie, D., & Munshi, D. (2007). *Reconfiguring public relations: Ecology, equity and enterprise*. Abingdon, England: Routledge.
- McNiff, J., & Whitehead, J. (2009). *Doing and writing action research*. London, England: Sage.

- McTaggart, R., & Kemmis, S. (1988). *The action research planner*. Geelong, Australia: Deakin University.
- Melrose, M. J. (2001). Maximizing the rigor of action research: Why would you want to? How could you? *Field Methods*, 13(2), 160-180.
- Meng, J., & Berger, B. (2013). An integrated model of excellent leadership in public relations: Dimensions, measurement, and validation. *Journal of Public Relations Research*, 25(2), 141-147. doi: 10.1080/1062726X.2013.758583 ¹
- Meng, J., Berger, B. K., Gower, K. K., & Heyman, W. C. (2012). A Test of Excellent Leadership in Public Relations: Key Qualities, Valuable Sources, and Distinctive Leadership Perceptions. *Journal of Public Relations Research*, 24(1), 18-36. doi:10.1080/1062726X.2012.626132
- Mennecke, B. E., Hoffer, J. A., & Wynne, B. E. (1992). The Implications of group development and history for group support system theory and practice. *Small Group Research*, 23(4), 524-572.
- Meyer, C. (2001). A case in case study methodology. *Field Methods*, 13(4), 329-352. doi: 10.1177/1525822X0101300402
- Meyerson, D., Wieck, K., & Kramer, R. (1996). Swift trust and temporary groups. In R. Kramer & T. Tyler (Eds.), *Trust in organisations: Frontiers of theory and research* (pp. 166-195). Thousand Oaks, CA: Sage.
- Miles, M. B., & Huberman, A. M. (1984). *Qualitative data analysis: A sourcebook of new methods*. Beverly Hills, CA.: Sage Publications.
- Miller, V. D., & Jablin, F. M. (1991). Information seeking during organizational entry: Influences, tactics, and a model of the process. *Academy of Management Review*, 16(1), 92-120. doi: 10.5465/AMR.1991.4278997
- Minton-Eversole, T. (2012). Virtual teams used most by global organizations, survey says. . *Organisational and employee development*. Retrieved January 15, 2014, from <https://www.shrm.org/>
- Mintzberg, H. (1989). *Mintzberg on management: inside our strange world of organizations*. New York, NY: Free Press.
- Monzani, L., Ripoll, P., Peiró, J. M., & Van Dick, R. (2014). Loafing in the digital age: The role of computer mediated communication in the relation between perceived loafing and group affective outcomes. *Computers in Human Behavior*, 33, 279-285. doi: 10.1016/j.chb.2014.01.013

- Morgan, L., Paucar-Caceres, A., & Wright, G. (2014). Leading effective global virtual teams: The consequences of methods of communication. *Systemic Practice and Action Research, 27*(6), 607-624. doi: 10.1007/s11213-014-9315-2
- Morgeson, F. P., DeRue, D. S., & Karam, E. P. (2010). Leadership in teams: A functional approach to understanding leadership structures and processes. *Journal of Management, 36*(1), 5-39. doi: 10.1177/0149206309347376
- Mukherjee, D., Hanlon, S., Kedia, B. L., & Srivastava, P. (2012). Organizational identification among global virtual team members: The role of individualism-collectivism and uncertainty avoidance. *Cross Cultural Management: An International Journal, 19*(4).
- Mukherjee, D., Lahiri, S., Mukherjee, D., & Billing, T. K. (2012). Leading virtual teams: How do Cognitive, Social, and Behavioral Capabilities Matter. *Management Decision, 50*(2), 273-290.
- Myers, M. D. (2013). *Qualitative research in business and management* (2 ed.). London, England: Sage.
- Nauman, S., Khan, A., & Ehsan, N. (2010). Patterns of empowerment and leadership style in project environment. *International Journal of Project Management, 28*, 638-649.
- Nicol, D., Minty, I., & Sinclair, C. (2003). The social dimensions of online learning. *Innovations in Education and Teaching International, 40*(3), 270-280. doi: 10.1080/1470329032000103807
- Northouse, P. (2016). *Leadership: theory and practice* (7th ed.). Thousand Oaks, CA: Sage.
- Ocker, R. J., Huang, H., Benbunan-Fich, R., & Hiltz, S. R. (2011). Leadership dynamics in partially distributed teams: an exploratory study of the effects of configuration and distance. *Group Decision and Negotiation, 20*, 273-292.
- Pauleen, D. (2004a). *Virtual teams: projects, protocols and processes*. Hershey, PA: Idea Group Publishing.
- Pauleen, D. (2005). Leader-facilitated relationship building in virtual teams. In Khosrow-Poor (Ed.), *Encyclopedia of Information Science and Technology* (pp. 1793-1798): Information Science.
- Pauleen, D. J. (2003a). An inductively derived model of leader-initiated relationship building with virtual team members. *Journal of Management Information Systems, 20*(3), 227-256 Retrieved from <http://www.tandfonline.com>.

- Pauleen, D. J. (2003b). Leadership in a global virtual team: An action learning approach. *Leadership & Organization Development Journal*, 24(3), 153-162. doi: 10.1108/01437730310469570
- Pauleen, D. J. (2004b). *Virtual teams: projects, protocols and processes*. Hershey, PA: Idea Group Publishing.
- Pauleen, D. J., & Rajasinhham, L. (2004). Mediating Complexity: Facilitating Relationship Building Across Boundaries in Start-Up Virtual Teams. In D. Pauleen (Ed.), *Virtual teams: projects, protocols and processes* (pp. 255-279). Hershey, PA: Idea Group.
- Pazos, P. (2012). Conflict management and effectiveness in virtual teams. *Team Performance Management: An International Journal*, 18(7/8), 401-417. doi: 10.1108/13527591211281138
- Pearce, C. L., & Conger, J. A. (2002). *Shared leadership: Reframing the hows and whys of leadership*. Thousand Oaks, CA: Sage Publications.
- Picherit-Duthler, G. (2011). How similar or different are we?: A perception of diversity in global virtual teams. In S. Kelsey & K. St.Amant (Eds.), *Computer mediated communication: Issues and approaches in education*. (pp. 135-147). Hershey, PA: IGI Global.
- Potter, R., & Balthazard, P. A. (2002). Virtual team interaction styles: assessment and effects. *International Journal Human - Computer Studies*, 56, 423-443. doi: 10.1006/ijhc.2002.1001
- Powell, A., Piccoli, G., & Ives, B. (2004). Virtual teams: A review of current literature and directions for future research. *The DATA BASE for Advances in Information Systems*, 35(1), 6-36.
- Purvanova, R. K., & Bono, J. E. (2009). Transformational leadership in context: Face-to-face and virtual teams. *The Leadership Quarterly*, 20, 343-357.
- Quinn, R. E. (1988). *Beyond rational manager: Mastering the paradoxes and competing demands of high performance*. San Francisco: Jossey-Bass.
- Quinn, R. E., & Rohrbaugh, J. (1983). A spatial model of effectiveness criteria: Towards a competing values approach to organisational effectiveness. *Management Science*, 29, 363-377.
- Radley, N. (2014). Survey: How Team Members Prefer to Communicate on Virtual Projects. <http://blog.softwareadvice.com/articles/project-management/survey-communication-virtual-projects-0714/>. Retrieved 12 August, 2016

- Ramirez, A., Walther, J. B., Burgoon, J. K., & Sunnafrank, M. (2002). Information-Seeking Strategies, Uncertainty, and Computer-Mediated Communication. *Human Communication Research, 28*(2), 213-228. doi: 10.1111/j.1468-2958.2002.tb00804.x
- Rogers, C. R. (1942). *Counseling and psychotherapy: Newer concepts in practice*. Boston, MA: Houghton Mifflin.
- Rogers, E. M., & Bhowmik, D. K. (1970). Homophily-heterophily: Relational concepts for communication research. *Public Opinion Quarterly, 34*(4), 523-538. doi: 10.1086/267838
- Roy, V., Bernier, C., & Leveille, L. (2006). The high wire balancing act of the IS project director. *Database for Advances in Information Systems, 37*(1), 8-39.
- Ruggieri, S. (2009). Leadership in virtual teams: A comparison of transformational and transactional leaders. *Social Behavior and Personality: An International Journal, 37*(8), 1017-1021. doi: 0.2224/sbp.2009.37.8.1017
- Salmon, G. (2004). *E-tivities: The key to active online learning* (2nd ed.). London, England: Taylor and Francis.
- Salmon, G. (2011). *E-moderating: The key to teaching and learning online* (3rd ed.). New York, NY: Routledge.
- Savolainen, R. (2006). Time as a context of information seeking. *Library & Information Science Research, 28*(1), 110-127. doi: 10.1016/j.lisr.2005.11.001
- Schmid Mast, M., Jonas, K., & Hall, J. A. (2009). Give a person power and he or she will show interpersonal sensitivity: the phenomenon and its why and when. *Journal of Personality and Social Psychology, 97*(5), 835-850. doi: 10.1037/a0016234
- Searle, J. R. (1969). What is a speech act? In J. R. Searle (Ed.), *Speech Acts: An essay in the philosophy of language* (Vol. 626, pp. 1-16 Cambridge, England): Cambridge University Press.
- Sewell, W. H. (1989). Some reflections on the golden age of interdisciplinary social psychology. *Social Psychology Quarterly, 52*(2), 88-97 Retrieved from <http://www.jstor.org/stable/2786909>.
- Short, J. A., Christie, B., & Williams, E. (1976). *The social psychology of telecommunications*. London, England: Wiley.
- Shriberg, A. (2009). Effectively leading and managing a virtual team. *The Business Review, 12*(2).

- Siebrat, F., Hoegl, M., & Ernst, H. (2009). How to manage virtual teams. *MIT Sloan Management Review*, 50(4), 63-68 Retrieved from <http://sloanreview.mit.edu/article/how-to-manage-virtual-teams/>.
- Silverman, D. (2010). *Doing qualitative research* (3rd ed.). London: Sage.
- Sivunen, A. (2006). Strengthening identification with the team in virtual teams: The leaders' perspective. *Group Decision and Negotiation*, 15(4), 345-366. doi: 10.1007/s10726-006-9046-6
- Sproull, L., Conley, C., & Moon, J. Y. (Ed.). (2005). *Prosocial behaviour on the net* (1st ed.). Oxford, England: Oxford University Press.
- Sproull, L., & Kiesler, S. (1986). Reducing social context cues: electronic mail in organizational communication. *Management Science*, 32(11), 1492-1512. doi: 10.1287/mnsc.32.11.1492
- Sriramesh, K. (2009). Globalisation and public relations: The past, present, and the future. . *PRism*, 6(2), 1-11. http://praxis.massey.ac.nz/prism_on-line_journ.html
- Steuer, J. (1992). Defining virtual reality: Dimensions determining telepresence. *Journal of Communication*, 42, 73-93. doi: 10.1111/j.1460-2466.1992.tb00812
- Stogdill, R. M. (1948). Personal factors associated with leadership: A survey of the literature. *The Journal of Psychology*, 25(1), 35-71. doi: 10.1080/00223980.1948.9917362
- Stogdill, R. M. (1950). Leadership, membership and organization. *Psychological Bulletin*, 47(1), 1-14. doi: 10.1037/h0053857
- Stoltz, V. (2016). GlobCom objectives. Retrieved July 21 2016, from <http://www.globcom.org/>
- Susman, G., & Evered, R. D. (1978). An assessment of the scientific merits of action research. *Administrative Science Quarterly*, 23(4), 582-604. doi: 10.2307/2392581
- The Challenges of Working in Virtual Teams. (2010). *Virtual teams survey report*. http://www.communicationcache.com/uploads/1/0/8/8/10887248/the_challenges_of_working_in_virtual_teams.pdf
- Thelen, H. A. (1954). *Dynamics of groups at work*. Chicago, IL: University of Chicago Press.
- Tombleson, B., & Wolf, K. (2017). Rethinking the circuit of culture: How participatory culture has transformed cross-cultural communication. *Public Relations Review*, 43(1), 14-25. doi: 10.1016/j.pubrev.2016.10.017

- Tong, M., & Clear, T. (2013). A reflection on the first run of the Runestone Project at Tongji University: Observations on cross cultural distributed teams vs face to face teams. In A. Pears (Ed.), *Proceedings 2013 Learning and Teaching in Computing and Engineering (LaTICE 2013)* (pp. 148-153). Macau: IEEE.
- Tuckman, B. W. (1965). Developmental sequence in small groups. *Psychological Bulletin*, 63(6), 384-399.
- Tuckman, B. W., & Jensen, M. A. C. (1977). Stages of small-group development revisited. *Group & Organization Management*, 2(4), 419-427. doi: 10.1177/105960117700200404
- Turnage, A. K. (2007). Email flaming behaviors and organizational conflict. *Journal Of Computer-Mediated Communication*, 13(1), 1083-6101. doi: 10.1111/j.1083-6101.2007.00385.x
- Turner, R. H. (2002). Role theory. In J. H. Turner (Ed.), *Handbook of sociological theory*. New York, NY: Kluwer Academic/Plenum Publishers.
- van Assen, M., van den Berg, G., & Pietersma, P. (2009). *Key management models* (2nd ed.). Harlow: Prentice Hall Financial Times.
- Verčič, D., Zerfass, A., & Wiesenberg, M. (2015). Global public relations and communication management: A European perspective. *Public Relations Review*, 41(5), 785-793. doi: 10.1016/j.pubrev.2015.06.017
- Vogel, D. R., Van Genuchten, M., Lou, D., Verveen, S., Van Eekout, M., & Adams, A. (2001). Exploratory research on the role of national and professional cultures in a distributed learning project. *IEEE Transactions on Professional Communication*, 44(2), 114-125. doi: 10.1109/47.925514
- Wæraas, A. (2007). The re-enchantment of social institutions: Max Weber and public relations. *Public Relations Review*, 33(3), 281-286. doi: 10.1016/j.pubrev.2007.05.007
- Wadsworth, M. B., & Blanchard, A. L. (2015). Influence tactics in virtual teams. *Computers in Human Behavior*, 44, 386-393. doi: 10.1016/j.chb.2014.11.026
- Wahyuni, D. (2012). The research design maze: Understanding paradigms, cases, methods and methodologies. *Journal of Applied Management Accounting Research*, 10(1), 69-80 Retrieved from <https://ssrn.com/abstract=2103082>.
- Wakefield, R. L., Leidner, D. E., & Garrison, G. (2008). A model of conflict, leadership, and performance in virtual teams. *Information Systems Research*, 19(4), 434-455. doi: 10.1287/isre.1070.0149

- Walther, J., & Bazarova, N. (2008). Validation and application of electronic propinquity theory to computer-mediated communication in groups. *Communication Research, 35*(5), 622-645. doi: 10.1177/0093650208321783
- Walther, J. B. (1996). Computer-mediated communication: Impersonal, interpersonal, and hyperpersonal interaction. *Communication Research, 23*(1), 3-43. doi: 10.1177/009365096023001001
- Walther, J. B. (1997). Group and Interpersonal Effects in International Computer-Mediated Collaboration. *Human Communication Research, 23*(3), 342-369. doi: 10.1111/j.1468-2958.1997.tb00400.x
- Walther, J. B. (2007). Selective self-presentation in computer-mediated communication: Hyperpersonal dimensions of technology, language, and cognition. *Computers in Human Behavior, 23*(5), 2538-2557. doi: 10.1016/j.chb.2006.05.002
- Walther, J. B. (2010). *Computer mediated communication* (2nd ed.). Los Angeles, CA: Sage.
- Walvoord, A. A. G., Redden, E. S., Elliott, L. R., & Covert, M. D. (2008). Empowering followers in virtual teams: Guiding principles from theory and practice. *Computers in Human Behavior, 24*(5), 1884-2008.
- Weber, M. (1947). *The theory of social and economic organization* (A. M. Henderson & T. Parsons, Trans.). New York, NY: The Free Press.
- Weerakkody, N. (2009). *Research methods for media and communication*. Melbourne, Australia: Oxford University Press.
- Wehmeier, S., & Winkler, P., (2013). Expanding the bridge, minimizing the gaps: Public relations, organizational communication, and the idea that communication constitutes organization. *Management Communication Quarterly, 27*(2), 280-290.
- Weil, N. (2008). Global team management: Continental divides; more and more CIOs find themselves managing global virtual teams. *CIO, 8*(21 Retrieved 4 January 2016 from <http://www.cio.com/>).
- Weisband, S. P. (2008). Research challenges for studying leadership at a distance *Leadership at a distance: research in technologically-supported work* (pp. 3-11). New York: Lawrence Erlbaum Associates.
- White, C. H., & Burgoon, J. K. (2001). Adaptation and communicative design. *Human Communication Research, 27*(1), 9-37. doi: 10.1111/j.1468-2958.2001.tb00774.x

- White, M. D., & Marsh, E. E. (2006). Content analysis: A flexible methodology. *Library Trends*, 55(1), 22-45. doi: 10.1353/lib.2006.0053
- Wickham, K. R., & Walther, J. B. (2009). Perceived behaviors of emergent and assigned leaders in virtual groups. In N. Kock (Ed.), *Virtual team leadership and collaborative engineering advancements: Contemporary issues and implications*. Hershey, PA: IGI Global, 50-64.
- Wilson, J. M., Straus, S. G., & McEvily, B. (2006). All in due time: The development of trust in computer-mediated and face-to-face teams. *Organizational behavior and human decision processes*, 99(1), 16-33. doi: 10.1016/j.obhdp.2005.08.001
- Wilson, T. D., Ford, N. J., Ellis, D., Foster, A. E., & Spink, A. (2002). Information seeking and mediated searching: Part 2. Uncertainty and its correlates. *Journal of the American Society for Information Science and Technology*, 53(9), 704-715. doi: 10.1002/asi.10082
- Wolf, K., & Archer, C. (2013). Into the unknown: A critical reflection on a truly global learning experience. *Issues in Educational Research*, 23(2), 299-314 Retrieved from <http://www.iier.org.au/iier223/wolf.html>.
- Wright, C. N., & Roloff, M. E. (2015). You should just know why I'm upset: Expectancy violation theory and the influence of mind reading expectations (MRE) on responses to relational problems. *Communication Research Reports*, 32(1), 10-19. doi: 10.1080/08824096.2014.989969
- Yilmaz, G., & Peña, J. (2015). How Do Interpersonal Behaviors and Social Categories Affect Language Use?: The Case of Virtual Teams. *Communication Quarterly*, 63(4), 427-443. doi: 10.1080/01463373.2015.1058285
- Yin, R. K. (2009). *Case study research: Design and methods* (4th ed. Vol. 5). Thousand Oaks, CA: Sage Publications.
- Yoo, Y., & Alavi, M. (2004). Emergent leadership in virtual teams: What do emergent leaders do? *Information and Organization*, 14(1), 27-58. doi: 10.1016/j.infoandorg.2003.11.001
- Yoon, S. W., & Johnson, S. D. (2008). Phases and patterns of group development in virtual learning teams. *Educational Technology Research and Development*, 56(5-6), 595-618. doi: 10.1007/s11423-007-9078-x
- Yukl, G. (2013). *Leadership in Organizations* (8th ed.). New York, New York: Pearson.
- Yukl, G., Chavez, C., & Seifert, C. F. (2005). Assessing the construct validity and utility of two new influence tactics. *Journal of Organizational Behavior*, 26(6), 705-725. doi: 10.1002/job.335

- Yukl, G., & Falbe, C. M. (1990). Influence tactics and objectives in upward, downward, and lateral influence attempts. *Journal of Applied Psychology, 75*(2), 132. doi: 10.1037/0021-9010.75.2.132
- Yukl, G., Guinan, P. J., & Soitolano, D. (1995). Influence tactics used for different objectives with subordinates, peers, and superiors. *Group & Organization Management, 20*(3), 272-296. doi: 10.1177/1059601195203003
- Zaccaro, S. J., Rittman, A. L., & Marks, M. A. (2001). Team leadership. *Leadership Quarterly, 12*, 451-483.
- Zander, L., Mockaitis, A. I., & Butler, C. L. (2012). Leading global teams. *Journal of World Business, 47*(4), 592. doi: 10.1016/j.jwb.2012.01.012
- Zander, L., Zettinig, P., & Makela, K. (2013). Leading global virtual teams to success. *Organizational Dynamics, 42*(3), 228. doi: 10.1016/j.orgdyn.2013.06.008
- Ziek, P., & Smulowitz, S. (2014). The impact of emergent virtual leadership competencies on team effectiveness. *Leadership & Organization Development Journal, 35*(2), 106 -120. doi: 10.1108/LODJ-03-2012-0043
- Zieman, G. A. (2012). Participant observation. In S. Klein (Ed.), *Action research methods: Plain and simple* (pp. 49-67). New York, NY: Palgrave Macmillan.
- Zigurs, I. (2003). Leadership in virtual teams: Oxymoron or opportunity. *Organizational Dynamics, 31*(4), 339-351.
- Zigurs, I., & Kozar, K.A. (1994) An exploratory study of roles in computer-supported groups. *MIS Quarterly, 18*, (2) 277-297. doi: 10.2307/249619
- Zivick, J. (2012). Mapping global virtual team leadership actions to organizational roles. *The Business Review, 19*(2), 18-25.

Appendix A: Ethics approval letter



MEMORANDUM

Auckland University of Technology Ethics Committee (AUTEC)

To: Tony Clear
 From: Dr Rosemary Godbold Executive Secretary, AUTEC
 Date: 14 May 2012
 Subject: Ethics Application Number 12/65 Leadership patterns in global virtual teams.

Dear Tony

Thank you for providing written evidence as requested. I am pleased to advise that it satisfies the points raised by the Auckland University of Technology Ethics Committee (AUTEC) at their meeting on 26 March 2012 and that on 8 May 2012, I approved your ethics application. This delegated approval is made in accordance with section 5.3.2.3 of AUTEC's *Applying for Ethics Approval: Guidelines and Procedures* and is subject to endorsement at AUTEC's meeting on 28 May 2012.

Your ethics application is approved for a period of three years until 8 May 2015.

I advise that as part of the ethics approval process, you are required to submit the following to AUTEC:

- A brief annual progress report using form EA2, which is available online through <http://www.aut.ac.nz/research/research-ethics/ethics>. When necessary this form may also be used to request an extension of the approval at least one month prior to its expiry on 8 May 2015;
- A brief report on the status of the project using form EA3, which is available online through <http://www.aut.ac.nz/research/research-ethics/ethics>. This report is to be submitted either when the approval expires on 8 May 2015 or on completion of the project, whichever comes sooner;

It is a condition of approval that AUTEC is notified of any adverse events or if the research does not commence. AUTEC approval needs to be sought for any alteration to the research, including any alteration of or addition to any documents that are provided to participants. You are reminded that, as applicant, you are responsible for ensuring that research undertaken under this approval occurs within the parameters outlined in the approved application.

Please note that AUTEC grants ethical approval only. If you require management approval from an institution or organisation for your research, then you will need to make the arrangements necessary to obtain this. Also, if your research is undertaken within a jurisdiction outside New Zealand, you will need to make the arrangements necessary to meet the legal and ethical requirements that apply within that jurisdiction.

To enable us to provide you with efficient service, we ask that you use the application number and study title in all written and verbal correspondence with us. Should you have any further enquiries regarding this matter, you are welcome to contact me by email at ethics@aut.ac.nz or by telephone on 921 9999 at extension 6902. Alternatively you may contact your AUTEC Faculty Representative (a list with contact details may be found in the Ethics Knowledge Base at <http://www.aut.ac.nz/research/research-ethics/ethics>).

On behalf of AUTEC and myself, I wish you success with your research and look forward to reading about it in your reports.

Yours sincerely

Dr Rosemary Godbold
 Executive Secretary
 Auckland University of Technology Ethics Committee

Cc: Averill Gordon agordon@aut.ac.nz

Appendix B: Tools

Participant Information Sheet



Project Title

Leadership Patterns in Global Virtual Teams

An Invitation

My name is Averill Gordon and I am the GlobCom global team mentor and a senior lecturer at AUT University, Auckland. I would like to invite you to participate in research on GlobCom which will examine its online collaboration and leadership to explore what makes successful communities of practice. It will also contribute to my PhD. Your participation is voluntary and you may withdraw at any time prior to the completion of data collection.

What is the purpose of this research?

The project researches GlobCom, the ongoing global collaboration project facilitated by technology and university lecturers, where students work on a live project for a multinational organization in competitive multicultural virtual teams drawn from eleven universities in eleven countries across five continents, comprising around 200 students.

This research will examine the collaboration between and within the lecturers and the global student team leaders and aims to identify leadership patterns which lead to effective communities of practice. This study aims to improve practice and add to the theoretical base.

The research is expected to produce research papers, conference presentations and a thesis.

How was I identified and why am I being invited to participate in this research?

You are invited as you have a leadership role in developing the GlobCom* global virtual teams and belong to one of the following groups:

- The 11 lecturers who run GlobCom
- The 7-11 student team leaders who comprise senior public relations students from universities in Australia, England, Germany, India, Italy, New Zealand, South Africa, Spain, Russia, the UAE and the US.
- The project's webmaster Mathias Rhodes

*The project, named GlobCom <http://www.globcom.org/> which has been running for seven years, is registered as a German charity with three lecturers on the board

Participant Consent Form



Project title: **Leadership patterns in global virtual teams**

Project Supervisor: **Associate Professor Tony Clear**

Researcher: **Averill Gordon**

I have read and understood the information provided about this research project in the Information Sheet dated **21 May 2012**.

- I have had an opportunity to ask questions and to have them answered.
- I understand that the contributions I have made, or may make through email messages and postings to the collaborative websites (including non-incorporated but related critiques made during the GlobCom project) augmented by research diary notes taken by the researcher, may be analysed in order to better understand the collaborative process and improve the development of GlobCom. They may be presented or made accessible in other ways for interested research colleagues, collaborative participants and collaborative researchers, both current and future, to view, in order to better understand the nature of the international collaborative process.
- I consent to being named in the report from the research: tick one: Yes No
- I wish to receive a copy of the report from the research: tick one: Yes No
- I understand that notes will be taken during the interviews and retrospectives and that they will also be audiotaped and transcribed.
- I understand that I may withdraw myself or any information that I have provided for this project at any time prior to completion of data collection, without being disadvantaged in any way.
- I understand that I may withdraw myself or any information that I have provided for this project, at any time, and that all relevant input data, or parts thereof, will be destroyed.
- I consent to the use of any information in the nature of email communications or postings that I have entered into the databases or developed in the course of critiques of the database in the manner, and for the purposes described above.
- I agree to take part in this research.

Participant's signature:

Participant's name:

Participant's Contact Details (if appropriate):

Appendix C: Sample of Coding and Thematic Analysis

1. Tables and graphs showing interactive styles in Chapter 5 'Virtual teams mean never having to say you're sorry'

Table 1 Frequency of each interactive style in each team stage

Interactive styles	D	E	P	I	Q	A	Total Interactive styles
Stage 1	10	10	6	7	4	2	39
Stage 2	1	1	1	1	2	0	6
Stage 3	1	2	0	1	2	1	7
Stage 4	8	12	5	4	4	3	36
Stage 5	10	8	0	2	3	2	25
Totals	30	33	12	15	15	8	113

D: Directing E: Explaining P: Personalising I: Immediacy Q: Questioning A: Apologising

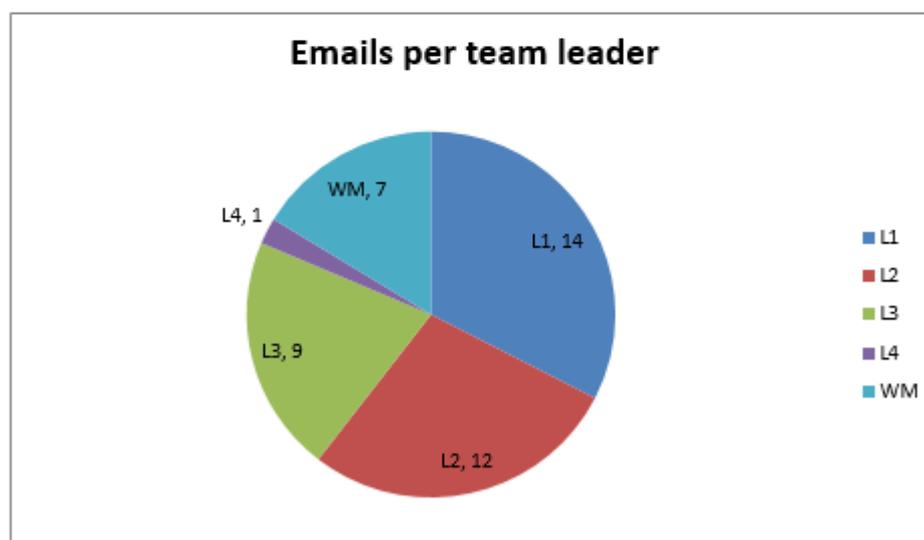


Figure 1 Total action-eliciting emails from each team leader

Table 2 Number of emails per lecturer in each team stage

	L1	L2	L3	L4	WM	Total action eliciting emails per stage
Stage 1	5	2	0	0	6	13
Stage 2	2	0	0	0	0	2
Stage 3	0	2	1	0	1	4
Stage 4	2	3	8	0	0	13
Stage 5	5	5	0	1	0	11
Total emails	13	12	9	1	7	43

Table 3 Frequency of interactive styles within the action-eliciting emails by each lecturer in each stage.

	Stage 1	Stage 2	Stage 3	Stage 4	Stage 5	Interactive styles total
Lecturer 1	16	6	0	4	13	39
Lecturer 2	5	0	5	8	10	28
Lecturer 3	0	0	1	24	0	25
Lecturer 4	0	0	0	0	2	2
Webmaster	18	0	1	0	0	19
	39	6	7	36	25	113

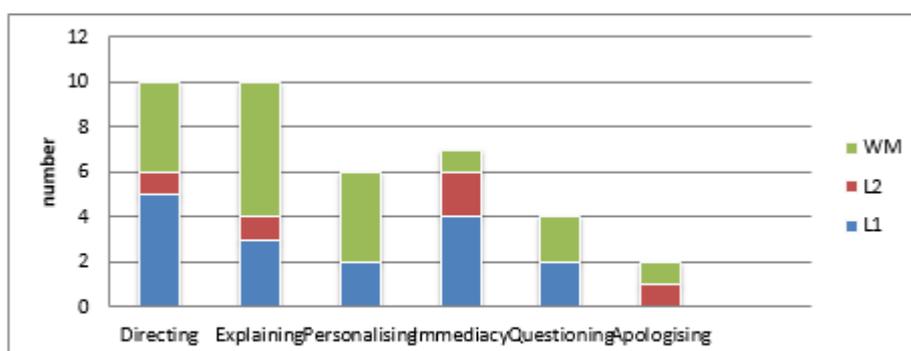


Figure 2 Interactive styles of lecturers in stage 1

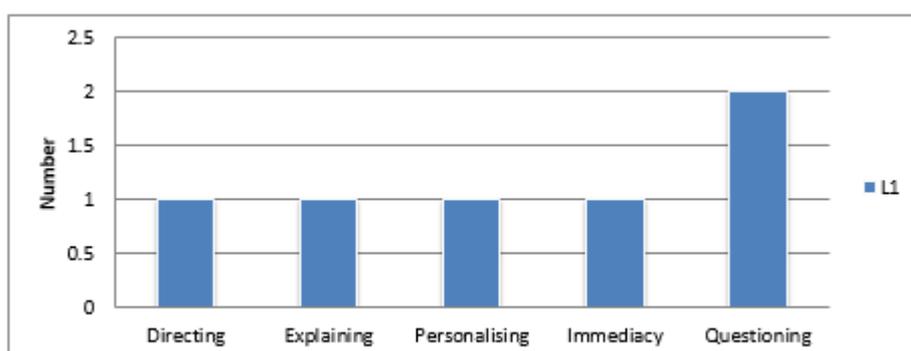


Figure 3 Interactive styles of lecturers in stage 2

Stage 3

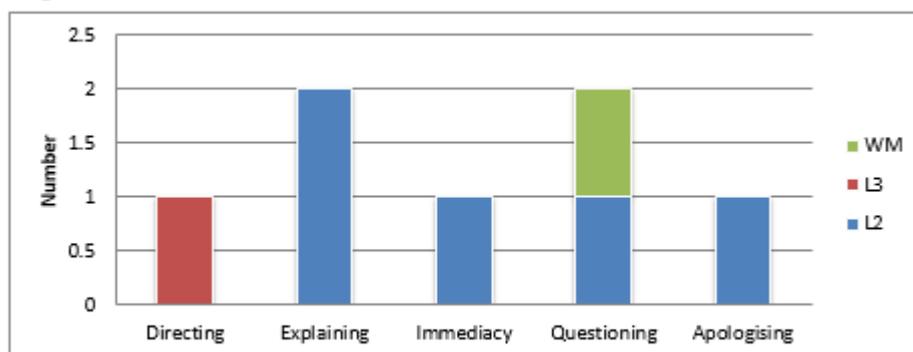


Figure 4 Interactive styles of lecturers in stage 3

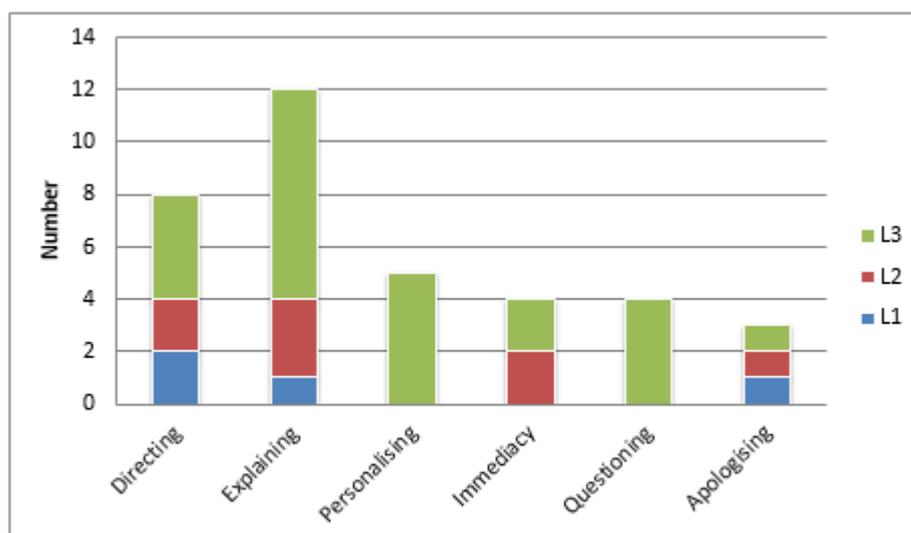


Figure 5 Interactive styles of lecturers in stage 4

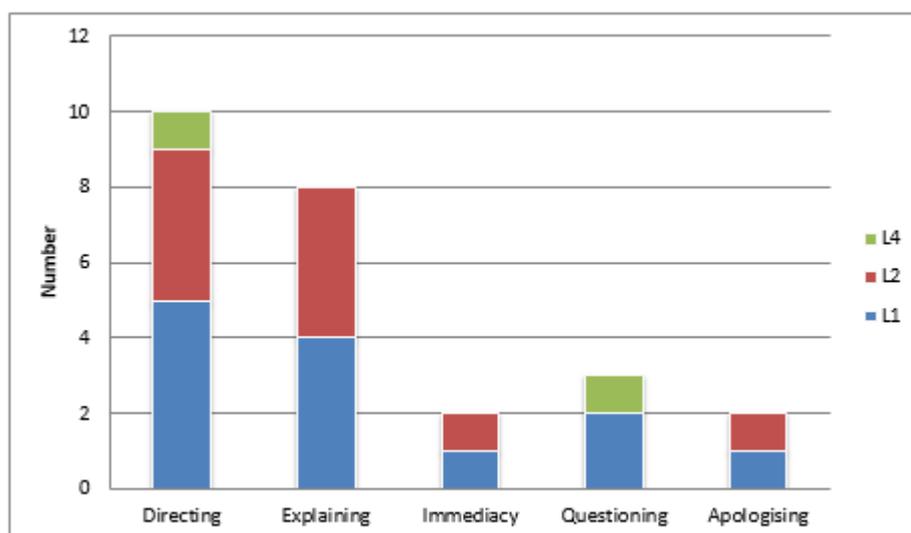


Figure 6 Interactive styles of lecturers in stage 5

Table 4 Frequency of each interactive style performed by each team leader

	Lecturer 1	Lecturer 2	Lecturer 3	Lecturer 4	Webmaster
D	13	7	5	1	4
E	9	10	8	0	6
P	3	0	5	0	4
I	6	6	2	0	1
Q	6	1	4	1	3
A	2	4	1	0	1

D: Directing E: Explaining P: Personalising I: Immediacy Q: Questioning A: Apologising

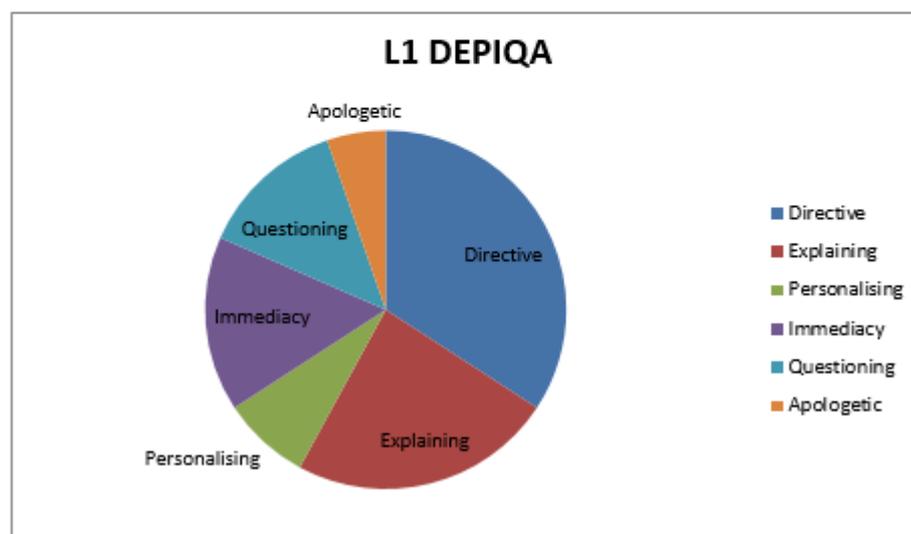


Figure 7 PIE chart showing frequency of the interactive styles performed by Lecturer 1 over all team stages

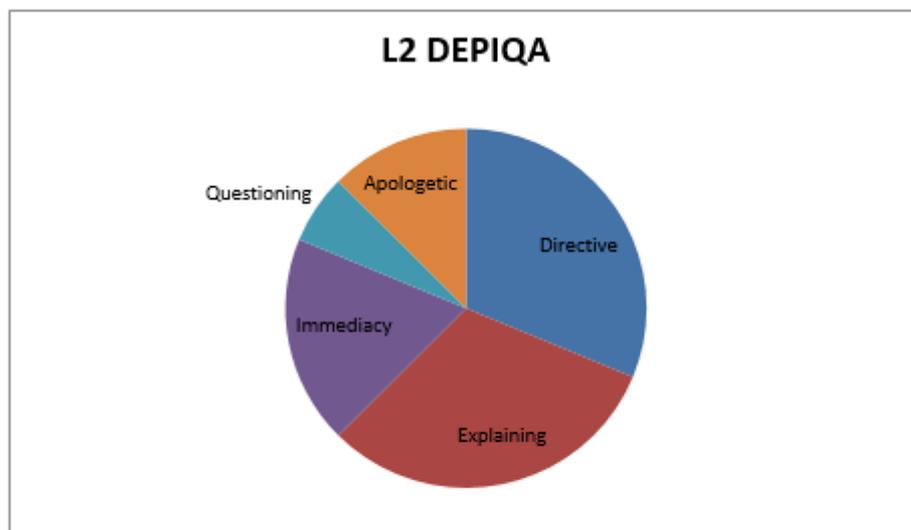


Figure 8 PIE chart showing frequency of the interactive styles performed by Lecturer 2 over all team stages

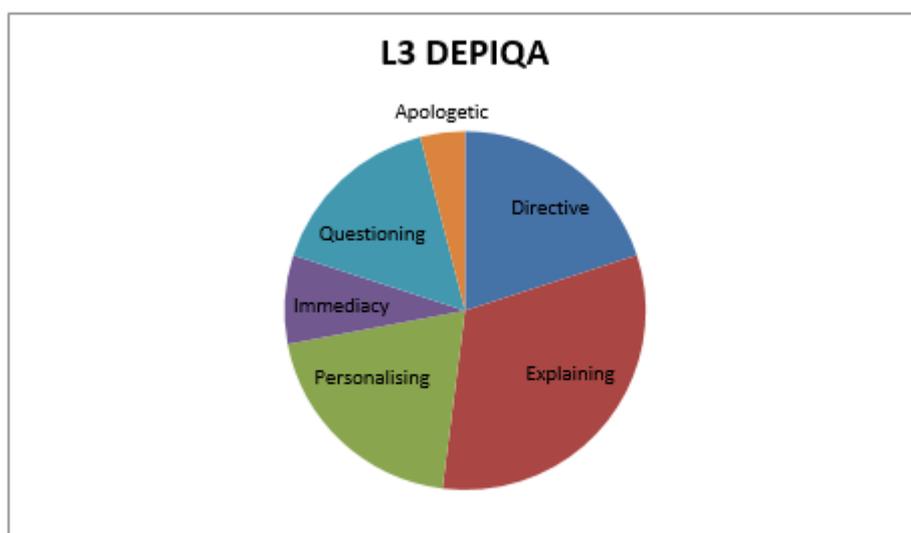


Figure 9 PIE chart showing frequency of the interactive styles performed by Lecturer 3 over all team stages

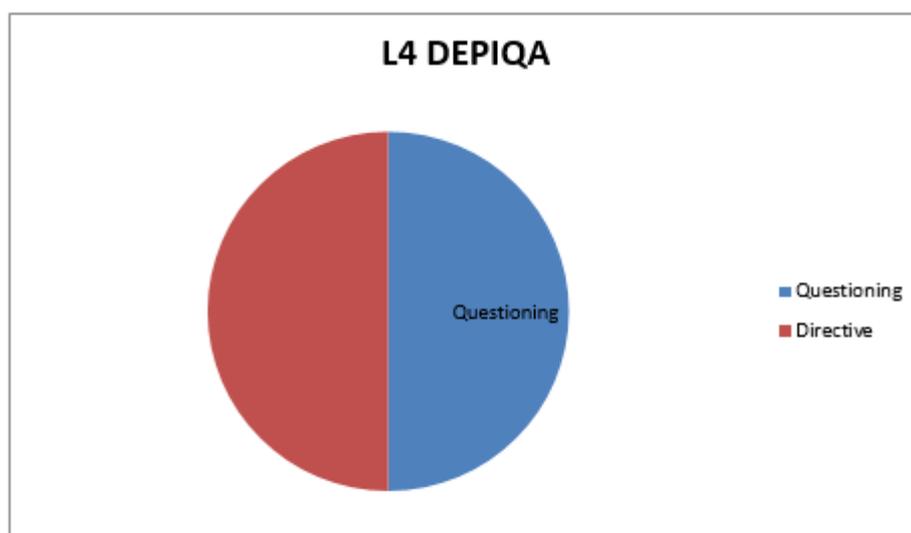


Figure 10 PIE chart showing frequency of the interactive styles performed by Lecturer 4 over all team stages

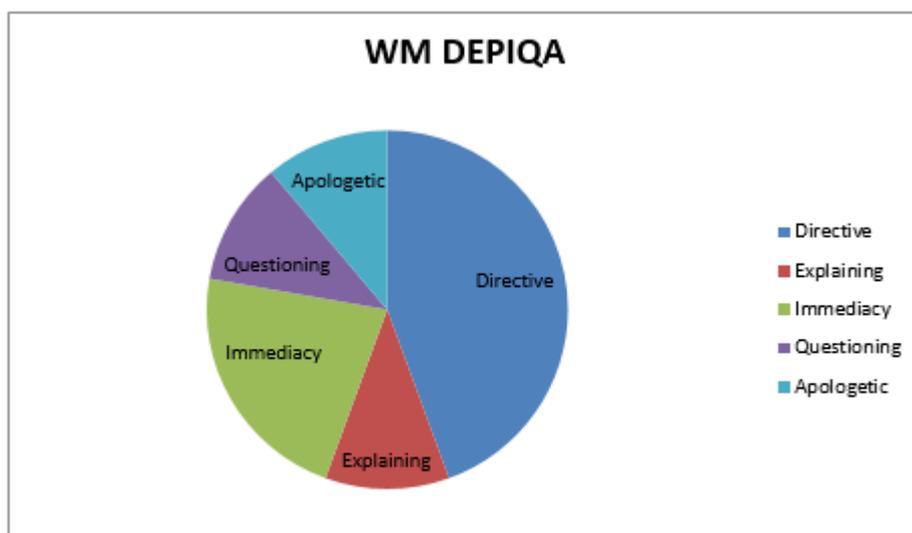


Figure 11 PIE chart showing frequency of the interactive styles performed by the Webmaster over all team stages

2. Tables and graphs showing the activity of the roles performed by lecturers in Chapter 6 'How face-to-face roles can be renegotiated in virtual teams'

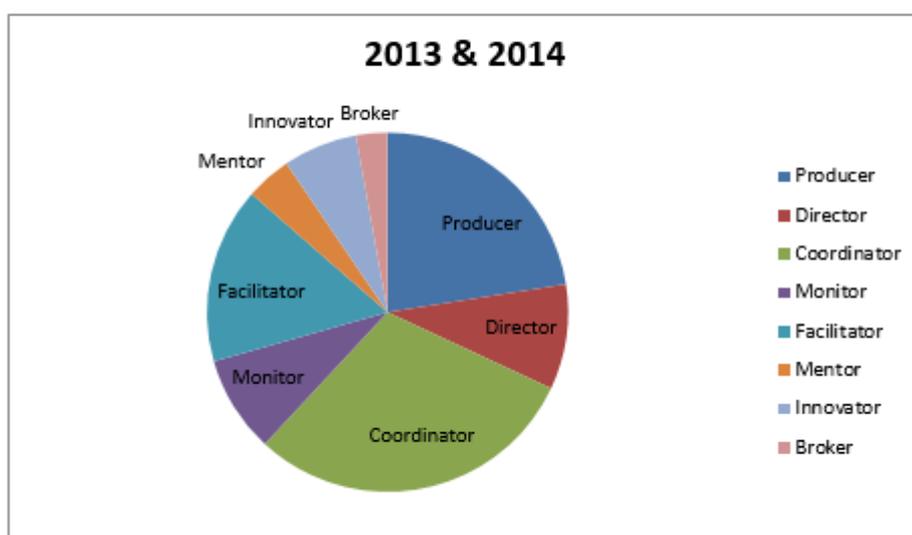


Figure 12 Comparing the overall role activity of lecturers in 2013 to 2014

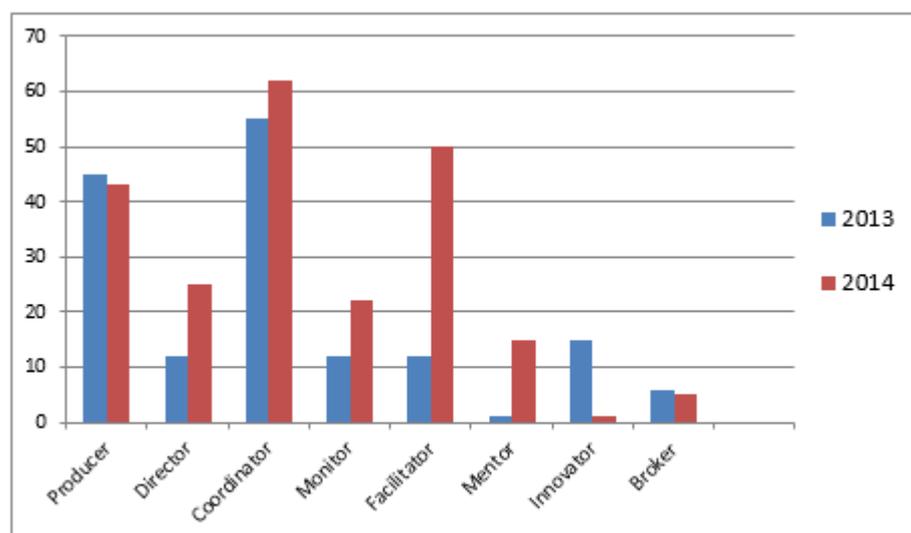


Figure 13 Comparing the role activity of lecturers in 2013 with 2014

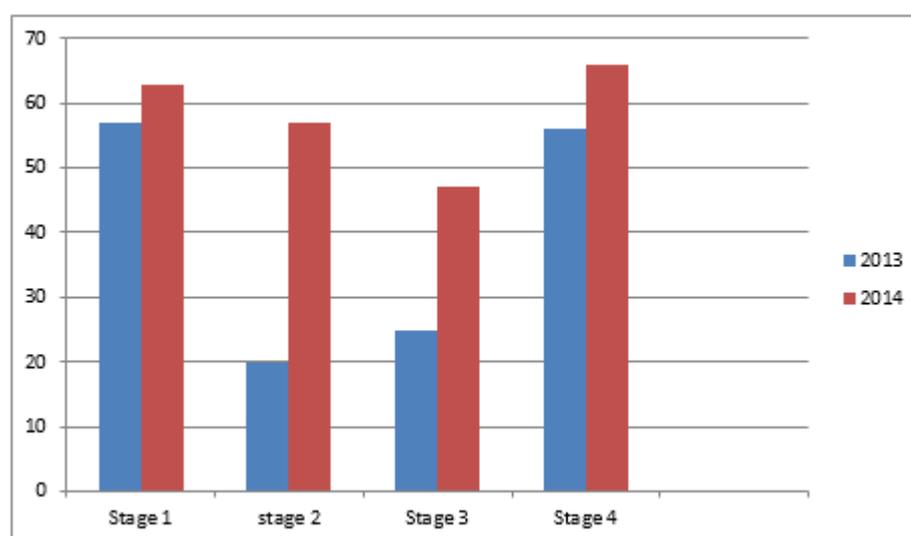


Figure 14 Comparing the overall activity of lecturers in each stage of 2013 with 2014

Table 5 The most active and least active roles and most shared and least shared roles in each stage in 2013 & 2014

Stage	1	1	2	2	3	3	4	4
Year	2013	2014	2013	2014	2013	2014	2013	2014
Participants	x8	x7	x5	x8	x10	x9	x12	x9
Most active role	P x4	P x4	P x3	C x5	Cx10	Fx5	Cx10	Cx8
Least active role	Me x1	B x3	Me x0	Me x1 Bx1	Me x0 Bx0 Dx0 Mox0	Ix0 Bx0	Me x0	Bx1
Most shared role	Mo x8	Mo, P, Me, F x4	P x3	C x5 Mo x5	Cx10	Cx6	Cx10	Cx8
Least shared role	Me x1	Dx1	Me x0	Me x1 B x1	Me x0 Bx0 Dx0 Mox0	Ix0 Bx0	Me x0	Ix1 Bx1 Dx1

P - producer; D - director; Me - mentor; F - facilitator; Mo - monitor; C - coordinator B - broker; I - innovator

3. Table and graphs showing team leader communication (posts on team forum and emails to the team mentor) during each stage of each cycle (2012-2014) in Chapter 7 'Great expectations'

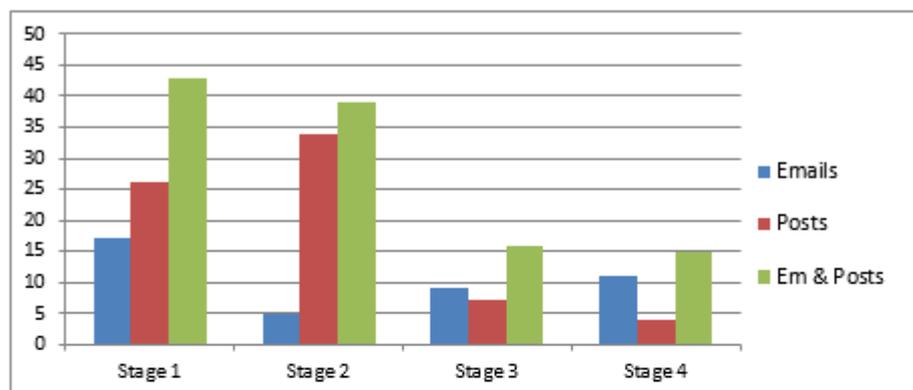


Figure 15 Overall team leader communication to the team mentor (emails and posts) in each stage of 2012

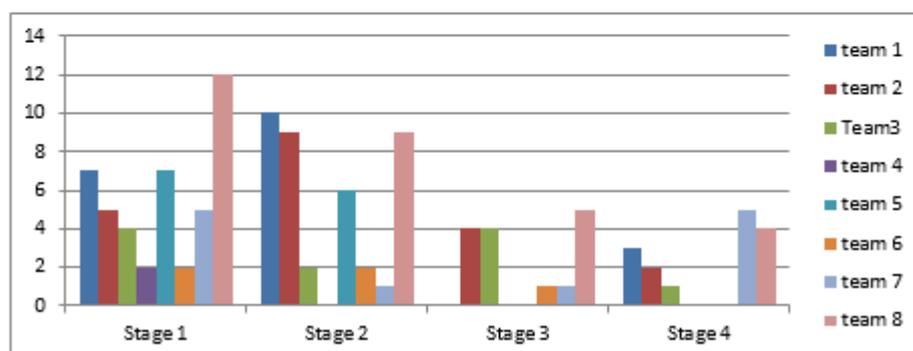


Figure 16 Individual team leader communication to the team mentor (emails and posts) in each stage of 2012

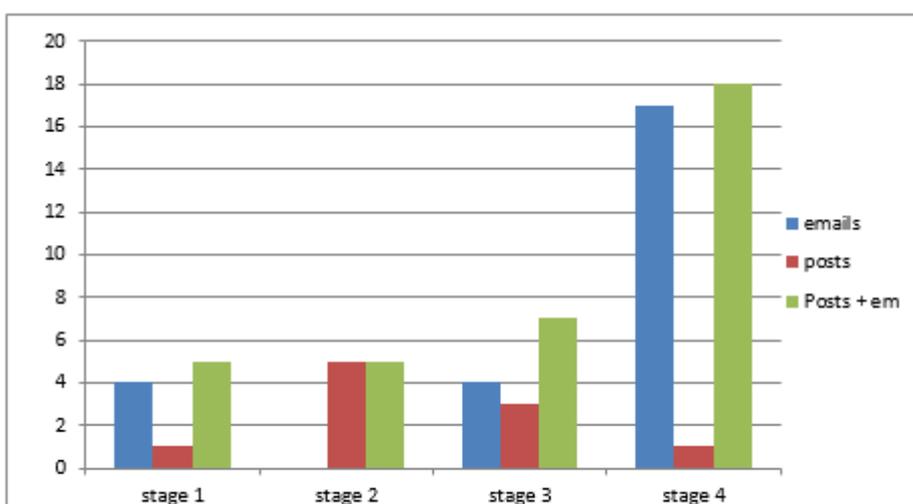


Figure 17 Overall team leader communication to the team mentor (emails and posts) in each stage of 2013

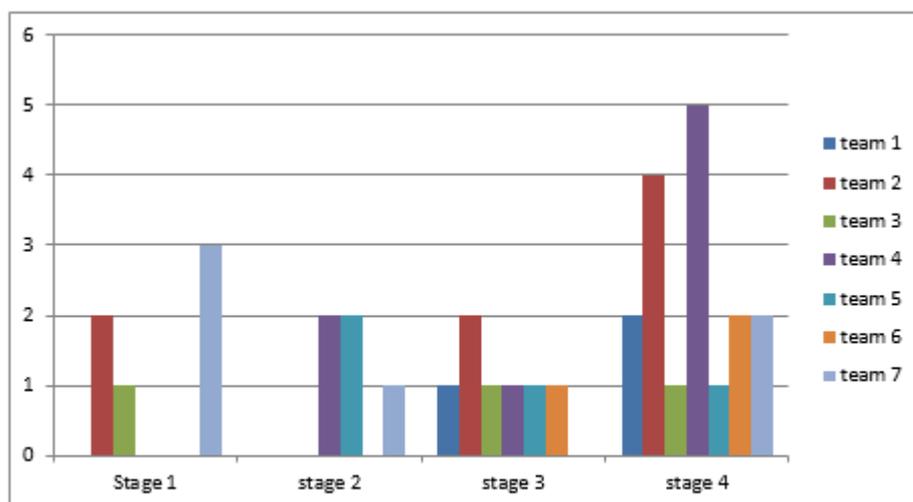


Figure 18 Individual team leader communication to the team mentor (emails and posts) in each stage of 2013

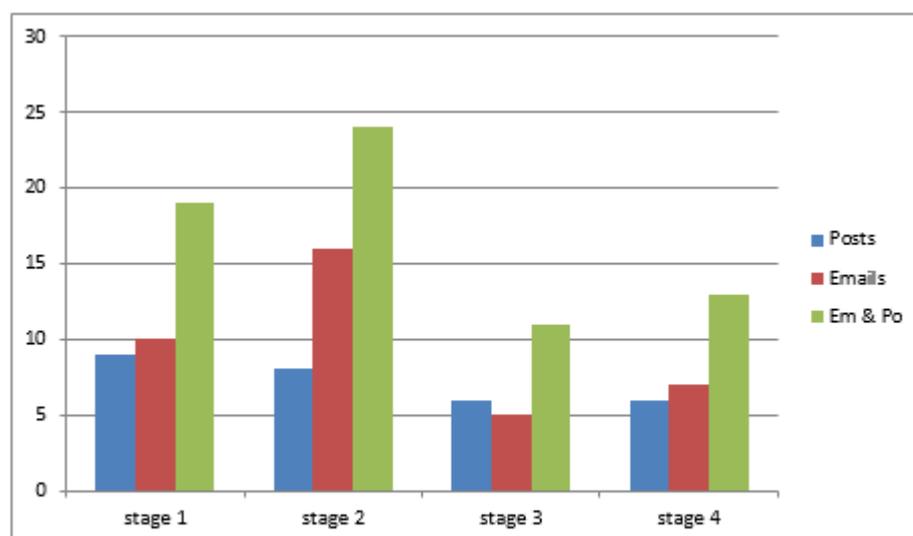


Figure 19 Overall team leader communication to the team mentor (emails and posts) in each stage of 2014

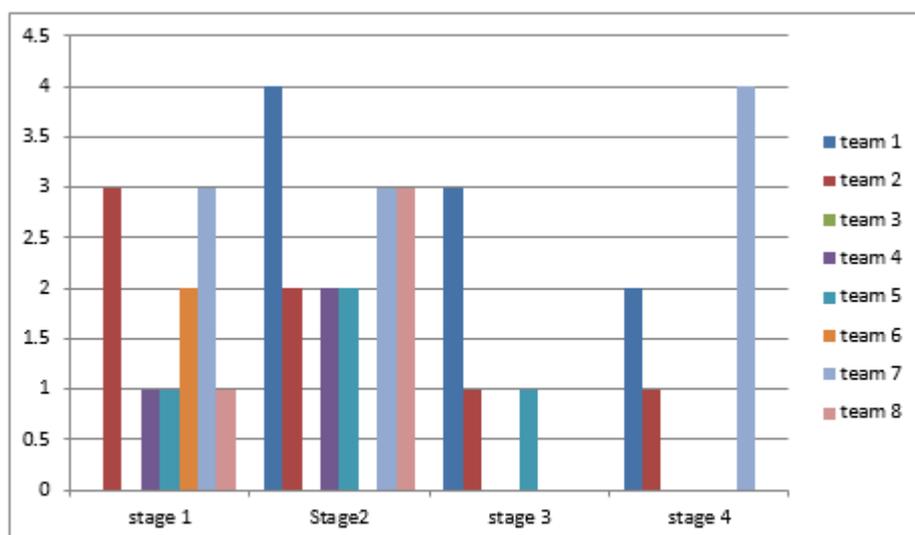


Figure 20 Individual team leader communication to the team mentor (emails and posts) in each stage of 2014

4. Excerpts from content analysis of student team leaders identifying socioemotional and task oriented leaders; issues and CVF roles in Chapter 7 'Great expectations'

Table 6 Excerpts from content analysis of student team leaders 2012

	Leadership role (Quinn CVF)	Leadership Interaction Socioemotional focus (cohesion, Agreement, tension release). Task focus: Gives or asks information, suggestions, opinion.	Issues/expectations
Team 1	<p>Producer</p> <p>Early start with schedule and meeting minutes and detailed plan allocating roles.</p> <p>Fostering a productive work environment.</p> <p>Coordinated register with meeting reports – more transparent to team.</p> <p>Final email outlining processes an encouraging about team members</p>	<p>Socioemotional</p> <p>11.3 [mtg report] 'T members happy with teamwork so far', allocated tasks and leadership. Some would like more support...' explains who to contact in team to get more help.</p> <p>Looking forward to UAE (post)</p> <p>Collaborative – helps other TL find documents on site</p> <p>Task</p> <p>S1 4/3 wrote detailed plan discussing ideas for proposal; checking member list – all activities. 'I look forward...'</p> <p>Directive – emailed W asking her to talk to x lecturer...emailed xx encouraging her to get involved...</p> <p>– Gives info and structure and task goals. Sets up norms of regular meetings and expected attendance, e.g. recommended 1 participant per country to attend meetings.</p> <p>Reduces uncertainty (Berger).</p> <p>Regular meeting reports x</p> <p>S4: report on participation and concerns re proposal development</p>	<p>Participation:</p> <p>S1: 4.3 participants x 12/11.3 participants x 9 /18.3 participants x 8 and 2 apologies</p> <p>Discrepancies about registration</p> <p>S2: worried re non attendees otherwise 'doing well'/ 'Motivated and hardworking'/ 'I am enjoying'/ 'thank you'</p> <p>S4 Participants x 7</p> <p>Timing</p> <p>S1 Timeline: 'pls advise us on our team's timeline...'</p> <p>S4 Revising strategy</p>
2 Mab	<p>Monitor</p> <p>Collaborative 'is it possible to have two members who can be a deputy? Thank you very much'</p>	<p>Task</p> <p>Regular meeting reports x</p> <p>–reduces uncertainty and helps team cohesion. Even though a task</p> <p>Socioemotional</p> <p>'we are doing great...more or less we are working the same'</p> <p>Looking forward to UAE and project</p> <p>Engages with other TLs on posts</p> <p>Both dep and she go to client mtg</p> <p>Interacts on team forum with other TLs. 'I have the same problem as ...'</p> <p>And 'I agree with Lauren'</p>	<p>Participation:</p> <p>S1: 'Sent message to Russian motivating her to participate...she's not answering...maybe in a few days</p> <p>'Still no response...'</p> <p>'Missing people' listed on meeting report</p> <p>More re registering</p> <p>S2: in mtg report to team 'ensure papers ...on time'</p> <p>'I am trying to find a good technique but it's complicated...only 5 countries helping...'</p> <p>S3: 'talking to team...moving on'</p> <p>'same problem as Caroline -</p> <p>S4: identifies collaborative countries but 'other countries help ...sometimes' notes 'missing countries' on report</p> <p>Participation: 5, 8, 2</p>

3 L	Facilitator Participative decision-making Calm – example: Human relations model	<p>Task: 'we are going to wait on strategy until after... and clients expectations are clear' wants some non-participating students prompted 'so I know they are on board with team 3'</p> <p>Socioemotional Looking forward 'Successful meeting...working very well...' 'see if people feel comfortable' [about virtual platforms] Open in poses about progress an technology they are 'trying' Positive: S1: 'everyone in T3 is participating in... some work not completed on time...teething problems.' 'Thx for all the info sharing everyone' on post. Interacts with other TLs – 'thanks for your comments everybody...'</p>	<p>Participation: S1 Participative....'Some work not being completed on time...hopefully just teething problems'</p> <p>S1: <i>pos more re registering</i></p> <p>S2: <i>Wans India to have 'a prompt'</i> S3: good attendance... 'we haven't seen them much...Russia let us know they weren't attending...it was just USA and Italy that were AWOL' 'Just Italy, UAE and India who didn't turn up...India...not doing work sent...not sure what this means I'll send another direct message and try to get a response' S 4: 'all coming together nicely' Participants: 14</p>
4 C	?	<p>Task: S3 questions on finalisation. Organised. Good leaders look at the big picture and progression and therefore can cope with ambiguity. Set up processes which allow project to move on and stay positive.</p> <p>Socioemotional 'everybody is extremely motivated and we are proceeding well'</p>	<p>Participation S1: More registration issues S2 Asks about this – later states he preferred to deal with it 'internally' Proposal: S3 18.3 Responds to email thank you – clarifies quite a bit.</p>
5 M	Monitor Collaborative monitoring personal performance, collective performance and organisational performance	<p>Socioemotional Looking forward to UAE Sharing ideas on forum Helping others with Liaising with own country students to help her TLs. Collaborative - Interactive with another leader –mar - on participating students in her country and also helps other leaders re looking for sites etc. Participative 'I will skype my team...' S2: I love the idea...good motivation. I'll ask my team what they think...'</p>	<p>Participation Registration - S1: Comfortable with ambiguity 'it's not really bothering as long as people are working' Suggests moving to another platform when one is not working. S2 participation worry S3: 'thank you for contacting the teachers...it helps a lot' 'we have heard from the UAE team. Very glad...haven't participated much yet but ...need time to catch up...' Participants: 11, 10, 11 Proposal issues S3: '...client brief not clear...not much time...don't know what direction...' Time issue S3 'not much time left ...worried...'</p>
6 S S4 Emerging leader M		<p>Task: Team: V little communication Socioemotional – kisses and 'have a good day</p>	<p>Participation: S2: meetings not well attended S3: we are yet to have UAE and Indian students... 27.4 unfair that Indian team yet to contribute – 'use our hard work' Participants: 9 27/4 Megan acting as TL – sends incomplete attendance record</p>

7 D/S	Introduced self. Affiliative but not directive Emerging leader	Task: asks advice 'where should we work[virtually]	Participation S1: 18.3: ...says we are 25...shouldn't we be 24/ On Facebook we're only 18... I'm trying to reach others....' S2: our group is missing... S3 better now...some aren't participating S4: 'they have not done this' R and India Timing S3: 'B' Behind schedule - doing swot in s4 (6 May) Proposal 'We have been looking at the complete wrong publics...' 'Presentation is going to be substandard'
8 C	Hierarchical Attempting to plan and set goals but unable to delegate effectively. More coordinator style Not managing time and stress, not visionary or designing work.	Task: Asking, questions, not sharing positively, questions, participation issues – not constructive in suggesting ways to overcome it. Socioemotional Self-disclosing at beginning with TLs. Report 'I thought I had to be business-like to be respected and followed...I put a team structure in place at the beginning which was too complicated based on a model of hierarchy. A team member said it was disempowering and I got rid of the structure which created uncertainty in the team. In the end assigning tasks to countries worked best. There is much I would change – mostly around my interactions with people showing them more compassion, a better plan and constantly letting the team know where we were.'	Participation/attendance: S1: 14.3 'only had 8 out of 12 teams show to our meeting...can we chase them...' 16.3 'I don't know who my Spanish team are...I'm a bit confused about who my Australian team is...[note use of my]; 16.3 [later] almost through the attendance sheet' 'people in my group who are not on spreadsheet...should I unfriend them?' Coordinator and monitor – concerns over participation and unsure of participants, confusing to her; focusing on member login and detailed participant reports 16/3 wrote about participation. 'neither have been participating...can you check' 17.3 '...unfriending' 19.3 '...not on list' S3: 'our team is struggling...like some guidance' S4: excluded people or 'not excluded anyone from the group I have just added a new one. No communication on the first group anymore....' S4: a lot not participating Participation 5,16,17,9,12,15,9,9,9,8 14/3 Worried about participation – missing countries? How to chase. Participation register, not meeting minutes (as per Diana). 16/3 same – worried about individuals I have 26 in my group but 29 on Time S4 Run out of time Proposal S2: Want to see standard from last year

Table 7 Excerpts from content analysis of student team leaders 2013

Leaders	<p>Socioemotional focus (cohesion, Agreement, tension release). Moves from characteristics (traits and situational) of leaders and followers And behaviour (functional) to relationships.</p> <ul style="list-style-type: none"> • High cognitive complexity (constructivism) not sure if fits here • Self-disclosure – not sure if fits here <p>Task focus: Gives or asks information, suggestions, opinion.</p>	<p>Issues/expectations Emerging leaders Reframing of issues Norms</p>
1 Marlene	<p>Socioemotional focus:</p>	<p>Exam duty to lead the group Sx: Participation: 'many have not been participating and I cannot force them...'</p>
2 Martin	<p>Socioemotional focus: Let's do well Task focus: 'do we have a predetermined style?' Martin's minutes followed same structure every meeting.</p>	<p>Participation: S3 apologies for sending participation sheet late' – dealing with participation internally S4: SA is participating again and we are also hearing from UAE EX: timeliness</p>
3 S3 Emerging leader – deputy Kate	<p>'Socioemotional focus: We are unsure'</p> <p>Task focus: 'lack of consistency and direction' 'get some clarity on what to do...'</p>	<p>Participation: S3 US not attended despite multiple attempts to contact them. Should we exclude them?' Access to site by non-participants. Ex: availability and support of TL. Deputy took over 'I feel abandoned by ...TL...when I am supposed to be the support role' No 'direct questions' but thought 'I should update you' S4: change to leadership 16.4 assumed leadership Leader change on 2/5 . Katie submitted reports and stayed in communication – posted on team forum which earlier leader had not Participation report sent 19, 25.3 and again 2.4 and 9.4 participation lists</p>
4 David		<p>Participation: Sx: didn't show up EX: 'told me in advance' Submitted regular participation sheets More on what they did e.g. not submitted research 'or showed up to the google+ chat but mostly listened in' 'handed in a swot analysis' Using wiggio, google+ and Facebook</p>
5 Chris S1 deputy	<p>Socioemotional focus: 'you inspire me to have a relaxing...'; good team collaboration' Task focus: Ambiguity</p>	<p>Participation S1: some hiccups</p>
6 John Dep Abby Emerging TL s4	<p>Socioemotional focus: Task focus: Asks questions seeks advice – is it a problem? 'Are we supposed to focus on...?' Ambiguity</p>	<p>S4: New TL – Chanelle taken over for Diogio Participation: S4: No interaction form...rest of the countries worked exceptionally hard' Leader change 3/5 and new Spanish joined as underperforming Added Spanish as not performing</p>
7 Nadia S1 deputy Deputy 11.3	<p>Socioemotional focus: emoticon Task focus: Asks for access to Forum; 'coach for British team' Ambiguity</p>	<p>Ex: 'can't wait to kick start my career' Instead of being helpful and working towards same goal...tend to criticise' Participation: S1 'guidance as to who belongs to team 7' 'some difficulties' S2: S4: 'disappointed with organisation ...Italy no longer responding to messages...access by non-participants Big issues of participation from beginning. Complaints 30.4 re her disappointment 'I have not excluded anyone from the group ...I have just added a new one.'</p>

Table 8 Excerpt from content analysis of student team leaders 2014

Leadership role (Quinn CVF) in each stage	Socioemotional focus (cohesion, Agreement, tension release). Moves from characteristics (traits and situational) of leaders and followers and behaviour (functional) to relationships. <ul style="list-style-type: none"> • High cognitive complexity (constructivism)not sure if fits here • Self-disclosure – not sure if fits here Task focus: Gives or asks information, suggestions, opinion.	Issues/expectations Emerging leaders Reframing of issues Norms
1 Long reports S	Socioemotional focus: 'it was fantastic' S2: 'today we fell deep down' S4: 'happy and satisfied...' 'All countries did a very good...' 'I feel very optimistic' 29/4 says he is positive but was demotivated at beginning. Task focus: S2 contribution, collaboration 'split into groups' more research needed Questions and asks for help S4: what do you think? Positive on track – try to manage our best; recognises issues of deadlines 29.3 now on track – issues with participation	Participation: 'problems with holidays' Sx: only method...proceed with the work regardless of participation.' Ex: timeliness 'late with work' deadlines S2: we cannot work separately for a group project
2 S2 long detailed report – 2 pages S2: Thinking about dep	Socioemotional focus: I'm confident this will improve' shows satisfaction S2: 'constantly getting better.' Agreeable - 'I will suggest to team' S3: understanding people have difficulties with English Task focus: S2: '...did waste a lot of time' 'going to complete...' S2; 'we lost time S3: deadlines Participation issues from beginning 18/3 21.4 agrees with others on forum We have already covered tips mentioned (as opposed to Brooke who was effusive about them and implemented them) 31.3 finished 23.3 wants help on working with Up process orientated. 27.3 small participation but 'atmosphere was nice' NZ was middle of night – so why do it them – should have arranged in advance a time as SA away, Italy - jobs etc. Planning ability. 'End of each week I write a little summary of the progress to update everyone' 'I am thinking about choosing her as a deputy'	Participation: S1: 'always the same nations post...' S2: cooperation good so far s2 'now they don't respond...' EX: participation, friendly, fun 'Rely on teams that are working well and who pay attention to deadlines' 'SWOT and PEST - heard it isn't obligatory'
3	Socioemotional focus: Recognises there will be participation issues and time zone issues. Addresses problems – put up an agenda as 'I recognised confusion' proactive socioemotional process	
4	Socioemotional focus: S1 'we appreciate' 'thank you' S2 'project amazing' Task focus: Asks for help re participation 'do you have any suggestions?' Ambiguity Has strong deputies incl MB, Have divided tasks by 19/3	Participation: Updates on what is happening identifies participation issues and is positive – asks for suggestions S3 some issues with participation but relying on local members which includes her deputies. Emails at beginning only – later more on forum. X: reciprocity – 'tried to contact them several times.

<p>5 Very long emails, e.g. page and a half</p>	<p>Socioemotional: S1: 'Don't know how to motivate them...' S1: 'lots of fun' S2 'we are doing better' S3: 'progressing well' S4: 'fun and easy with them.'</p> <p>Task: S2: 'divided whole team into subgroups' S3: 'strategy and ideas' 'coming up with ideas without me telling them' They work hard; get everything done by the time it needs to be finished.</p>	<p>Participation: s1 'they don't answer any questions...' S2: we decided not to try to reach them anymore...' S2 'they don't get back to me...hard to integrate them...' S3: not a problem if Chile drops out for a while Ex: others to be motivated and attend meetings 'all of them attending meetings' 'like working with team and everyone to get along S3: timings --working hard' S3: even if they don't [attend] they get back to me and excuse themselves.</p>
<p>6 Long emails Long reports</p>	<p>Socioemotional focus: S1 'all very satisfied' Introduced vice leader Task focus: S1: Took role as others too busy and 'didn't mind' Established a timetable and what to expect in advance. S4: Doing budget but feels behind</p>	<p>Participation: S3: Concerned re participation and doesn't feel motivated S4: 'not detailed and sufficient work' Ex: S4: timings 'bit behind still'</p>
<p>7 Brenda Long reports</p>	<p>Socioemotional S2: Introduces self and co-leader – 'team spirit' Task processes S1: 1st proper mtg 8.3 (Google hangout with minutes) 'As a global team... Emphasises importance of strong structure, delegation, and follow up briefings. Emails of we and team and global and agree, group consensus, Detailed meeting notes showing links to the documents and action list.</p>	<p>Participation: Discussed norms S1: 'all team members will take part in all elements ...in constant contact with each other...various asks, review each other's work, add to it, make amendments. To ensure all members play a role in all aspects...' S3: 'xx want to communicate but it's unfortunate they haven't' Showing compassion and using participative decision-making S4: Local members the best. Expectations: ready to go Participation: 'tried and tried to involve' and 'certain members worked wonderfully together.'</p>
<p>8</p>	<p>Socioemotional S1 'my team knows they can count on me' S1 'They make me feel at ease in my position...' Task process: S2: 'meeting deadlines organised – each country to nominate...'</p>	<p>Participation: S2: 'I've sent dozens of messages' S2 'I spoke too soon' 'I have set a deadline but only half my team has joined...' S3: difficult to get collaboration Expectations S1: 'they recognise my talent for chaos control' S1 Looking forward and getting to know so many different people...count on me T: website access – login not working</p>

3. Questions and issues raised by student team leaders in Chapter 7 'Great expectations'

Table 9 Excerpts of content analysis identifying issues and questions by student team leaders in 2012, 2013 and 2014

Team	2012	2013	2014
1	<p>S1: 1 re timeline Sends minutes Registration - clarification on team changes (process) S1 Whether to forward team minutes instead of just an attendance report (process) S2: asks me to contact a L Q on proposal – suggests something and asks did we misinterpret (as team had differing opinions) (constructive) Technology question to progress client discussion (constructive)</p>	<p>S 3 Advice would be helpful?</p>	<p>S1: can't attend client mtg? alternative S2: When will client give answers? S2: question re conference S4: ?date of submission</p>
2	<p>S1: Leadership questions – 2 deputies possible? (repeated on forum 2 days later) Sends minutes S4: Other countries are participating and sometimes they're not -statement</p>	<p>S3: UAE students were participating S4: ?style of presentation and referencing etc.</p>	<p>S1: Where is forum? S1: ?students not submitting work S3: ?conference S4 ? budget currency</p>
3	<p>S3: Good attendance (13) Sends regular registers S3: All who attended were great S4: coming together</p>	<p>S3: T1 underperforming, not sure what to do 'no direct question' about emerging leadership S4 ?Submission q</p>	
4	<p>S1: ? registration – they do not reply S3: proposal presentation question (length of document)?</p>	<p>S4: ? submission date</p>	<p>S 2: ?participation from US S4: question on (unexpected) team change</p>
5	<p>S1 ? registration S1: ?possible to solve the problem S3 ? clarifying client brief – wants information from client</p>		<p>S1: ? Sending submission form after meeting – what do you think?</p>
6	<p>Emergent TL Megan S3: could you let Indian L know that team haven't contributed?</p>	<p>Chanelle – emergent TL S4: question on proposal</p>	<p>S3: ? Is this update enough?</p>
7	<p>S4? 'various issues' S4 ?hand in day</p>	<p>S1: ? team registration</p>	<p>S1? login S3: login issue S4: ?submission</p>
8	<p>S1 ? 6/6 emails with qs on s registration S3: I'd really like some guidance... S4: ? GlobCom guidelines</p>		<p>S2: ? local or global ? strategy between countries - asks about working processes</p>

5. Excerpts from diary notes (2013) about actions in Chapter 7 'Great expectations'

The team mentoring page was moved to GlobCom website; the GlobCom website was inadequate. More material to be added including schedule, readings and guidelines to the team mentoring website.

Explicit goals may help structure stages rather than needing to rely on a-e emails. What would happen if these were more explicit?

Although I want to make changes I have to wait for the team board meeting and lecturers meeting.

Interesting to see the inside depth of communication from team leaders and being involved in their processes. Need to find a way to get lecturers more involved – not all lecturers have a team leader in their course so can miss out. Sending them participation reports and meeting registers helps but lecturers unaware of the struggle that team leaders have.

Hard enough to get lecturers to login to website and see the team mentoring pages and the stages.

Also can stimulate other team leaders to interact as well as take up roles.

1. A challenge to get lecturers to login to website and see the team mentoring pages and the stages.

I pasted registers onto emails rather than attaching these.

Better responses

Getting people to go to help pages is difficult.

2. No access to website as webmaster away

Set up team leader forum

Team leaders communicated on this with me and tea leaders – showed they needed the support. 2013 moved to main website but had difficulties with technical issues

Confirmed the team leader forum site as effective and needed as lecturers in stage 4 responded to the information provided to them. Therefore, this was moved into the main website of the project for 2013. A new website for the team mentors only. Team leaders communicated on this with me and tea leaders – showed they needed the support. 2013 moved to main website but had difficulties with technical issues

3. Team mentoring site

Getting people to go to help pages is difficult.

Provided information on running a virtual team, collaboration tools etc. that was existing but created

4. Team leader dissatisfaction

TI criteria

Mukherjee identifies the need for social capabilities in stages 2 and 3 which encourage motivation, but there was low activity in the middle stages of 2013 and very low sharing of the roles except for the coordinator role. Therefore, it may be helpful to encourage interaction in these stages to improve participation.

5. Poor interaction and low middle stages

Development of roles for lecturers and student teams

6. Uncertain schedule

Team stages articulated

7. Oversized chaotic teams

Team size defined

8. Some team leaders not communicating

Team mentoring role reinforced

Appendix D: Student Information Pack

Student introduction to GlobCom

- What is GlobCom?
- What are the GlobCom goals?
- Student virtual teams and their leaders?
- A country leader, deputy country leader and extra students
- Format of a student team
- Team stages and activities
- What happens at the beginning?
- Stage 1 to stage 4
- Criteria for identifying a team leader
- Suggested student roles
- GlobCom expectations of you

What is GlobCom?

- GlobCom is an educational initiative, registered as a charity in Germany with a board of trustees and a board of directors.
- GlobCom gives senior PR students the opportunity to form multinational teams which compete to create a global proposal from a live client brief.
- GlobCom addresses the demand for students to achieve the international PR expertise which is delivered by global virtual teams - people dispersed in time, geography and culture who can work collaboratively and interdependently, communicating through technology.

What are the GlobCom goals?

1. To work in an international team
2. To collaborate online
3. To solve a global PR problem as an international agency
4. To overcome cultural barriers
5. To recognize cultural diversity as a strength
6. To learn that a global strategy has to be implemented locally
7. To persuade through a presentation

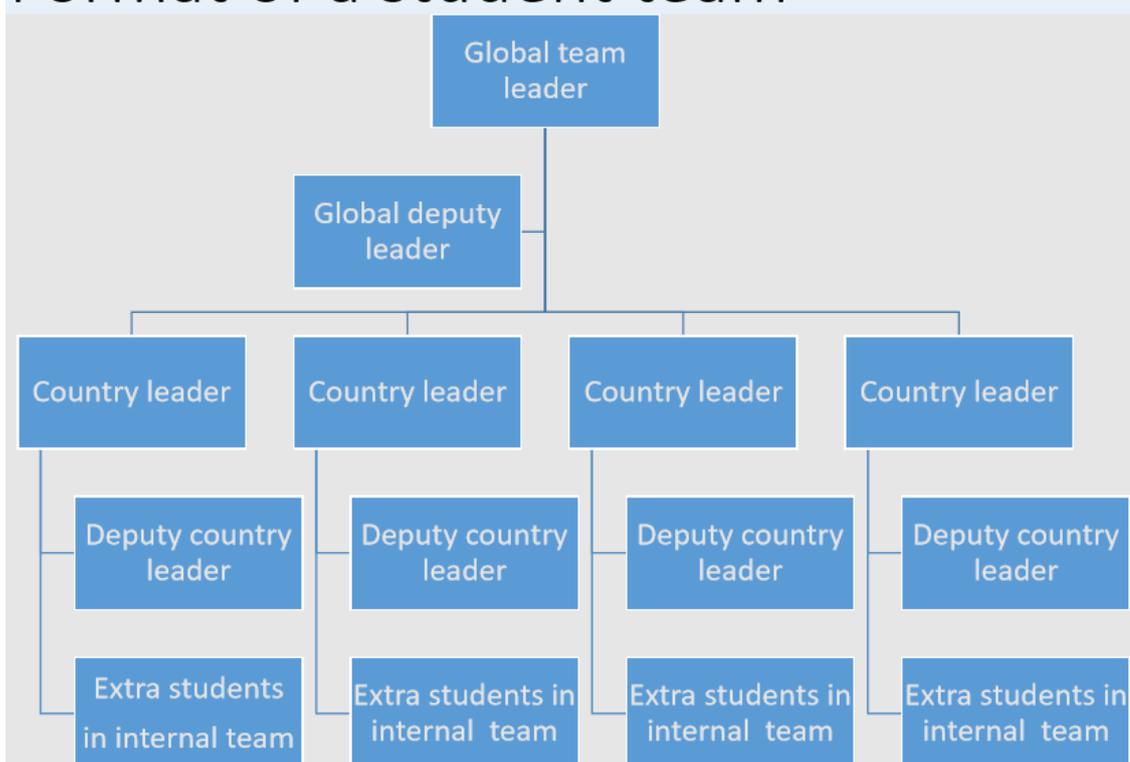
The student virtual teams and their leaders

- Usually eight or nine competitive **virtual teams** comprise two students from each university so that teams are multinational and work across geographical locations. Any extra students from a country form an **internal team**.
- A **global student team leader** and **deputy leader** for each team is elected online in stage 1, along with other team roles (see slide 14)
- A **country leader represents** their own country in team meetings (see next slide) and sends work to their lecturer at the end of each stage (see next slide)
- The **deputy country leader** manages any **extra students** from their country as an **internal team** (see next slide)
- The GlobCom website hosts a **team mentoring site** for students and a global team leader forum for leaders to communicate with other leaders and the global team mentor (who is also a lecturer)
- Leaders submit student registers, and report on team progress to the global team mentor
- Lecturers guide their own students in all the teams – please refer any questions to your own lecturer
- The competitive proposals are submitted online and marked using given marking criteria
- **Students and lecturers attend the GlobCom conference where the winners are announced**

A country leader, deputy country leader, and extra students

- A **country leader** represents their country within the team. They liaise with the other virtual team members of their virtual team including their global virtual team leader.
- Country leaders submit work after each stage to their lecturer.
- The **deputy country leader** manages any **extra students** from their country who want to participate in GlobCom. These **extra students form an internal team** and are **not** registered by GlobCom. The internal team liaises with their **deputy country leader** only. The deputy country leader manages the work of the internal team and passes these contributions to the other team members.

Format of a student team



Team stages and activities

Date	Functional stage and activities
February - March 4	Enrolment Students meet and socialise and work out procedures
March 4 – 24	Establish team communication
Stage 1	Research to create a situation analysis
March 25 - April 15	Collaborate
Stage 2	Framework of proposal: Objectives, strategy, publics, concepts
April 16 - April 29	Share work online
Stage 3	Body of proposal: Confirm strategy, implementation, action plans
April 30 - May 6	Collate work
Stage 4	Finalise proposal: Develop budget, proposal evaluation, submit 7

What happens at the beginning?

- Preparation: February - March 1
- GlobCom registration of all students into their teams (two from each country) by webmaster, Julian Gross
- Students meet, socialise online and learn about GlobCom until all students are registered in their GlobCom teams
- If there are more than two students from a country in one team these **extra students** are not registered but form an internal team and report to their **country leader** who will manage their contributions (see slide 4)

Stage 1

March 1-21	Team processes: All students meet online and introduce themselves
Establish team communication & research for a situation analysis	Elect team leader (see slide 12 for team leader criteria), deputy leader, country leaders and deputy country leaders . Allocate roles to all team members (see slide 14 for roles) Arrange an initial team meeting and identify team goals Establish timeline, meeting times, what to do if absent from a meeting, list each country's holidays, set up a virtual shared platform
	Proposal: Review client brief and discuss as a team (March 1-16) Discuss brief with client (March 16) Research using a team online SWOT and PEST analysis Draft a situation analysis using a SWOT and PEST analysis <u>Country leaders to submit situation analysis to their lecturer at end of this stage</u>

Stage 2

March 22 - April 17	Team processes:
Collaborate & develop framework of proposal	<ul style="list-style-type: none"> • Hold meetings and send meeting minutes to team • Present work to the team and discuss • Post collaborative work on the virtual platform
	Proposal: <ul style="list-style-type: none"> • Write objectives (SMART) • Create strategy (use a creative concept with an overarching theme) • Identify publics (analyse and rank in terms of importance) <u>Country leaders to submit framework of proposal to their lecturer</u>

Stage 3

April 18 - April 29

Share work & write body of proposal

Team processes:

- Carry out brainstorming to gain creative ideas
- Hold meetings and send meeting minutes to team
- Present work to team and discuss
- Post collaborative work on the virtual platform

Proposal:

- Confirm strategy and creative concept
- Develop implementation plan (tactics that meet objectives)
- Create action plans regarding the implementation

Country leaders to submit body of proposal to their lecturer

Stage 4

April 30 - May 15

Collate work & complete proposal

Team processes:

- Hold meetings and send meeting minutes to team
- Present work to the team and discuss
- Re briefing session with client (May 2)
- Post collaborative work on the virtual platform

Proposal:

- Budget
- Timeline
- Proposal evaluation measurement
- Revise proposal and edit
- Submit proposal

Country leaders to submit final proposal to lecturer by May 15

	Criteria for identifying a global virtual team leader	Grading
Availability	Have the time and willingness to carry out this very time-consuming role; this is often the limiting factor for student team leaders who over commit in their enthusiasm but later let the team down	/5
Collaborative	Enjoys collaborative teamwork and is non-hierarchical but has the ability to make decisions and lead	/5
Discreet	Is discreet and respects other people's privacy; this is important as personal communication should not always be shared with the team.	/5
Flexible	Is comfortable with ambiguous and fast-moving situations; often the uncertainty of the project can be very frustrating	/5
Relational	Feel rewarded by good friendships; when the proposal is challenging the friendships are mutually sustaining	/5
Personable	Friendly and understated; not necessarily extroverted or charismatic in person	/5
Multicultural	Has a multicultural appreciation, is not nation or hemispheric-centric, and understands how to work with time zones	/5
Technological	Likes to develop online team processes to help others collaborate and be organised Ability to use diverse virtual platforms in collaboration with the team without feeling overwhelmed and must have constant online access and availability over time zones	/5
Total assessment		/40 13

Suggested student roles

- **Global student team leader:** (see global team leader criteria on slide 12): Communicate with the team, delegate roles, ensure collaboration and maintain morale. Confirm your role with the Global Team Mentor: Averill Gordon, agordon@aut.ac.nz to gain access to the Global Team Leader Forum www.globcom.org for ongoing team leader guidelines.
 - **Global deputy team leader:** Works closely with team leader to coordinate meetings, write and send meeting reports to team members and team mentor
 - **Country leader:** Represents their own country and submits team work to their lecturer at end of each stage
 - **Deputy country leader:** Manages work by extra students from their country in an internal team
 - ***Editors:** several team members to collate update and edit presentation
 - ***Virtual platform managers:** Several members set up and maintain virtual platform for document sharing, scheduling and job allocation
 - ***Designers:** Several members format and design the presentation
 - ***Researchers:** Several members outline and collate the team research
- *These are shared roles and may include more than two students in a team.

GlobCom expectations of you

- Introduce yourself to your team and share your social media profile
- Know the team stages and expected actions and outputs
- Build a visual team profile early and submit with proposal
- Use virtual communication positively and avoid personal comments
- Develop team norms, i.e. meeting times, roles, taking of minutes
- Liaise with your lecturer regularly, attend all meetings
- Interact frequently with your team and team leader
- Keep your team leader and team informed of anticipated absences
- Check the GlobCom website regularly www.globcom.org

- **Carl Zeiss Vision International GmbH** has been approved as our case sponsor. Some of you will remember that we have worked already some years ago on "Clear Vision". We shall get a "continuation", named Aloka, and students certainly can build up on the strategies of the former teams. However please keep this information still confidential vis-a-vis your students.

The venue of our 4 nights symposium will be **Bangalore in India**, which could be reached directly from Europe and/or via Mumbai, the former Bombay. We are very grateful that Sai Prasaad with Melissa, whom you know already from our 2016 symposium, and their team as well as the university are prepared of arranging the symposium as our host.

We shall meet from **June 4 (arrival day) to June 8, 2017** (departure day). June 4/5 will be devoted to the coaching of students giving presentations, to presentations of the teams in front of juries including a welcome eve. Pavel will arrange these presentation days in close co-operation with the host. On June 6 the symposium will be carried out. We shall experience presentations on burning issues of the communication industry followed by the two winner presentations. On June 6 eve we have the gala dinner with outside honoured guests and a dinner speaker. June 7 should give us an impression of Bangalore as the "Silicon-Valley-City of India".

Im attaching the timetable of GlobCom 2017. As you can see our official start of the project is on March 1. However our webmaster, Julian Gross, will tell you soon, when and how you can start with the registration of your students. All our **nine (9) teams** should be completed in the first days of March 2017 .