



Conceptualising Learning in Social Virtual Worlds: An Ethnography of Three Groups in Second Life

Wan-Ying Tay
Kellogg College

Thesis submitted to the University of Oxford for the Degree of DPhil
Hilary Term, 2012

TABLE OF CONTENTS

Abstract	vii
List of Figures/Tables	viii
Chapter 1 – Introduction	1
1.1. About Second Life	2
1.2. Rationale and aims of study	7
1.3. Overview of the chapters	11
Chapter 2 – Theoretical constructs and conceptual framework	14
2.1. The potential of virtual worlds as learning spaces	15
2.1.1. <i>Defining virtual worlds and its distinctive characteristics</i>	16
2.1.2. <i>Social virtual worlds as “third places”</i>	22
2.2. Theories for examining learning	24
2.3. Conceptualising learning in online groups	29
2.3.1. <i>Defining and characterising online groups</i>	32
2.3.2. <i>Models for development of online groups</i>	37
2.3.3. <i>Dynamics of online groups</i>	40
2.3.4. <i>Frameworks for examining learning in online groups</i>	44
2.4. Research framework and research questions	53
Chapter 3 – Methodology and research design	57
3.1. Methodological considerations and implications of adopting an ethnographic-based approach	57
3.2. Research design	60
3.2.1. <i>Selection of groups</i>	61
3.2.2. <i>Gaining access to the field site</i>	66
3.2.3. <i>My role as an ethnographic researcher</i>	68
3.3. Data collection methods	69
3.3.1. <i>Conducting observation of participation</i>	70
3.3.2. <i>Conducting semi-structured interviews in Second Life</i>	72
3.3.3. <i>Logging of fieldnotes</i>	75
3.4. Analysis of data	75
3.5. Steps taken in ensuring reliability and validity of study	77
3.6. Steps taken in addressing ethical concerns	79
3.7. Writing up and presenting the ethnographic data	82
Chapter 4 – Analysis of the findings of the Science Group	84
4.1. Description of the Science Group	84
4.2. A Brief Account of a virtual field trip	86
4.3. Changes in group development and dynamics	90
4.3.1. <i>Extending membership beyond a niche group</i>	91
4.3.2. <i>Developing a repertoire of activities in supporting learning</i>	94
4.3.3. <i>Ensuring the credentials and backgrounds of members</i>	99
4.3.4. <i>Establishing hierarchical structures</i>	104
4.3.5. <i>Influences of virtual spaces</i>	105
4.3.6. <i>Nurturing communal sentiments and establishing group norms</i>	109
4.3.7. <i>Interacting with the Second Life environment and the larger Science community</i>	113

4.4.	Summary of chapter	116
Chapter 5 – Analysis of the findings of The Education Group		118
5.1.	Description of the Education Group	118
5.2.	Changes in group attributes and the related group dynamics	120
5.2.1.	<i>Bringing together people of shared beliefs, practices and experiences</i>	120
5.2.2.	<i>Cultivating group identity</i>	124
5.2.3.	<i>From a centralised to a decentralised system</i>	127
5.2.4.	<i>Increasing the use of technology in Second Life</i>	131
5.3.	Summary of chapter	136
Chapter 6 – Analysis of the findings of The Philosophy Group		138
6.1.	Description of the Philosophy Group	138
6.2.	Changes in group development and dynamics	141
6.2.1.	<i>Defining a classroom style discussion Structure</i>	141
6.2.2.	<i>Having a small but active membership</i>	144
6.2.3.	<i>Having a dominant leadership and managing disagreements</i>	148
6.2.4.	<i>Nurturing a sense of belonging</i>	154
6.2.5.	<i>Reacting to external events and technology</i>	158
6.3.	Summary of chapter	160
Chapter 7 – Discussion and synthesis of findings		162
7.1.	Salient attributes of the three groups and how they had changed over time	162
7.1.1.	<i>Membership</i>	162
7.1.2.	<i>Social and task orientation of the group</i>	169
7.1.3.	<i>Group governance</i>	174
7.1.4.	<i>Use of technology and relationship with external organisation</i>	178
7.1.5.	<i>Summary</i>	180
7.2.	Learning in individuals	181
7.2.1.	<i>Individual learning through developing one's practice</i>	181
7.2.2.	<i>Individual learning through engaging in shared practices</i>	182
7.2.3.	<i>Individual learning through becoming and belonging to the group</i>	184
7.3.	Manifestations of learning in interpersonal relations	186
7.3.1.	<i>Interpersonal learning through managing members, negotiating and resolving conflicts</i>	187
7.3.2.	<i>Interpersonal learning through collaboration</i>	189
7.4.	Manifestations of learning in groups	190
7.4.1.	<i>Group learning through modification of norms and shared values</i>	190
7.4.2.	<i>Group learning through creation of new connections, knowledge and adoption of new technologies</i>	192
7.4.3.	<i>Group learning through increase in responsiveness to conflict and adaptability to changes</i>	193
7.4.4.	<i>Group learning through increase in cohesiveness</i>	195
7.5.	Juxtaposing group development, learning, and Second Life	197
Chapter 8 – Conclusion		201
8.1.	Contribution of the study	201
8.2.	Scope and limitations of study	202
8.3.	Closing comments	204
Bibliography		205
Appendix A – Sample of notecard distributed to participants		231

Appendix B – Profile page on Second Life	232
Appendix C – Electronic information sheet	233
Appendix D – Electronic informed consent form	234
Appendix E – Research ethics approval form	235

ACKNOWLEDGEMENTS

This thesis would not have come about if not for the unwavering support and encouragement from many individuals.

First and foremost, I would like to express my deepest gratitude to my supervisors, Dr Rebecca Eynon and Professor Ralph Schroeder. Thank you for sharing your knowledge, expertise and experiences with me, for guiding me throughout this journey, and for taking me to greater heights. Your invaluable insights, untiring patience and keen support have been instrumental to the development and completion of this thesis. You have been the most inspirational role models to aspiring academic wannabes like me.

I would also like to thank my examiners, Dr Chris Davies and Dr Martin Oliver, for your invaluable comments and recommendations on this thesis – I am most grateful. To Professor Ingrid Lunt, Professor Geoffrey Walford, Dr David Mills and Dr Chris Davies who examined me at my Transfer and Confirmation of Status interviews, thank you for your insightful observations and helpful suggestions – they were vital in steering the project towards the right course. I would also like to extend my gratitude to Professor Sisse Siggaard Jensen, Professor Louise Phillips, Dr Greg Wadley, Dr Paul Dourish, Dr Christine Halverson and Professor Dianne Sonnenwald, with whom I had the pleasure of discussing my project at the Ph.D. seminar: Analytical strategies and methodologies for the study of virtual worlds and the Doctoral Colloquium at the Group 2010 Conference.

To all the members of the three groups, with whom I spent a most memorable and enriching nine-month period with in the virtual world, Second Life, I am most thankful to you for graciously welcoming me into your groups and allowing me to attend the group events. This thesis would not have come into being if not for your generosity and openness in sharing your thoughts and experiences with me.

To my colleagues at the Department, thank you for the many stimulating and thought-provoking conversations on our respective projects. I would especially like to thank my friends, Margot McKinnon, Machi Sato, Mitsuko Matsumoto and Abdul Al Lily, for taking time to read and comment on the drafts of this thesis. Your inputs and suggestions have been most helpful in shaping the thesis. My thanks also go to my colleagues in the Learning and New Technologies Research Group. In particular, I would like to thank Jingjing Zhang and Chia-Ying Lee, who were the most amazing course mates I could ask for. The take-away dinners that we shared and our conversations about our research studies and life in general, were just a small fraction of the numerous beautiful memories that I remember fondly. I would also like to extend my appreciation to the staff members at the Department of Education and Kellogg College for your generous support throughout my course of study.

The company of many wonderful friends, particularly Ariel, Bipana, Chang Da, Charlene, Daniel, Fei-Yun, Florence, Isis, Jane, Jason, Jenny, Juliana, Lorna, Margot, Phil, Shuang, Wayne and Zhi Ling, have enriched my time in Oxford. Thank you for the beautiful and treasured memories and I wish you all well in your future endeavours. I would also like to thank my friends in Singapore and other parts of the

world who provided words of encouragement via emails or through Facebook and Skype.

I owe my loving thanks to my family. Thank you for always being there for me, regardless of the physical miles that keep us apart. Thank you for making numerous trips to visit me despite your busy schedules. To my paternal grandparents, I am so sorry I was not able to be by your side over the past few years; I should have been, since you had been there for me throughout my growing years. I seek your forgiveness. I would especially like to thank my dad for providing encouragement and advice whenever things got tough, and my sister, Wan Ting, for taking such great, loving care of the family and our pet dog. I would also like to extend my appreciation to my mother-in-law, godparents, and Aunt Miao Bing.

Last but certainly not the least, I would like to thank my husband, Wei Meng, for supporting me in all respects. It had not been an easy decision for us to come to Oxford, but it turned out to be a beautiful chapter of our lives that I will always cherish dearly. The mind-boggling debates we had on occasions challenged me to reflect on, reconsider and at times, reconstruct my assumptions and ideas. They had, undoubtedly, helped in refining and augmenting the arguments and frameworks presented in this thesis. Your unconditional love is what keeps me going, especially during the period when I had to be away from home to work on my thesis. Thank you for sharing the joys and tears with me throughout this delightful yet challenging journey, and for always believing in me. I look forward to embarking on many more new exciting chapters with you.

DEDICATION

This thesis is dedicated to my mum, whom I know continues to guide and watch over me, from wherever she may be.

ABSTRACT

This thesis presents an ethnographic investigation of how people organise themselves into groups in social virtual worlds and how learning occurs through such organisation. In particular, emphasis is placed on examining the learning processes occurring in both the individuals and the groups that they belong to. To examine this overarching question, an ethnographic-based study of three informal, self-organising groups was conducted over a nine-month period in the social virtual world, *Second Life*, with participant observation and in-world semi-structured interviews as the main data collection methods. The study is guided by the following research questions: 1) what are the salient attributes of the three groups and how have they changed as the groups developed over time?; 2) what can be observed of the ways in which learning occurs along the three planes: individuals, interpersonal relations, and group?; and 3) how does group development affect learning, and vice versa?

The findings indicate that on an individual level, learning was observed to have occurred as members developed their own practice, knowledge and skills, engaged in shared practices, and felt a sense of becoming and belonging in their respective groups. On an interpersonal level, learning occurred as members worked on managing relationships with other members, negotiating and resolving conflicts and engage in collaborative projects. On a group level, learning was observed to have occurred as the group members worked on modifying norms and shared values, creating new connections, adopting new technologies, increasing responsiveness to conflicts and adaptability to change, and increasing group cohesiveness. The findings draw together individual and group cognition, as well as the social and environmental context, and stress that all of these are pertinent in advancing our understanding of the ways people learn in social virtual worlds.

The importance of this thesis lies in its contributions to the emerging literature of virtual worlds, by developing a conceptual understanding of how we think about learning in social virtual worlds like *Second Life*. A framework that is widely applied in the literature for examining groups is the Community of Practice (CoP) model (1991; Wenger, 1998). While CoP offers important insights, I argue that it is not applicable to all groups in social virtual worlds. I suggest instead that learning be examined along three planes as suggested by Rogoff (1995; 1998). These three planes of analysis can be used to explain changes in a group's attributes as it develops and mature over time. Doing so will open up new avenues and opportunities for us to explore learning within the social virtual worlds, especially in the light of group development. Drawing on the literature review and findings of the three groups studied, I present a framework that conceptualise learning in relation to group development in the virtual world environment, with the aim of contributing to this nascent area of educational research.

LIST OF FIGURES/TABLES

FIGURE 2-1 - A SCREENSHOT OF A MUD PROGRAMME	17
FIGURE 2-2 - A TYPOLOGY OF ONLINE GROUPS	36
FIGURE 2-3 - DIFFERENT FORMS OF VIRTUAL COMMUNITIES ACCORDING TO THEIR CONTEXT OF EMERGENCE.....	36
FIGURE 2-4 - CONCEPTUAL MODEL OF VIRTUAL COMMUNITY LIFE CYCLE	39
FIGURE 2-5 - TYPICAL DEVELOPMENT STAGES IN A COMMUNITY OF PRACTICE	45
FIGURE 2-6 - CHANGES IN PARTICIPATION PATHS OF SCUBA INSTRUCTORS DESCRIBED USING LPP ...	46
FIGURE 2-7 - COMPONENTS OF SOCIAL THEORY OF LEARNING	47
FIGURE 2-8 - A CONSTRUCTIVIST MODEL OF COMPUTER-MEDIATED INTERACTION	50
FIGURE 2-9 - BALES' (1950) INTERACTION PROCESS ANALYSIS (IPA) FRAMEWORK	51
FIGURE 2-10 - GRAPHICAL REPRESENTATION OF THE RESEARCH FRAMEWORK.	55
FIGURE 3-1- CHOOSING AN AVATAR.....	67
FIGURE 4-1 - A SCREENSHOT OF THE VIRTUAL STONEHENGE.....	96
FIGURE 4-2 - A SCREENSHOT OF A PRESENTATION IN THE VIRTUAL AUDITORIUM.....	106
FIGURE 4-3 - A SCREENSHOT OF ANOTHER AUDITORIUM WITH CIRCULAR CHAIRS.....	107
FIGURE 4-4 - A SCREENSHOT OF AN INFORMAL DISCUSSION MEETING.....	108
FIGURE 5-1 - PICTURE OF A ROUNDTABLE MEETING	132
FIGURE 5-2 - PICTURE OF A SEMINAR SESSION.....	133
FIGURE 6-1 - MEETING ROOM OF THE PHILOSOPHY GROUP.....	140
FIGURE 7-1 - PROPOSED MODEL RELATING GROUP DEVELOPMENT TO LEARNING.....	199

CHAPTER 1 – INTRODUCTION

A three-storey high modern building greeted me on arrival. I entered through the door-less, open-concept entrance into a spacious lobby that looked towards the ocean. Zen-inspired indoor landscaping laid the path towards a water fountain at the far end of the lobby, offering a cascading water effect to the minimalist yet contemporary design. Beautiful as it was, I had no time to stop and take a second glance. I headed straight for the auditorium located on the far right. It was a fairly large auditorium and was able to seat about eighty people. On the stage area, there was a podium and a screen. Strangely, there was no sight of her. Perhaps this was not the agreed meeting place.

Walking back to the reception area, I climbed the wooden stairs up to the first floor, moving as quickly as I could. There were two rooms, one on my left and the other on my right. Not knowing which room I was supposed to be in, I hastily decided to enter the one on the right. Standing in front of the glass door, I waited impatiently for the door to slide open. Dark oak coloured wallpaper that lined the walls contrasted against the grey carpet, giving the lounge a warm feel. There she was! A slender woman with lightly tanned skin and long dark hair, sitting on a white couch decorated with black cushions, resting her head on her right hand. On seeing me, she stood up and waved her left hand at me. Without haste, I typed on the keyboard, “sorry for being late”. Before I could explain that I met some problems finding the meeting place, I saw “don’t worry about it ☺” appearing on the chat window at the left corner of the screen. I felt an immediate sense of relief...

The extract above was an account of my first meeting with Janice, the founder of the Science Group I studied for nine months. We had arranged via email correspondence to meet online to discuss my intended study. The meeting got off to a frantic start as I first had problems logging into *Second Life*, a *social virtual world* environment, then met with difficulty locating the agreed meeting place. Thankfully, it turned out well in the end. We had a good and constructive discussion about the project and I was

granted access into the Science group. This group, together with two other unique Second Life groups, provided the ethnographic focus for this study. What emerged from my engagement with these three groups is a vibrant picture of people from various walks of life and from different countries around the world engaging in the process of socialising, networking, information sharing and knowledge construction in the context of a virtual world.

This thesis presents an ethnographic study of three groups in the context of the virtual world, *Second Life*. The purpose of this study was to examine how people organise themselves into groups in Second Life and how learning occurred through such organisation. In particular, emphasis was placed on examining the learning processes occurring in both the individuals and the groups that they belonged to.

1.1. ABOUT SECOND LIFE

The virtual world, Second Life, is developed and governed by Linden Lab, a privately owned company with its headquarters in San Francisco and branches in several parts of the US. Since its launch to the public in 2003, Second Life has attracted much media and academic interest. Though not purposefully designed as a learning space, Second Life has been used for educational purposes by a number of real-world institutions. Harvard Law School and University of Southern Queensland (Australia), for example, held classes in Second Life (Brown & Adler, 2008); University of Hertfordshire established an online campus to support the learning of campus-based students (Barker, Haik & Bennett, 2009); and NASA has a virtual island in Second Life where visitors can view archives of space launches and space programmes, as well as information and images of the Universe (Wiecha *et al.*, 2010).

The official trailer of Second Life (<http://secondlife.com/whatis/?lang=en-US>) underlines the basic purpose of the social virtual world, promoting the various activities that potential users can engage in and the possibility for them to be who they want to be. The video has the following caption: “What is Second Life? A place to connect; a place to shop; a place to work; a place to love; a place to explore; a place to be. Be different. Be yourself. Free yourself. Free your mind. Change your mind. Change your look. Love your look. Love your life.” Before this trailer, there was

a previous one that was showing on the website between 2006 and 2008. As Second Life was still relatively new then and the emphasis was placed on creation and building, the trailer then had a different caption, “A new society, a new world, created by the resident. Explore a world of surprise and adventure. Create anything you can imagine. Compete for fame, fortune, or victory. Connect with new and exciting people. Your world. Your imagination. Second Life.” In comparison to the previous trailer, the current one seems to emphasise the characteristics of the virtual world, promoting it as the “place to be” in and the place to meet and socialise.

Unlike game-based virtual worlds, Second Life is not a game and has no specific narratives or clear goals. Rather, Second Life is inherently a social world where users, often referred to as *Residents* (with a capital ‘R’), can chat and interact with each other. It is possible to include gaming elements in Second Life and these are often observed in role-playing groups in the virtual world. It is also not uncommon to find virtual spaces with medieval, fantasy or science fiction themes. However, as Second Life does not provide its Residents with a clear set of objectives, users often have to create or find their own purposes for being there (see, for example, Book, 2004; Diehl & Prins, 2008) and determine their experiences in the worlds for themselves.

Second Life is a user-created virtual world where Residents can create content and objects, of which they have ownership rights to. Almost everything in this virtual world is given form and substance by its Residents (Ondrejka, 2006). This is one of the distinguishing features that make Second Life different from the other virtual worlds. Linden Lab developers did not initially intend on having this feature, but later included the creation element when they found that users enjoyed experimenting with the space and their creations therein (Au, 2008). This ability to create and build then became the main draw of Second Life. Besides providing build-in tools for creation of content and objects, Second Life also allows uploading of multimedia materials such as photographs, diagrams, scanned original documents, interactive models and streamed audio and video clips, thus providing the users with a myriad of possibilities for their creative productions. The ability to create content, combined with the ability to upload images, sounds, and animations help enhance the creating

and building experience. Such user empowerment gives users more autonomy in imbuing the virtual space with their own creations.

Given its social and participatory nature, Second Life naturally encourages the formation and development of groups, where Residents can share their interests, engage in topical discussion or participate in activities. Anyone can form a group with a start-up cost of \$100 Linden Dollars¹ and every Second Life Resident can join up to twenty-five groups at any one time. Groups in Second Life are varied in nature; they include professional groups, role-playing groups, drama groups, book clubs and cultural groups. Through participating in such groups, members can exchange information and engage in joint activities, potentially leading to a range of learning outcomes.

In terms of communication, Second Life users have the ability to communicate through synchronous and asynchronous modes. Text chat that is displayed on a chat window is the primary way that residents communicate with each other. Users can also choose from a range of gestures that will then be depicted through the actions of the avatar (e.g., laughing, crying, dancing, etc.). Through instant messaging (IM), users can send private messages to other users, which will be sent to the recipient to view if he/she is online; if the recipient is offline, the message will be forwarded to his/her email account. The message is also recorded and stored in the inventory in his/her personal account, which can be accessed the next time the recipient logs into Second Life. In addition, in early 2007, Linden Lab introduced an audio chat or voice option in Second Life, which is a common feature included in many game-based online worlds such as *World of Warcraft* (WoW). Previously, users might use other external software such as Skype or MSN concurrently with Second Life to converse through voice chat. A study by Wadley, Gibbs and Ducheneaut (2009) reported mixed feelings about the use of voice in Second Life. While acknowledging that the mode of communication was richer with the use of voice as compared to text, some participants felt they were not too keen on voice communication for it gave away

¹ The equivalent of \$100 Linden Dollars is about \$0.40 USD, based on the exchange rate on 10th March 2012 on LindeXTM Exchange: Market Data, which closed at \$249 Linden Dollars to \$1 USD.

additional information about themselves, such as their gender. They thought that the use of voice was in conflict with maintaining anonymity of their offline identity.

In Second Life, users have many channels and means for gathering, disseminating and receiving information. These include note cards with textual information or external links for more information on the Internet, scripts that can be used to interact with virtual artifacts and objects, and language translators that allow users who speak in other languages to converse with one another through their preferred language. Virtual items and landmarks to specific places within the virtual world can also be stored in a user's inventory for future reference or use. Having these channels and means for information sharing can be helpful when interacting with the virtual environment.

Despite the many functionalities of the virtual world, Second Life also has its fair share of problems and limitations. High user attrition rate and dwindling interest in the rental of virtual land are a few of the challenges that Second Life developers continuously seek to address. Such attrition problems may affect the sustainability of the social virtual world given that the user base is its most important asset (Jung, 2011).

Furthermore, learning how to use Second Life properly can be a time-consuming and exhausting process (Carr, Oliver & Burn, 2010). It involves a steep learning curve (Luo & Kemp, 2008; Salmon, 2009). Additionally, there are technological issues that can disrupt users' experience with the virtual space, such as problems with logging in or a slow network. Computers must meet the requirements of the Second Life system in order for users to participate in the virtual world to the fullest extent.

There is also constant tension between users of Second Life and its developer, Linden Lab. Although Residents and organisations based in Second Life have autonomy and freedom over how they use the virtual space, the overall governance of the virtual world lies with Linden Lab. It sets the terms and regulations of usage and owns the virtual world. There have been many disputes between Linden Lab and the users of Second Life due to conflicts of interest or disagreements of how the environment is to be run. Two examples of such conflicts are highlighted below.

First are the subsidised rates for land rental and usage which were provided to educational institutions and not-for-profit organisations since 2003. Linden Lab decided to do away with these subsidies as of January 2011. This decision caused much displeasure among Second Life Residents when it was announced. As a result, a number of organisations and groups called for urgent meetings in late 2010 and some of them decided to migrate to other virtual world platforms that provide free or subsidised land rental. Those that decided to stay on in Second Life had also begun to explore other virtual worlds and some of them were planning to move their operations in the near future.

The second involves the ownership of the virtual creations. Although it is clearly stated in the terms of use that the Residents own anything they make and retain any legal rights on their in-world creations, they only own these rights within Second Life itself. This is to say that Residents only own the rights for the objects, buildings and other creations that they produce within Second Life premises; they cannot move these items across to another virtual world.

Besides the issue of conflict of interests between Second Life users and Linden Lab, there were also problems within the company itself that led to speculations that the company was running into operational difficulties. Between 2005 and 2009, Linden Lab had seen resignations, layoffs and movements in its senior management and a couple of branches outside of the United States shutting down. There was even word in 2010 that Microsoft Inc. had indicated interest in buying over Linden Lab and taking over the operations of Second Life. Although this piece of news turned out to be untrue, it has caused some organisations and groups based in Second Life to start exploring other virtual worlds, such as OpenSimulator, Kitely, Heritage Key, to name a few. However, Second Life still remains as one of the most popular three-dimensional virtual worlds at the time of writing.

I have highlighted these issues to emphasise the point that users in Second Life are also faced with many issues relating to expenditure, intellectual property and authority not unlike those in real life. These issues are important because they have a bearing on the participation rate, the demographics of participants and

sustainability of participation within the groups. These factors in turn affect how people interact and learn within the unique Second Life environment. For the purpose of this study, it is necessary to take in account the environmental, technological and operational factors of Second Life, particularly how these factors influence the dynamics and functionality of the respective groups.

1.2. RATIONALE AND AIMS OF STUDY

Many scholars have reported on Second Life's potential to be developed and applied as a learning space (see, for example, Boulos, Hetherington & Wheeler, 2007; Jennings & Collins, 2007; Gerald & Antonacci, 2009), espousing the purported benefits and positive learning outcomes afforded by the virtual environment (see, for example, de Freitas, 2008; Salmon, 2009; Warburton, 2009). To date, there is still a lack of studies that focus on ascertaining and establishing these purported benefits and learning outcomes, and our understanding of how Second Life could be used as learning spaces remains limited (Jarmon, Traphagan & Mayrath, 2008; Inman, Wright & Hartman, 2010). Close examination of the literature suggests several reasons for this, three of which will be highlighted.

Firstly, as Dalgarno and Lee (2010) observe, much of the literature addressing learning and instructional activities in Second Life "is largely 'show-and-tell', presenting only anecdotal evidence or personal impressions that cannot be usefully generalised beyond the local context" (p. 23). Just like what Selwyn (2010) observes of research on educational technology, studies in this area tend to be about how Second Life "*could* and *should* be used", but less emphasis is placed on discussing how and why Second Life is "*actually* being used" (emphasis in original text, p. 66). Many studies researching on learning in virtual worlds tend to focus on examining the end product, i.e. the learning outcomes, without giving due attention to how such outcomes actually come about, i.e., the learning processes. Furthermore, a review by Fang and Lee (2009) finds that a majority of studies on Second Life published between 2006 and 2008 is of a descriptive nature. Similarly, Hercheui (2011) reports that studies conducted on virtual worlds tend to be descriptive, rather than theoretically driven. In another review of published studies on virtual

worlds (including, but not particular to, Second Life), Sivunen and Hakonen (2011) observe that many studies have focused on examining on narrowly-defined themes such as effects of avatar appearance on individual perceptions (Yee & Bailenson, 2007; Ducheneaut *et al.*, 2009), effects of avatar on behaviours (Yee, Ducheneaut & Bailenson, 2009), proximity and gaze on interaction and engagement and effects of choice of media on communication (Williams, Caplan & Xiong, 2007). Clearly, there is a need to move beyond research that is descriptive or focuses on narrowly-defined themes (although such studies are important too), to more in-depth case studies or empirical research examining how and why the virtual world is actually being used.

Secondly, there have been studies that carefully designed learning activities, introducing students into virtual campuses in Second Life and studying them under controlled conditions and over a stipulated amount of time. Some of these studies report on the importance of establishing a core set of competencies, including learning the basics of “being there”, such as navigating within the Second Life environment and communicating with others, while some focus on the benefits and limitations of designing learning activities and conducting classes in the virtual environment. Although these studies provide us with many interesting but isolated accounts of successful (and not so successful) ways to conduct learning activities in virtual campuses, they fall short on developing an understanding of the nature of the virtual environment, its structures, its boundaries, and how these can afford or constrain learning processes. The adoption of these worlds and their integration into the curriculum appear to have been done with little understanding of the characteristics, potentials and limitations of the virtual world itself (Bell, 2009). Yet, such understanding of the context is important, for learning in the virtual world is observed to be influenced by the environment that has unique characteristics and may not be of the same nature as that in formal educational settings (Aurilio, 2010).

Thirdly, it is observed that many users log into Second Life with the intention to socialise and mingle (see, for example, Au, 2008; Boellstorff, 2008). Although the

activities of self-organising groups in Second Life may be less formal² in nature, it is possible that some forms of learning, whether intended or unintended, may arise as a result of participating in these activities (Dawley, 2009). For instance, a study by Diehl and Prins (2008) find that participants who took part in a myriad of activities including language classes in Second Life, developed a deeper level of intercultural literacy, which they argue, was an unintended outcome of their interaction and learning. Such learning, however, may manifest differently from the learning achieved in a formal classroom setting. Literature that examines learning, within or outside of formal classroom premises, has often written about how to ascertain and measure the learning objectives and outcomes that have been pre-determined or hypothesised, but has less discussion about learning outcomes that are unintended. Although literature on self-directed learning, adult learning, informal learning, incidental learning or tacit learning talks about unintended outcomes of learning, it does not adequately address how such outcomes can be identified, given that they usually occur without much external facilitation or structure, and may not be immediately visible to both the instructor or the learner.

As can be observed from the current directions of the literature, the majority of research in this area tends to focus on studying how best to conduct learning activities or manage virtual classes in virtual worlds for formal education or postulating the potential benefits and learning outcomes of conducting learning activities in virtual worlds. However, we still know very little about what actually happen in the virtual world environments, i.e., what people do in the virtual world, what kind of activities do they engage in, how they organise themselves into groups,

² The literature usually discusses the formal and informal dichotomy in terms of formal/informal learning. However, it is difficult to draw such a distinction in examining learning in social virtual worlds like Second Life, given that it is possible to conduct less formal or informal activities in a virtual campus (which, in itself, is a more formal, educational venue), such as role-playing activities, and that formal activities can also be organised by social groups (or groups of a less formal nature), such as seminars and conferences. For both of these examples, it will be hard to distinguish between formal or informal learning, given the blurring of the two categories. Thus, I argue that the formal and informal dichotomy presents an analytical difficulty for describing the nature of learning in the social virtual world context. Instead, in this thesis, I use the terms “formal” and “informal” as a way to describe the learning venue/context/environment, i.e., formal educational settings and informal, social groups.

form and sustain relationships, work collaboratively, build a common identity and particularly how they learn through such processes. In order to explore the authentic learning experiences of its users and realise the potential of Second Life as a learning space, I argue that it is necessary to look beyond what the virtual world has to offer for formal education and to consider examining the activities that are taking place within its naturalistic environment. Furthermore, the learning that occurs in self-organising groups in Second Life may include unintended learning outcomes, which may require a different way of conceptualising. So as to be able to make visible such outcomes and the processes of which they come about, I argue that it may be necessary to consider the various ways in which learning presents itself, and perhaps even to look beyond the formal/informal or planned/unplanned paradigm in understanding its nature.

Accordingly, this thesis is an attempt to advance our understanding of the practices and activities occurring within Second Life. The aim of this thesis, however, is not to give a description or an overview of the people and what they do in Second Life, as there has been much excellent work in this respect, by eloquent writers such as Ludlow and Wallace (2007), Au (2008) and Boellstorff (2008), to name a few. Rather, it seeks to understand how learning occurs during and as a result of the practices and activities. Specifically, it places its focus on exploring how and what kinds of learning occur in self-organising groups in Second Life. To examine this, an ethnographic-based study of three groups in the virtual world, Second Life, was conducted over a nine-month period, employing the logging of fieldnotes, participant observation and online semi-structured interviews as the main data collection methods. These three groups were initially formed for the main purpose of connecting like-minded people or people who shared common interest in the respective subject areas. Although learning outcomes were not specifically stated in their objectives, the findings suggest that much learning could be observed in the groups and constituted a significant amount of the groups' activities. Furthermore, although some explicit learning could be identified in the members' discussion of content-specific knowledge, much of the learning that was observed to have occurred could be traced by examining the changes in participation in individuals,

interaction amongst members, and development and dynamics of the respective groups.

The aim of this study is two-fold. The first is to provide an ethnographic reportage on how members of the three groups work towards developing their respective group in the virtual world context. Through documenting this developmental process, it seeks to tease out and identify the learning processes that occur. The second aim is to move beyond the descriptive level and develop a framework in conceptualising the ways people learn in informal, self-organising groups in the social virtual world context. Such knowledge will help us understand how we can support learning in online-based groups that are informal and self-organising in nature.

1.3. OVERVIEW OF THE CHAPTERS

The thesis has been organised into eight chapters.

In Chapter 2, I situate the study in the relevant literature. Consisting of three parts, the first defines the characteristic attributes of virtual worlds and discusses the notion of these worlds as simulated places of the real physical world; the second focuses on how previous studies have examined, conceptualised and explained learning in social virtual worlds; the third explores the characteristics of online groups and discusses what they are like, how they develop and evolve in the virtual space, and how learning manifests itself and can be identified. Following a synthesis of these concepts, I attempt to draw links and postulate the relationship between virtual environment, development of online-based groups and learning.

Chapter 3 describes the methodology guiding the study. The chapter begins with a discussion of the ethnographic approach that was employed in this study, focusing on the methodological considerations and implications. Next, I discuss the reasons for selecting the three groups. This is followed by a description of the ways in which this ethnographic-based study was conducted in Second Life. It concludes with a discussion of the ethical considerations, alongside the mitigations and resolutions that I took.

In the next three chapters, Chapter 4, 5 and 6, I describe the findings of each of the three groups and highlight the key attributes that have changed as each group developed. Although there were other changes that surfaced from the data, these key attributes emerged via the thematic analysis as being closely tied to the major events and are significant in contributing to the development happening in each of the three groups. For each of these attributes, I discuss its changes, how it had changed, how it had influenced the ways in which learning occurred, and the extent to which it was an indicator of learning.

In Chapter 4, I give a general description of the Science Group and a brief account of one of the virtual field trips, in which I participated. This will give the reader a sense of how the virtual ethnography was being carried out. I then proceed to describe the seven changes to its attributes. These changes are 1) extending membership beyond a niche group; 2) developing a repertoire of activities in supporting learning; 3) ensuring the credentials of members; 4) establishing hierarchical structures; 5) use of virtual spaces; 6) nurturing communal sentiments and 7) interacting with external parties in second life. At the end of each structural change, the implications for learning are discussed.

In Chapter 5, I provide a description of the Education Group and identify four main changes that were observed to be salient. These include 1) bringing together people of shared beliefs; 2) cultivating group activities; 3) changing from a centralised to decentralised governance and 4) increasing the use of technology in Second Life. The coherence of the group and its structure was thought to be the highest amongst the three groups studied. This will be explained in more depth in the discussion chapter.

In Chapter 6, I provide a description of the Philosophy Group and identify five main changes to its attributes. These include 1) defining a classroom style discussion platform; 2) having a small but active membership; 3) having a dominant leadership style; 4) promoting free and robust discussion and 5) reacting to external events and technology. The group did not appear to have progressed much in terms of group development and group dynamics. As a result, it was observed that there was little

group learning that was taking place. The Philosophy Group was thought to have progressed the least.

Chapter 7 synthesises and discusses the findings in the preceding three chapters. It summarises the findings in the previous three chapters into five features that describe group development. They are 1) membership; 2) social and task orientation of group; 3) group governance; 4) use of technology and 5) relationship of the group with external agents. Learning is then divided into three planes and analysed vis-à-vis the group development. These three planes encompass individual, interpersonal and group. Finally a framework summarising the discussion is presented. I propose that learning happens when there is tension or collaboration. I also argue that it is important to draw together individual and group cognition, as well as the social and environmental context, in understanding the ways people learn in social virtual worlds.

Finally in Chapter 8, I summarise the scope of the study and highlight its contributions. I question the suitability of the popular concept of Communities of Practice (CoPs) (Lave & Wenger, 1991) for describing learning in groups and communities. I argue that it focuses primarily on learning as it takes place in individual members. Although both the development stages and characteristics of CoPs have been described and discussed in the literature (see, for example, Wenger, 1998; Wenger, McDermott & Snyder, 2002), the conceptual link between how these play a part in influencing learning in individuals and in the group / community itself has not been adequately described. Drawing on the analysis of the findings, I argue that this conceptual link is especially important in the case of informal and self-organising groups for studying the ways which learning occurs in individuals and groups themselves.

CHAPTER 2 – THEORETICAL CONSTRUCTS AND CONCEPTUAL FRAMEWORK

There are three parts in this chapter. The first part discusses the defining attributes of virtual worlds, arguing that virtual worlds are not simply technological tools, but simulated models of the real physical world. Next, drawing upon Oldenburg's (1999) notion of the "third place", I argue that *social virtual worlds* (SVWs) like Second Life function not just as virtual spaces; rather, they serve as "third places" where users coalesce and socialise, or seek solace and company. By imbuing the virtual spaces with their own sociability through interactions and creations, users instil meaning into the spaces, transforming them into "third places".

The second part examines literature that investigates learning in virtual worlds. While most research adopts the *constructivist* approach (see, for example, Dede, 1995; Dickey, 2003; Inman, Wright & Hartman, 2010), I argue that just this approach alone may not be adequate in identifying and explaining the ways in which learning occurs in the context of the virtual world. I examine the various learning theories that have been discussed in the virtual world literature and discuss how these theories may help us in considering how learning may be like in the virtual world.

Besides examining learning in the context of the virtual world, the other important objective of this review is to discuss what the nature of groups is, how they may develop in virtual worlds, and more importantly, to identify potential frameworks that will help in conceptualising and theorising learning in such groups. The review of the literature suggests that there are only a small number of studies that examine groups in Second Life, and even fewer that focus on learning. In consideration of this, I draw upon the literature on groups not only in the web-based and online settings, but also the offline settings. The review suggests that groups develop through stages and that the types of learning that can be observed changes according to the stage the group is in. Furthermore, group dynamics such as membership, group structure and governance can also influence the ways which learning occur in groups. I also examine literature relating to plausible theoretical frameworks for learning in groups.

Finally, drawing on the review, I construct a conceptual framework for the study, so as to identify and capture the ways in which learning occur. I also propose that the learning processes are influenced by the development and dynamics of groups, which have in turn been uniquely shaped by conditions afforded by the social virtual world.

2.1. THE POTENTIAL OF VIRTUAL WORLDS AS LEARNING SPACES

Virtual worlds, or *multi-user virtual environments* (MUVes), as they are sometimes referred to, are online spaces that allow a large number of users to log in simultaneously and interact in real-time. There are three main genres of virtual worlds: 1) game-based virtual worlds; 2) social virtual worlds; and 3) work-based virtual worlds. These virtual worlds are usually maintained and governed by private companies that have resources to provide huge storage and server capacity and manage a large base of users. While game-based virtual worlds such as *World of Warcraft* (WoW) provide players with plot-driven narratives, monsters to kill or quests to fulfil, social virtual worlds like Second Life tend to be much less structured and purposeful in comparison. Social virtual worlds are primarily designed for socialisation, communication and interaction. Work-based virtual worlds like *Project Wonderland* are also built mainly for communication and interaction, but chiefly for work purposes. These are especially useful for companies with employees located in different physical locations, who can arrange to meet in the virtual environment. This study focuses on the second type of virtual worlds – social virtual worlds.

Some scholars discuss the pedagogical benefits of virtual worlds by relating them to design and usability principles, often referring to them as *affordances*. Based on an earlier virtual world platform, Active Worlds, Dickey (2003) describes some of the pedagogical affordances of such worlds such as the synchronous communication tool which allows for immediate feedback, the ability to use different camera settings (first person or third-person view) which allows users to view objects from different angles, and the ability to move and manipulate objects which can support object-modelling tasks. In addressing learning affordances of virtual worlds, Dalgarno and Lee (2010) observe that virtual worlds can be used to facilitate certain tasks that can

help promote learning. These tasks include: 1) acquisition of spatial knowledge through visual exploration of simulated environments; 2) experiential learning tasks that may not be undertaken in the real physical world; 3) learning tasks that lead to increased levels of motivation and engagement; 4) learning tasks that lead to improved knowledge transfer or skills application in real-life situations; and 5) collaborative tasks that may not be possible to conduct with two-dimensional alternatives.

The term affordance was introduced by James Gibson (1977; 1986) in the field of ecological psychology and was originally used to describe the relational properties between an organism and its environment. Now, it is more commonly used to describe an action that can be achieved based on the intended function of an innovation or a tool. Yet adopting a functional perspective to which meanings and values are attached diverts us from understanding its intrinsically neutral properties (Heft, 2003). Oliver (2005) also points out the problems of using the term “affordance”, noting that the “concept has drifted so far from its origins that it is now too ambiguous to be analytically valuable” (p. 402). In consideration of this, I argue that, it is important to go a step back, and to consider the notion of virtual worlds in terms of their inherent properties and distinguishing characteristics instead, prior to the discussion of their affordances. In the next section, I will define what virtual worlds are as well as its distinctive characteristics.

2.1.1. DEFINING VIRTUAL WORLDS AND ITS DISTINCTIVE CHARACTERISTICS

The concept and design of today’s virtual worlds have been hugely influenced by text-based *Multi-User Dungeons* (MUDs), the first of which was created in 1979 (Bartle, 2010). Traditionally set in fantasy worlds and focusing mostly on role-playing and social activities, MUDs (see Figure 2-1 for an example of a MUD) are online systems that allow users to navigate the space, communicate with others, control his/her character and execute various commands by typing text commands.

Another feature of MUDs is that it allows users to create content using simple programming commands. By creating persistent artifacts that are meaningful to

them, users are not only consumers of content, but also producers of this modifiable space. As such, MUDs are described to be “literally, anything” one can type (Thomas & Brown, 2007, p. 152). However, such reliance on text-based communication necessitates a good understanding of typing commands and an ability to relate to system architecture. Thus, MUDs tend to attract specific pools of users who are savvy with such a system and its commands.

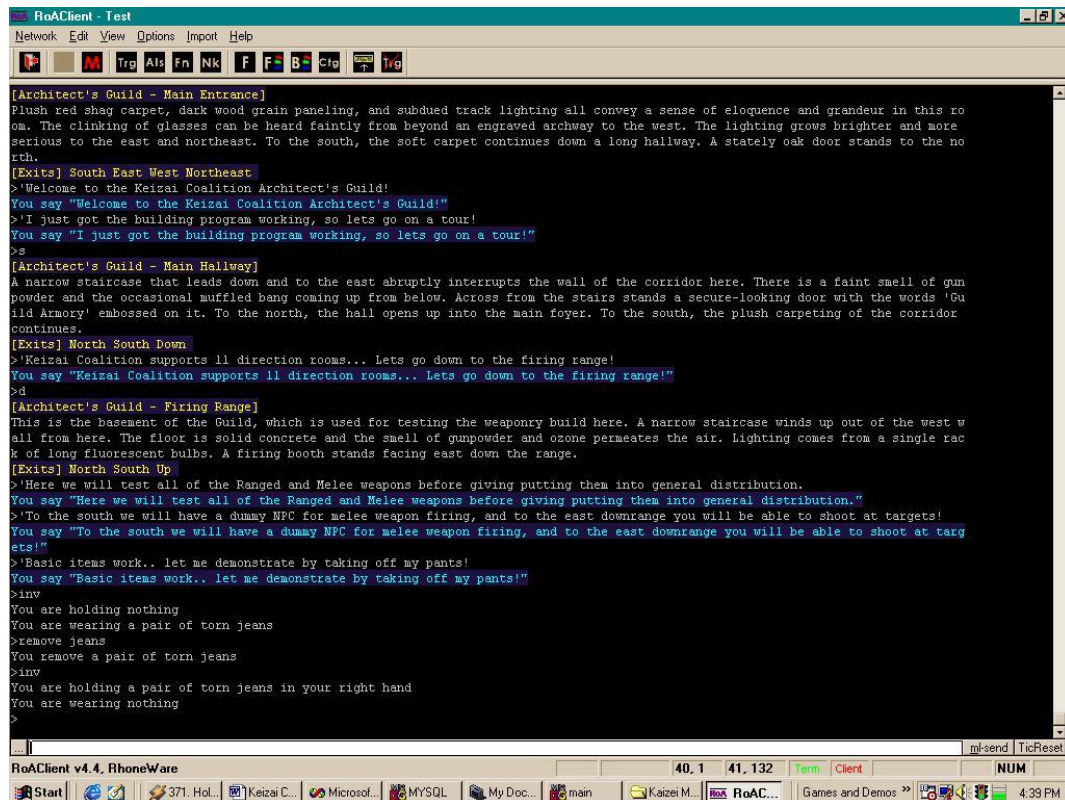


FIGURE 2-1 – A SCREENSHOT OF A MUD PROGRAMME (SOURCE: [HTTP://WWW.GAMINGMOMENTS.NET/2007/FATHER-OF-THE-MUD-WOULD-CLOSE-WORLD-OF-WARCAFT/](http://www.gamingmoments.net/2007/father-of-the-mud-would-close-world-of-warcraft/))

Building on the concept of MUDs while tapping into technological and design advancements, developers have, over the years, designed three-dimensional (3-D), graphical virtual worlds. Such virtual worlds provide users with more choices of communication, enhanced visual graphics and faster network connectivity. However, sociability, playfulness, fantasy, and ability to communicate, create content and engage in role-play, which are reminiscent of MUDs, remain important elements of virtual worlds.

By providing users with a richer sensory experience, 3-D virtual worlds can further accentuate the sense of place and space in users, hence, allowing a higher degree of “being there” in these environments (Schroeder, 2006; Schroeder, 2008; Schroeder, 2011). It is this sense of “being there” that “allows or compels the user to have a sense of being in an environment other than the one they are actually in, and to interact with that environment” (Schroeder, 2006, p. 25). Creating a sense of “being there” requires stimulating an ensemble of sensory faculties. As observed by Thomas and Brown (2009), “the visual component of virtual worlds has re-defined the landscape of online interaction away from text and toward a more complex visual medium which provides a sense of place, space, and physiological embodiment” (p. 39).

In most virtual worlds, users are represented by their digital personas, or *avatars*, which may or may not be a true reflection of who the user actually is like in the real world. For example, a male user may choose to have a female avatar, or one that resembles a robot. There are also users who choose to customise their avatars such that they look like what they do in real life. The word “avatar” is derived from the Sanskrit word *avatāra*, which means “an incarnation on earth of a divine” (Kolff, 2002, p. xii). In the literature of virtual worlds, it is often taken to mean “a manifestation of the self” (Klang, 2004, p. 390). It is the term used to describe the alter ego, persona, or character that a user takes on when he or she is in an online world (Au, 2008). In most virtual worlds, users have a certain degree of autonomy over the representation of their avatars. Users have control over their avatar and can customise their avatar’s appearance or alter the avatar’s age, height, ethnicity, looks, clothing, etc.

As Yee, Ducheneaut and Bailenson (2009) observe, having the ability to represent oneself through a virtual, graphical representation can influence how we interact with others, and how others interact with us, in avatar-based online worlds. People may react differently to different avatars, for example, when interacting with an avatar that resembles a *newb*, which is a term given to an inexperienced or novice user, as compared to a stylishly dressed avatar that appears to know what he/she is doing. Dickey (2003) observes that being able to self-select and customise one’s

avatar “may reduce inhibitions and dissolve social status among users, or reconstruct social status based upon different attributes” (p. 107). Furthermore, research also suggests that the appearance of avatars and the environment, along with their interactions, can affect people’s sense of presence in the virtual worlds (see, for example, Lombard & Ditton, 1997; Blascovich, 2001; Biocca, Harms & Burgoon, 2003; Davis *et al.*, 2009). Besides enhancing the sense of “being there”, Thomas and Brown (2009) observe that the representation of the user through an avatar can “transform the space of a virtual world into a sense of place. In doing so, it grounds the experience of the user in a sense of presence with others, allowing for an opportunity to truly engage in the shared practices” (p. 39).

Like MUDs, virtual worlds provide users with text-based communication tools that allow for synchronous communication. Research has suggested that synchronous communication invites conversations that are more social and interactive, and less formal in nature (see, for example, Herring & Nix, 1997; Paulus, 2007) and can help support collaborative activities held in online-based environments (see, for example, Ingram, Hathorn & Evans, 2000; Orvis *et al.*, 2000; Nehme, 2008; Lucia *et al.*, 2009). It has also been suggested that using a variety of communication tools can aid in building a sense of belonging in members among users (see, for example, Rovai, 2002; Wang, 2008). Other than text-based communication tools, virtual worlds provide users with a more varied set of features for interacting with others, such as gestures, gaze, animations and *Voice-over Internet Protocol* (VoIP), giving the users a greater sense of “being there” and a higher level of spontaneity (Barkand & Kush, 2009; Halloran, 2009).

Voice is a recent add-on in the virtual worlds and research in this area is just emerging. Users can communicate with others using either voice or text, or both. In a recent quasi-experimental study conducted by (Williams, Caplan & Xiong, 2007), voice was provided as a communication medium to teams of players in World of Warcraft. They measured its effects on players’ experiences and social relationships and found that players who communicated by voice and text during the trial liked and trusted each other more, compared to those who communicated by text only.

This study suggests that the choice of media could have an influence on one's virtual experiences and interactions.

It has been suggested, especially in the computer-mediated communication (CMC) literature, that "reduced cues" in online media can affect communication. For example, Nilsson *et al.* (2002) suggest that the lack of visual cues could create problems for turn-taking during conversations; Haythornthwaite (2002) observes that diminished cues could hinder emotionally laden exchanges and impede the delivery of complex information. In the virtual world context, some of these characteristics are enhanced, and may have the potential to facilitate the flow and transmission of such information. For example, a user can tap on the camera motion tool to look towards a certain direction or a particular object, thus giving other users information of where or what the user is looking at or referring to. In some virtual worlds like OnLive! Traveler, the add-on features of text-to speech and/or synchronous mouth-movements as the user speaks in voice (Dickey, 1999), can provide other users with the information of when that user starts or finishes speaking. Such a feature can enhance the cue for turn-taking.

Keeping in line with the notion of fantasy in the early versions of MUDs, virtual worlds contain elements of reality and fantasy (Schroeder, 2011). On one hand, it is not uncommon to see that the settings of these worlds are often based on modern-day realistic environments, be it a tropical beach with coconut trees and beach chairs or a school compound with indoor and outdoor classrooms equipped with projection screens, eco-gardens and sports halls; on the other, it is unsurprising, all the same, to see elements of fantasy at play in these spaces. For example, defying the rules of nature and physics of the real physical world, in the virtual world environment, avatars can fly or teleport³ from one place to another; buildings could be built in the middle of the sky rather than on ground; users could opt for a *furry*⁴ or a robot avatar rather than that of a human. In fact, role-playing is observed to be

³ To instantly travel to a location (as opposed to manually walking or flying there). Residents can teleport via the map, with landmarks, or through invitations given by other residents.

⁴A "furry" is an animal avatar with human personalities and characteristics. It is based on the furry fandom and is a subculture in virtual worlds like Second Life.

one of the more popular activities within the virtual worlds (Bardzell & Odom, 2008; Leigh, Elwell & Cook, 2010). As Minocha and Reeves (2010) observe, depicting objects and spaces as they are in the real life in these virtual spaces, provides people with a sense of familiarity and comfort, and more importantly, gives people an idea of what to expect, how to behave and how to interact with others. Elements of fantasy, however, allow creativity and innovation in recreating the familiar. Bell (2009) suggests, and I agree, that creating spaces that bear resemblances to the real physical settings “are not failures of imagination, but reflections of the way creativity is here used to provide a sense of grounding, of place making, of comfort and familiarity” (p. 519). It is this unique blend of reflection of reality and escapade into fantasy that makes virtual world both real and “out-of-this-world” at the same time. More interestingly, concomitant with this complex experience is a potentially new suite of stimuli and interactions that change and influence the way the users learn and interact.

Based on the above, one can broadly assign the following attributes to 3-D virtual worlds: 1) they usually involve multiple users; 2) they allow real-time and multi-modal means of communication; 3) they simulate models of space with visually rich content with blend of fantasy and reality; 4) they allow users to have avatars and therefore embodiment of themselves. In supporting self-representation and various types of interactivity, these characteristics have a direct effect on an individual’s sense of “being there” in virtual worlds, as well as “being there together” with other users (Benford *et al.*, 2001; Slater & Steed, 2002; Schroeder, 2006). Consequently, these may have implications on the depth and extent of engagement and interaction within these spaces (Biocca, 1997; Schroeder, 2001; Nowak & Rauh, 2005).

Being in a visual and 3-D simulated space enhances the individual’s sense of “being there” and “being there together” with others. Furthermore, the ability to communicate in a myriad of ways and in real time enhances the user’s experience in such a virtual space. In many ways, the simulated space of a virtual world resembles a township that is brimming with social, educational and commercial activities. Embedded within it are landscapes, buildings and practices that resonate with the offline physical world (Dodge, 1999; Dodge & Kitchen, 2001). In the virtual town

reside people who are there for a number of reasons - pursuing their interests, conducting and attending classes, selling and buying items, socialising with others. In this sense, virtual worlds are not simply technological tools or platforms; rather they resemble simulated models of the real physical world (Davis *et al.*, 2009) or as Bartle (2004) describes, places “where the imaginary meets the real” (p. 1).

2.1.2. SOCIAL VIRTUAL WORLDS AS “THIRD PLACES”

As mentioned earlier, this study focuses on a specific type of virtual worlds – social virtual worlds (SVWs). Social virtual worlds are designed primarily for social and recreational purposes. Most social virtual worlds do not set defined goals for their users; users of these spaces tend to seek out opportunities and work out their own reasons for being there (Book, 2004; Diehl & Prins, 2008). Rather than levelling up through taking on and completing quests, users of social virtual worlds are usually provided with the autonomy to build objects and create user-generated content, which they own the intellectual property rights to. By endowing the space with meanings and values, users become co-producers of this space, sharing the ability of transforming the “space” into a distinctive “place” (Tuan, 1977, p. 6), together with the developers of the virtual world.

The open and communal nature of social virtual worlds encourages the formation and development of groups, drawing people with common interests together and providing them with places to seek out or provide information and engage in conversations with others. As people organise themselves together, they develop structures and norms, and “create their own fictions and communities, imbuing them with meaning through interaction” (Ondrejka & Salen, 2008). Indeed, this is perceived as part and parcel of participation in social virtual worlds (Boellstorff, 2008).

Steinkuehler and Williams (2006) liken virtual spaces to “third places” (Oldenburg, 1999). According to Oldenburg (*ibid*), the “first place” is the home, the “second place” is the workplace and the “third place” refers to the social surroundings where people coalesce and socialise informally, tell stories, share experiences, converse about recent events or current affairs, and engage in shared or collaborative activities. The

“third places” that Oldenburg writes about are pubs, barbershops and coffee shops, etc. in local neighbourhood areas. As Oldenburg (1999) describes:

Third places exist on neutral ground and serve to level their guests to a condition of social equality. Within these places, conversation is the primary activity and the major vehicle for the display and appreciation of human personality and individuality. Third places are taken for granted and most have a low profile. Since the formal institutions of society make stronger claims on the individual, third places are normally open during the off hours, as well as other times. The character of a third place is determined most of all by its regular clientele and is marked by a playful mood, which contrasts with people's more serious involvement in other spheres. Though a radically different kind of setting from the home, the third place is remarkably similar to a good home in the psychological comfort and support that it extends. (p. 42)

Likewise, there are also parks, cafés, pubs, libraries, shops, museums, etc. in social virtual worlds, where people can mingle, chat and socialise. Although there are also work and educational places in social virtual worlds, there are fewer of these places compared to those that are catered for sociability and interaction. These work and educational places tend to contain areas where people can socialise and communicate informally too.

Indeed, social virtual worlds function as places of assembly where people located in various parts of the real physical world can interact and communicate with one another, exchange information and engage in joint activities in the virtual setting (see, for example, Au, 2008; Boellstorff, 2008; Book, 2004). The main difference is that these venues now exist in a virtual alcove in front of a computer screen, and no longer confined to the various localities in the real physical world. These virtual venues are probably not that different from those in the real physical world, except that the ways people communicate are mediated by the technological capabilities and sociability of virtual world environment. In this sense, social virtual worlds can be described as “third places”, where new forms of storytelling are enabled, the possibilities for creating and maintaining social relationships can be explored, and opportunities for people to work on shared or collaborative activities across time and distance are provided.

2.2. THEORIES FOR EXAMINING LEARNING

Based on the review of the literature, it can be observed that a consensus about pedagogy for virtual worlds has not yet been reached (see, for example, Duncan & Young, 2009; Aurilio, 2010; Dalgarno & Lee, 2010). Some literature on learning in virtual worlds is typically framed through the constructivist or social constructivist lens, while others adopt a situated learning and socio-cultural perspective. The aim of this section, however, is not to get into the discussion of which learning theory is better suited for the virtual world context, nor is it to provide an exhaustive list of learning theories that have been discussed in the virtual world literature. Rather, I will examine the various learning theories and discuss how these theories may help in identifying, conceptualising and explaining the ways in which learning occurs in the context of the virtual world.

Dede (1995) suggests that the learning in virtual worlds can be examined through the lens of constructivist theory. Central to the constructivist approach is the epistemological perspective that individuals construct meaningful representations through their interaction and interpretation of the world around them. Rather than passively receiving knowledge from the environment, individuals are actively engaged in the process of knowledge construction, which is in turn based on what they already know. According to constructivist theories, learners learn best when they participate in activities that involve processes of exploration, inquiry and reflection, as these activities provide opportunities for learners to organising information around concepts and develop their problem-solving skills or high-level order reasoning.

While constructivist theorists generally subscribe to the view that knowledge is actively constructed rather than passively received from the objective world, they differ in their opinions on the nature of learning and the process of knowledge construction (Swan, 2005). As such, they tend to highlight different aspects of the constructivist approach, resulting in diverse conceptual perspectives.

Cognitive constructivism, for example, conceptualises learning as an active process of constructing meaning and representations, through an individual's interaction and

interpretation of the environment, and based on his/her experience and prior knowledge (Conceição-Runlee & Daley, 1998; Kanuka & Anderson, 1998; Jonassen, 1999). It focuses on the cognitive processes through which an individual makes sense of the world (see, for example, Derry, 1996). According to Piaget (1983), when an individual interacts with the environment, he/she may encounter a situation that is inconsistent with his/her constructed understanding of the world. This triggers a corresponding construction of mental structures, or schema. Schema construction involves two kinds of cognitive processing, *assimilation* and *accommodation*. In assimilation, new knowledge is incorporated into existing schemas. In accommodation, new knowledge conflicts with existing schemas, which would have to be altered to incorporate the new knowledge. Thus, to say that learning has occurred would require manifestation of change(s) in the individual learner's schema.

For example, a new user of Second Life is exploring a virtual island when he sees a golf buggy parked besides a building. He clicks on it with his mouse and almost immediately, he sees his avatar sitting in the buggy. A small window appears on the top right hand corner of his screen, saying: "driving off in 10 seconds". Next, he sees his avatar driving the buggy and taking a tour of the island. He learns that when he clicks on an object with his mouse, he interacts with the object. Given that he is a new user to the virtual environment, this is new knowledge to him and requires assimilation of his existing schema. After circling around the island, the buggy arrives back by the building, and he clicks on the button "STAND" at the bottom of the screen and his avatar stands up. Walking to the next building, he sees a bicycle parked by a lamppost. According to his existing schema, he thinks that this bicycle can too be ridden on, and he clicks on the mouse to interact with the bicycle, in an attempt for his avatar to ride it. After his avatar sits on it, he realises that the bicycle is not moving, i.e. his avatar can sit on it, but cannot ride it. This conflicts with his existing schema, as he thinks that the bicycle should be moving after his avatar sits on it. He learns that although he can interact with an object by clicking the mouse, it does not mean that the object can perform certain action; it can only do so if it has been designed or scripted as such. This reflects an accommodation of his schema. In short, to say that learning has taken place, will require an examination of the

change(s) of an individual user's schema or mental construct.

Building on the concept of cognitive constructivism, Papert (1980) suggests that learners learn best when they are interacting with or constructing an external artefact or object. Terming such learning as constructionism, he stresses that coupled with the stimuli of external artifacts or instructional tools, learners can further conceptualise and construct knowledge (Papert, 1980; Papert & Harel, 1991; Ackermann, 2001). As Papert and Harel (1991) describe,

Constructionism – the N word as opposed to the V word – shares constructivism's view of learning as “building knowledge structures” through progressive internalization of actions... It then adds the idea that this happens especially felicitously in a context where the learner is consciously engaged in constructing a public entity, whether it's a sand castle on the beach or a theory of the universe.

(p.1)

Constructionism helps us understand how a learner's knowledge is constructed by means of an external artifact or object. It is through such externalisation of his/her internal mental constructs that suggests that learning has indeed taken place. For example, the forming and transforming of such mental constructs can be traced by examining the ways in which a learner builds or manipulates an object in Second Life. Dickey (2003) observes that some virtual worlds like Second Life offer users the ability to build and manipulate objects and such a characteristic should be leverage on when designing learning activities. Dede (1995) also suggests that when designing learning activities in virtual worlds, learners be given the opportunity to personalise the environment, “learn by doing” and engage in experimentation. Besides supporting individual learning, such object-focused tasks have also been found to be an effective way of facilitating collaborative activities in virtual worlds (Wadley & Ducheneaut, 2009; Schroeder, 2011).

Both cognitive constructivism and constructionism emphasise the roles of individuals in creating their own knowledge and links learning to an individual's prior knowledge. However, by primarily emphasising individual cognition, they do not adequately address the social and environmental context in which individuals are located and

where the learning activities are based (see, for example, Selwyn, 2010). Context, however, is emphasised by social constructivism and sociocultural perspectives on learning. The central tenet of these perspectives is that meaning is “socially constructed” through shared endeavours (see, for example, Berger & Luckmann, 1966), and the social context is fundamental to understanding the ways in which meanings are negotiated and constructed.

Social constructivism and sociocultural perspectives on learning have their roots from the work of Vygotsky (1978). Distinguishing between two developmental levels, the actual and the potential levels of development, Vygotsky (1978) introduced the concept of *zone of proximal development* (ZPD). Social interactions among learners create opportunities (i.e. the ZPD) for them to bridge the gap between these two developmental levels, which subsequently results in learning (Greeno, Collins & Resnick, 1996). ZPD distinguishes between what an individual can accomplish individually and what the same individual can attain when interacting and working with other(s). Consequently, such interactions are crucial in shaping an individual’s cognitive skills, patterns of thinking and behaviours. Socialising with others and participation in teams or groups is an integral part of virtual worlds. Such collaborative activities encourage interaction among users and provide opportunities for individuals to engage in negotiation of meanings, which may consequently result in social construction of knowledge. When an individual interacts with another individual who possesses a different level or area of expertise, it is possible that he/she may learn from the other. Putting this in the virtual world context, manifestations of learning can be traced by means of studying a user’s interaction with other users, such as examining discourse for negotiation of meanings.

It has also been suggested that virtual worlds are suited for situation-dependent learning tasks (see, for example, Bares, Zettlemoyer & Lester, 1998; Dickey, 2005). In the course of engaging in the activities at hand, learners find out what they need to know and when they need to know it. They are then able to apply what they have found out in the same context as when they first have learnt it. Besides involving authentic tasks that are relevant to learners (Lave, 1988; Brown, Collins & Duguid, 1989), another characteristic of situated learning is having access to and being able

to interact with a person who has a higher level of expertise (compared to that of the learner) in a certain area (Lave & Wenger, 1991). In the virtual world context, learners can learn through role-playing or engaging in conversation or collaborative activities with a mentor. Antonacci and Modress (2008), for example, created a virtual clinic in Second Life where students could engage in clinical practice, share and reflect on their experience. One situated learning model that may be particularly salient for studying social virtual worlds is a community of practice model, where learning is considered the result of people working together in establishing a joint enterprise, shared repertoire and mutual engagement (Lave & Wenger, 1991). The CoP model will be discussed later in section 2.3.4.

Behaviourist theories have also been applied to discuss and explain learning activities in virtual worlds (see, for example, Salt, Atkins & Blackal, 2008). According to behaviourism, learning is manifested through changes in an individual's observable behaviour, in response to the environmental factors or external stimuli (Ertmer & Newby, 1993). Through repetitive actions, desired behaviours are conditioned or reinforced via feedback, punishments or rewards. Thus, according to the behaviourist model, learning can be observed to have occurred if desired outcomes have been observed. In an experimental study by Weusijana *et al.* (2007) conducted in Second Life, the authors applied the concept of stimulus reinforcement that is often discussed in behaviourist approaches. Participants who made a wrong choice in their navigation through a maze or failed to solve puzzles correctly would have their avatar stunned for 15 seconds. The authors found that through this negative reinforcement, participants were able to operate more efficiently in the problem-solving situation. One of the criticisms of behaviourism is that in focusing on studying the changes in an individual's behaviour and observable learning outcomes, it misses out what is happening inside the mind of an individual as well as the social factors, which may also have contributed to the learning process.

Although these approaches provide a preliminary understanding of how and why learning may occur in the social virtual world setting, it will be premature to determine which of these approaches will be more appropriate or suitable before embarking on the study. This, however, does not preclude one from conceptualising

learning that may occur in online groups. In the next section, I will discuss and explain how one can examine and conceptualise learning using Rogoff's (1998, p. 688) three planes of analysis, namely, individuals, interpersonal relations and group processes.

2.3. CONCEPTUALISING LEARNING IN ONLINE GROUPS

Goodman and Dabbish (2011) observe that there is a lack of clarity in the literature on the definition of group learning. Some definitions focus on individuals learning in a group (see, for example, Johnson & Johnson, 2009), while others place emphasis on a group's collective knowledge (see, for example, Levitt & March, 1988; Huber, 1991; Argyris & Schön, 1996). For example, group learning has been defined as "the activities through which individuals acquire, share and combine knowledge through experience with one another" (Argote, Gruenfeld & Naquin, 2001, p. 37). It has also been defined as "an ongoing process of reflection and action, characterized by asking questions, seeking feedback, experimenting, reflecting on results and discussing errors" (Edmondson, 1999, p. 353). The former defines group learning as individual learning in the context of groups, while the latter focuses on learning at the group level. Due to the difference in its focus, these two groups of definitions lead to different units of analysis.

As observed by Goodman and Dabbish (2011), studies that address learning in groups tend to employ either the group or the individual as its level of analysis. The former treats a group as a collective learning system that can acquire knowledge, understanding and skills while the latter applies individual cognitive processes to explain how and why learning occurs in groups (Johnson & Johnson, 2009).

Stahl (2011), for example, adopts the view of studying cognitive processes at the group level, i.e., the group as the unit of analysis. Employing this approach involves studying the collective ideas, activities and structures of the group. Kim (1993) suggests that group learning is not a magnification of individual learning. Forsyth (2010), quoting Lewins (1952)'s dictum, "the whole is greater than the sum of the parts", maintains that when individuals merge into a group, something new is

created and the new product itself has to be the object of study. In a similar vein, Garavan and McCarthy (2008) observe that “the sum of individual learning does not equate with the collective level of analysis” (p. 451). According to Schein (1996), as members confront challenges that surface collectively, they test the ideas and if the results are successful, the assumptions and values associated with the ideas are perceived as valid and workable. Over a period of time, the group will develop shared schema from which the assumptions and values are based on, and from which norms and group practices will form. Learning, in this sense, is perceived as a “social process in which meaning is negotiated, goals emerge from social processes, and success is taken within context” (Young, Barab & Garrett, 2000, p. 160).

Conversely, representing the perspective of learning at the individual level, Simon (1991) contends that a group or an organisation only learns when its members learn, or when new members who possess knowledge and skills that the group do not already have. Likewise, Argote, Gruenfeld and Naquin (2001) advocate examining learning in groups at the individual level.

Asch (1952), however, took a position that emphasised the need to examine the two in relation to each other. He stressed that although it is important to gain an understanding of the distinctive and identifying features associated with the individuals that comprise a group, it is also necessary to examine the group as something unique unto itself. Asch (1952) described how individual and group learning are interrelated by pointing out that, “We need to see group forces arising out of the actions of individuals and individuals whose actions are a function of the group forces that they themselves (or others) have brought into existence” (p. 251).

As Felix (2005) observes, there have been attempts to synthesise these two approaches. Arguing that these two approaches complement, rather than contradict, each other, Salomon and Perkins (1998, p. 2) suggest studying both “cognitive, acquisition-oriented” conceptual of individual learning and “situative, participatory” conception as two levels of analysis.

Using two metaphors, the *acquisition metaphor* (AM) and the *participation metaphor* (PM), Sfard (1998) emphasises the importance of addressing both learning

in the minds of individuals, as well as learning that takes place in a certain social, environmental context, through a social, participatory process. AM regards learning as development of concepts or accumulation of knowledge or cognitive skills that can be applied, transferred or shared with others (see, for example, Anderson, Reder & Simon, 1996); PM construes learning as a participatory process of becoming an integral part of a team or group. While the former emphasises on the changes of mental contents within an individual mind, the latter stresses on “the evolving bonds between the individual and others” (Sfard, 1998, p. 6) and locating evidence of learning through examining individual’s changing participation in the team/group. However, Sfard (1998) is careful to point out that these two metaphors are not mutually exclusive and should not be considered separately; instead, they should be viewed as being complementary to each other. Like Sfard (1998), Salomon and Perkins (1998) view the acquisition of knowledge in individuals and the changes in participation and interaction as being interrelated. They observe that individual learning is often situated in a social context and is “rarely truly individual” (Salomon & Perkins, 1998, p. 2), and learning of social entities such as groups and teams entails learning of participating individuals.

For a finer stratification, Rogoff (1998, p. 688) uses three planes of analysis to describe the different types of learning, from individual level to social level of learning. These three planes are: 1) individuals, 2) interpersonal, and 3) group. Given its focus on social and cognitive processes, this synthesised view is useful for examining the ways in which people and groups learn in the context of the social virtual world. This approach supports the thesis’s position of analysing group learning with simultaneous consideration of both individual and social aspects.

In the subsequent sections, I consider current literatures on group definition, typology, the different models of group development and the dynamics that brought about development in groups. The first two points are useful for us to identify the start state of the different groups studied in this thesis, while the latter two give a more dynamic picture of the groups’ development. Ultimately, this information will coalesce to synthesize a conceptual framework for investigating learning in online-based groups, focusing particularly on how group development and dynamics can

influence learning.

2.3.1. DEFINING AND CHARACTERISING ONLINE GROUPS

Before proceeding to define and characterise online groups, it is perhaps worthwhile to explain why I have chosen to use the term “group” over “community”. It is observed that in most of the literature reviewed, the term “community” is used instead of “group”. However, the notion of community is one that is constantly debated. It is clear from the literature examined that the term “community” is a complex one and which has huge terminological baggage, or as Kling and Courtright (2003) suggest, it is “uncritically used” (p. 91). If we were to examine the key elements that define a community in the literature, we would see that there are many different views on it. Karp, Stone and Yoels (1991) identify three key elements that define a community: sustained social interaction, shared attributes and values, and a delineated geographical space. Other notable characteristics mentioned in the literature include membership rules (Lawrence, 1995), strong personal links (Memmi, 2006), communicative process (Scherer, 1972), functionality and purpose (Lockard, 1997), “the voluntary association of like-minded individuals” (Healy, 1997, p. 61). The disparities in opinions appear to suggest the complexities and the multi-levelled perceptions of the term. Fernback (1999) describes the complexity of the term aptly, pointing out that “community is a term which seems readily definable to the general public but is infinitely complex and amorphous in academic discourse” (p. 39). Zacharek (1999) notes the fluidity of the term in the literature and cautions against casual application of the term to online groups:

“community” is quite possibly the most over-used word in the Net industry. True community - the ability to connect with people who have similar interests - may well be the key to the digital world, but the term has been diluted and debased to describe even the most tenuous connections, the most minimal interactivity. The presence of a bulletin board with a few posts, or a chat room with some teens swapping age/sex information, or a home page with an e-mail address, does not mean that people are forming anything worthy of the name community.

(Online; cited in Lai *et al.* (2006, p. 17))

Besides the complexity of the term, the defining characteristics of community such as shared values and sustained interaction, are those that require much time and effort to establish. In comparison, there appears to be less disparity and fewer criteria on the term “group”. According to Hare (1962), some form of interaction between a collective of individuals must exist before they can be considered a group. According to this definition, a party of two or more people who engages in some form of interaction can form a group. In addition to interaction, Hare (*ibid*) suggests that a group develops when the individuals share one or more common goals, set behavioural expectations (i.e., norms), create differentiated roles and form networks of “likes” and “dislikes” (Hare, 1962, p. 10). Whereas a community requires more defining characteristics, a group has a looser definition. For the purpose of this study, it would be necessary to begin with a broader description, and for this, the term “group” will be suitable. In consideration of this, Brandon and Hollingshead’s (2007) description of a group as “an entity comprised of people having interdependent goals, who are acquainted, interact with one another and have a sense of belonging associated with their membership” (p. 106) is a good starting point. Next, I will discuss the characteristics of online-based groups as described by the literature.

Rheingold (1993) describes online-based groups as “social aggregations that emerge from the Net when enough people carry on these public discussions long enough, with sufficient human feeling, to form webs of personal relationships” (p. 5). However, this description seems only to focus on social relationships that have been forged through repeated and constant communication, and neglects to emphasise the purpose for having such communication in the first place, which could be for task-related reasons, information exchange, and not limited to engaging in discourse with people. In contrast, Plant’s (2004) description of online groups as a “collective group of entities, individuals or organisations that come together either temporarily or permanently through an electronic medium to interact in a common problem or interest space” (p. 54) takes into consideration the purpose of being in the group, but again, it is not encompassing enough to define the various types of online groups. Although these two definitions emphasise on different characteristics of online-based groups, together, they provide us with some idea of what some of the

characteristics of online-based groups may be like. For instance, members of online-based groups tend to be working towards a shared purpose or endeavour. That is to say that there is a certain task or tasks that the members would want to achieve through such organisation. Such an organisation can be temporary, but it can also take place over a period of time. Yet, online groups are not “all work and no play”. As Rheingold (1993) describes, the socio-emotional component is an important aspect of online groups. This is also evident in some studies (see, for example, Fahy, 2006; Peña & Hancock, 2006) which demonstrate that online-based groups actually have significantly more socio-emotional than task content.

2.3.1.1. TYPOLOGY OF ONLINE GROUPS

The literature suggests that there are many variations in classifying the types of online groups and scholars appear to apply varying principles and foci in their typologies. Lazar and Preece (1998) suggest a classification schema for online groups. They identify four key characteristics of online groups in this schema, namely, 1) attributes such as shared goal or interest and size of group, 2) supporting software, 3) relationship to physical communities, and 4) boundedness (extent of interpersonal relations within the group).

Another classification typology often mentioned in the literature is that by Hagel and Armstrong (1997). In their view, people gather together and form groups based on four basic needs: interest, relationship, fantasy, and transaction. The activities and objectives of the groups vary depending on their need(s). For instance, people who are seeking fantasy may come together and explore new worlds of fantasy that may not be readily available in offline settings. This may include role-playing groups. In groups that seek out transaction, members may be more interested in sharing, comparing and trading of information.

Riel and Polin (2004) distinguish groups by asking whether they are task-based, practice-based or knowledge-based. Task-based learning communities are groups of people organized around a task, working together for a specified period of time to produce a product. At stake is a specific set of targeted objectives or interests that

could be achieved via collaborative working/learning relationships and are purposeful for the existence of the group. Practice-based learning communities correspond to the idea of communities of practice, where large groups with shared visions exist to provide members with a common way of practices. Learning arises through immersion and evolution of the unique microcosmic culture within the community. Finally, knowledge-based learning groups resemble the practice-based communities but have a more focused objective of producing and promulgating knowledge via the practices.

In another typology of online groups, Porter (2004) suggests that online groups could be categorised in two categories: member-initiated and organisation-sponsored (Figure 2-2). For each category, Porter further categorises the groups based on their relationship orientation with the external community at large. Member-initiated online groups can be split into two types: social and professional. In social groups, the main functions often include building of interpersonal relationships or providing socio-emotional support. For such groups, the activities tend to be more recreational and casual. In professional groups, membership is usually formed around shared professional interests. Thus, members of these groups would often engage in task-based activities, though they might also have informal events where members could socialise. In organisation-sponsored groups, Porter recognises that these are online groups that are affiliated to organisations and exist for commercial reasons, non-profit cause or on behalf of government agencies. This classification is useful in that it reflects the varying nature of online groups and how their establishment may be linked to the activities and interpersonal relationships. However, in making such distinctions, it may miss out on classifying groups that are more complex in nature. For example, a member-initiated group can be both professional and social at the same time.

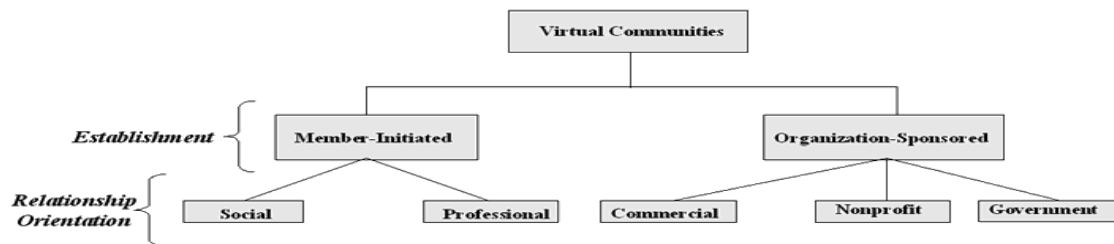


FIGURE 2-2 – A TYPOLOGY OF ONLINE GROUPS (SOURCE: PORTER, 2004, ONLINE).

Henri and Pudelko (2003) propose a framework (see Figure 2-3) to categorise groups by studying their activities and relationship between members. In this framework, there are four main categories of online groups: 1) community of interest; 2) goal-oriented community of interest; 3) learners' community; and 4) community of practice.

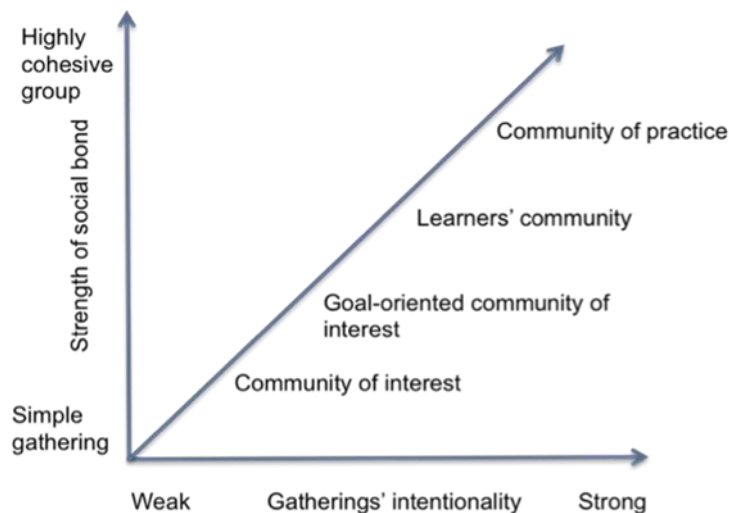


FIGURE 2-3 - DIFFERENT FORMS OF VIRTUAL COMMUNITIES ACCORDING TO THEIR CONTEXT OF EMERGENCE (SOURCE: HENRI & PUDELKO, 2003, P. 476).

This framework suggests the types and development of groups, from one to the other, varying on their level of cohesiveness and strength of the intentionality of the group meetings. However, it appears to suggest that such a development is a linear process, and becoming a Community of Practice is what an online group may strive towards. A Community of Practice refers to a group of people who engage in joint, collaborative activities that provide opportunities for them to share, negotiate, and

create knowledge (Lave & Wenger, 1991; Wenger, 1998). This will be elaborated later in Section 2.3.4. Further, this framework also suggests that the level of social cohesiveness in communities of practice is higher than that of groups such as communities of interest, which again, may not necessarily be the case, given the complexities of online groups. Nevertheless, this framework suggests that there are several different forms of groups (i.e., not all groups are necessary Communities of Practice) and is perceived to be useful in addressing how a group develops and evolves.

Typologies of online groups are diverse and, depending on the purpose and context, may be appropriately selected to suit one's discourse. It is not the intention of this thesis to cherry pick the 'right' typology. Rather, the purpose of presenting the various typologies is to help in understanding how the three online groups were selected to form the subjects of our study. The selection of the three groups will be further discussed in the methodology chapter – Chapter 3, Section 3.1.1.

2.3.2. MODELS FOR DEVELOPMENT OF ONLINE GROUPS

The typology of a group is akin to a static snapshot of the group's property at a fixed point in time. It is, by itself, inadequate because most typologies lack a chronological description of what the group was and how the group would develop. Yet, groups are not static entities; they progress through a series of stages over their life cycle. To understand their life cycle, we have to understand the pattern of groups' development as they evolve over time. As noted by Castells (1996), online groups can "go on for a long time, around a nucleus of dedicated computer users, most of the contributions to the interaction are sporadic, with most people moving in and out of networks as their interests change or their expectations remain unfulfilled" (p. 362). Over time, individuals join and leave the groups, and social relationships are created and severed, and these changes could affect the group structure (Panzarasa, Opsahl & Carley, 2009).

Scholars have postulated different models to explain these stages, with most emphasising the patterns of growth and changes (see, for example, Wheelan, 2004; McGrath & Argote, 2008; Wheelan, 2009). These patterns of growth and changes

represent “the degree of maturity and cohesion that a group achieves as members interact, learn about one another and their structural relationships and roles within the group” (Mennecke, Hoffer & Wynne, 1992, p. 526). Although these patterns of growth and changes are not specific to online groups in particular and have mostly been developed through studies examining offline groups, some if not most of them are observed to be reminiscent of online-based groups (see, for example, McKenna, 2008).

Mennecke *et al.* (1992) posit that group development models may generally be classified into one of three categories: progressive, cyclical and non-sequential. In progressive models, groups exhibit an increasing degree of maturity and cohesion over time; in cyclical models, groups develop in a recurring, cyclic manner or follow a cycle of formation, growth, maturation and finally, termination; in non-sequential models, groups do not develop in any specific sequence, rather the changes are triggered by events or contingent factors. Palloff and Pratt (1999) propose an expansion of the cyclic model. It outlines the following five stages with respect to the life cycle of group development: forming, storming, norming, performing, adjourning. “Forming” is the establishing of the group where members are still testing the waters. “Storming” refers to a necessary phase where conflicts occur within the evolution of the workgroup. Once the conflicts are resolved and the group attains equilibrium, it will enter the “norming” phase where intimacy and productivity starts and leads to “performing,” one of the most productive stages within the cycle. Eventually, the group will terminate and enter the “adjourning” phase.

The main limitation of Mennecke *et al.*’s (1992) classification of groups is that it is dependent on the time factor, i.e., how long the groups are studied for. It is perfectly plausible that a group that is originally thought to be progressive may either change its course of development, due to the onset of a disruptive external event (i.e. becomes non-sequential development), or eventually completes its life cycle and become adjourned (adopts a cyclic development). Events like these are likely to happen if one is able to track the development of the group over a long duration. The time scale of the study is therefore an important variable when considering groups’ development. However, few field studies have been conducted to examine

the longitudinal development (i.e. studies that are conducted over an extended period of time), especially for groups that exist online. Most studies on online groups are tasks specific and end when the tasks are completed. For this reason, I have chosen to track all three groups involved in this study for nine months. This duration, though still short compared to the age of the groups, is nonetheless considerable for me to observe trends and trajectories of their development.

Mousavidin and Goel (2009) suggest four key elements that will help in examining the factors affecting the life cycle of online groups. As shown from the life cycle in Figure 2-4, the development of an online group is influenced by four elements, namely socially shaped aspects, individually demonstrated characteristics, technologically facilitated features, and the external media.

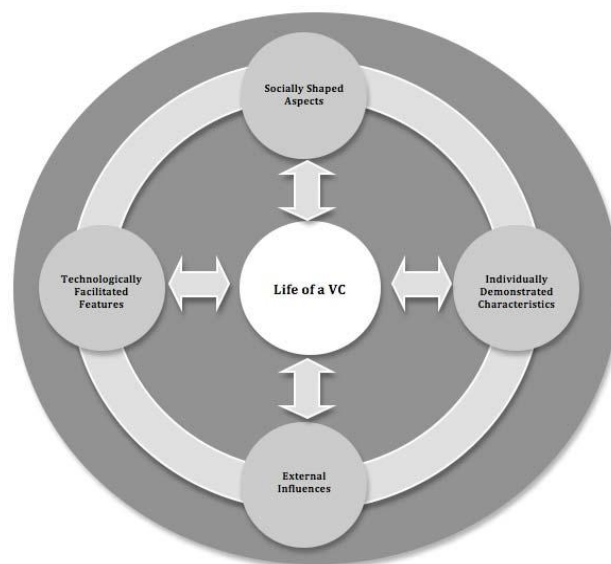


FIGURE 2-4- CONCEPTUAL MODEL OF VIRTUAL COMMUNITY LIFE CYCLE (SOURCE: MOUSAVIDIN AND GOEL, 2009, P. 5)

Described within these four elements are the attributes that define the state that a group is in. Instead of following the development of a group by a fixed trajectory (e.g. using Mennecke *et al.*'s (1992) model of classifying group development into progressive, cyclic or non-sequential), group development can be tracked simply by observing how these attributes change. For example, as the online group develops, socially shaped attributes such as membership patterns, hierarchical structure,

norms and culture may see some changes. Individually demonstrated characteristics such as members' purpose or attitude towards the group may also be transformed over time. Depending on an individual's needs and preference, a group with higher participation and larger membership size may be perceived as having more resources and be more valuable to him/her. Alternatively, he/she may perceive the resources or opportunities as being more limited, now that these have to be divided among more members. New technological platforms, like voice communication or faster file transfer protocols may also become available and serve to better support the changing needs of the members. Establishing external links such as forming partnerships with other groups or using other platforms as alternative modes of communication could occur and change the ways the group functions. These changing attributes define what a group was/is like and what it has become. In other words, by looking at how these attributes change over time, one is able to track the group's development. More crucially, the dynamics of group development provides a rich and comprehensive account of how learning can occur. I will expand on this in the next section.

2.3.3. DYNAMICS OF ONLINE GROUPS

As noted in the previous section, life cycles of groups are influenced by social, individual, technological and external media influences. Each of these categories contains attributes that are unique to the group at different stages of its development. In this section, I introduce an additional concept called "group dynamics". The Association of Qualitative Research⁵ (UK) describes group dynamics as "the way in which any group of humans interacts and develops as a group, and the relationship between the group and the individuals within it" (online). Group dynamics therefore describes the actions and reactions, between individuals and the individuals with their group. I posit that these activities can lead to changes in group attributes and thus development of the group from one stage to another.

⁵ <http://www.aqr.org.uk/glossary/?term=groupdynamics>

To understand how group dynamics influence learning, it is instructive to delve into the outcomes of these dynamics and correlate them to learning. Such outcomes may include commonplace activities like exchanging resources, practical knowledge, advisory information or milestone events like decisions to change the group's manifesto or membership demographics etc. These activities / events are often rich in information and can elucidate how groups develop and learning occurs. In this section, I will focus on three group attributes that are often mentioned in the literature and whose outcomes are shaped by group dynamics. Consequently, these attributes may have effects on learning. They are 1) membership, 2) group governance; and 3) task / socio-emotional orientation.

When describing membership in online groups, Ala-Mutka, Punie and Ferrari (2009) observe that open or closed membership could have influences over the dynamics of the groups. When membership is closed and limited to a selected number, interpersonal relations can be built more quickly and the trust level between members is likely to be higher. However, opening up the membership could increase the diversity of participants and pool of resources, which could lead to the development of new ideas and innovations.

It has been suggested that changes in membership can have effects on group learning. For example, new members may bring with them new areas of expertise and knowledge, thus increasing the group's resource pool (Kane, Argote & Levine, 2005) and the breadth of knowledge within the group. Besides increasing the breadth of knowledge, the depth can also be enhanced. New members are usually a mix of both domain experts and novices. On one hand, novices can learn deeper skills and concepts from the experts, e.g. by observing their practices and getting feedback and comments on their own work. Experts, on the other hand, can learn new aspects of their work and further develop their professional identities through interaction with other experts. Furthermore, new members may also stimulate existing members to reflect on the group's internal structure and processes (Choi & Thompson, 2005; Lewis *et al.*, 2007). Finally, when members are working on a joint task, the activities serve as means of negotiation for creating and building collaborative product or resource. In this process, the members not only learn the

skills needed for the joint activity, but also the negotiation and collaboration skills necessary to be a part of the team.

Membership size can also potentially affect learning. Butler (2001) suggests that whilst larger membership leads to greater audience resources, it also makes it more difficult for individuals to benefit from those resources. Larger group size makes the group more susceptible to free-riding and social loafing (see, for example, Markus, 1990; Butler, 2001; Butler *et al.*, 2008). Individual members are observed to be less committed and may contribute less time, energy, and resources. Instead, they may rely on other members to provide enough to achieve the desired benefits for the group (Petty *et al.*, 1977). Furthermore, group size may affect the number of possible interactions amongst members. Consequently, this may affect how well individuals can form personal relationships with other members or receive benefits such as social support or information (Feld, 1982; Butler, 2001). If members do not feel that they are receiving sufficient benefits from the group to sustain their perceived attachment to the group, they may gradually withdraw from the group and eventually drop out. This may have detrimental effects especially in online-based groups, where members' network ties are weak and membership structures are fluid by nature. Furthermore, there is normally no penalty for withdrawal of membership.

Another attribute that is influenced by group dynamics is the way groups are being governed. Scholars (see, for example, Barab, Barnett & Squire, 2002; Cuthbert, Clark & Linn, 2002; Barab, 2003; Riel & Polin, 2004; Schlager & Fusco, 2004) have acknowledged that online groups are difficult to establish and successfully operate. They have to be carefully governed so that they can form and develop over time. Successful groups thus have governance structures that have adapted and survived. These structures of governance are themselves artifacts of learning, recording the dynamics of the groups' evolution. Such outcomes could provide a wealth of information that can be examined in greater detail.

Finally, the task/social-emotional orientations of groups are also important factors influencing group dynamics and learning. It is the scaffold that keeps members

together. Butler (2001) observes that an online task-based group, consisting of knowledge professionals, may cease to develop or exist unless it continues to receive socio-emotional support that members appreciate and value. Similarly, a support group that is more socio-emotional in nature will not be sustainable if there is no achievement of functional tasks. A balance in both task and social-emotional support is therefore important for groups to develop and sustain themselves.

It has also been observed that the sustainability of online groups relies heavily on the continuous participation of their members (Riverin & Stacey, 2008). Rather than “termination”, the relationships of members in long lasting groups form and reform continuously. In order to sustain themselves, some groups introduce new features through experimentation, evaluation and refinement. In doing so, these groups adapt to fulfil the task / socio-emotional needs of their members, as they emerge (Malhotra, Gosain, & Hars, 1997). Ideally, it is advisable for groups to provide and maintain a balanced task / social emotional orientation for members to work, give/receive feedback, and express feelings about each other. Through these activities, members learn to participate as active members, develop social competence and achieve functional goals. In return, the group can continue to grow and flourish. The relationship between groups and their members, in fulfilling both the task and socio-emotional needs, is a complex one. Barab *et. al.*'s (2002) empirical account of a Community of Practice, though conducted on an offline group, is a good illustration that focuses on the need to balance the tensions that arise from maintaining such complex dualities (such as the local needs of members versus the goals of the group).

In summary, I have discussed the way groups are defined and classified. However, these classifications form only a static picture of the groups chosen for investigation in this thesis. To get a dynamic picture of groups, I have emphasized the need to look at how groups develop over time i.e. what the group was and what it would become. Four elements that influence group life cycle, as proposed by Mousavidin and Goel (2009), were chosen to be included into the framework for looking at group development. The four elements describe the different categories of attributes that affect how a group develops. Processes that cause a change in these attributes are

called group dynamics and we can study the effects of group dynamics on learning by looking at the activities and milestone events that emanate from the group i.e. the outcomes of group dynamics.

2.3.4. FRAMEWORKS FOR EXAMINING LEARNING IN ONLINE GROUPS

According to the literature, a model that may be particularly salient for studying groups in social virtual worlds is the concept of *Community of Practice* (CoP). First introduced by Lave and Wenger (1991) and further developed by Wenger (1998), a CoP refers to a group of people who engage in joint, collaborative activities that provide opportunities for them to share, negotiate, and create knowledge. CoPs differ from social groups or other functional units in that it is the shared meaning and values of its members that keep the community closely knitted. They are characterised by *joint enterprise*, *mutual engagement* and a *shared repertoire*. Joint enterprise refers to the ways in which members of a CoP are engaged in the same kind of work; mutual engagement is “the way that the members are and how they interact and collaborate” (Laferrière, Breuleux & Erickson, 2004, p. 266); and shared repertoire is the set of “routines, words, tools, ways of doing things, stories, gestures, symbols, genres, actions, or concepts that the community has produced or adopted in the course of its existence, and which have become part of its practice” (Wenger, 1998, p. 83).

Communities of Practice usually start from a relatively small group of individual members. Over time, through membership invitation via current members and through word of mouth, membership increases. It usually takes several meetings before membership achieves equilibrium and the core group is established (Barab, Barnett & Squire, 2002). As Pemberton, Mavin and Stalker (2007) observe, “The value attached by individuals to these meetings or interactions is a critical success factor and there is evidence to suggest that this value can dissipate over time, leading to the demise of the CoP” (p. 65-66). Hence, in maintaining a Community of Practice, it is important to ensure that this value is continuously renewed and sustained in its individual members. Wenger, McDermott and Snyder (2002) suggest

that there are a number of developmental stages in a CoP. Figure 2-5 below shows these different stages.

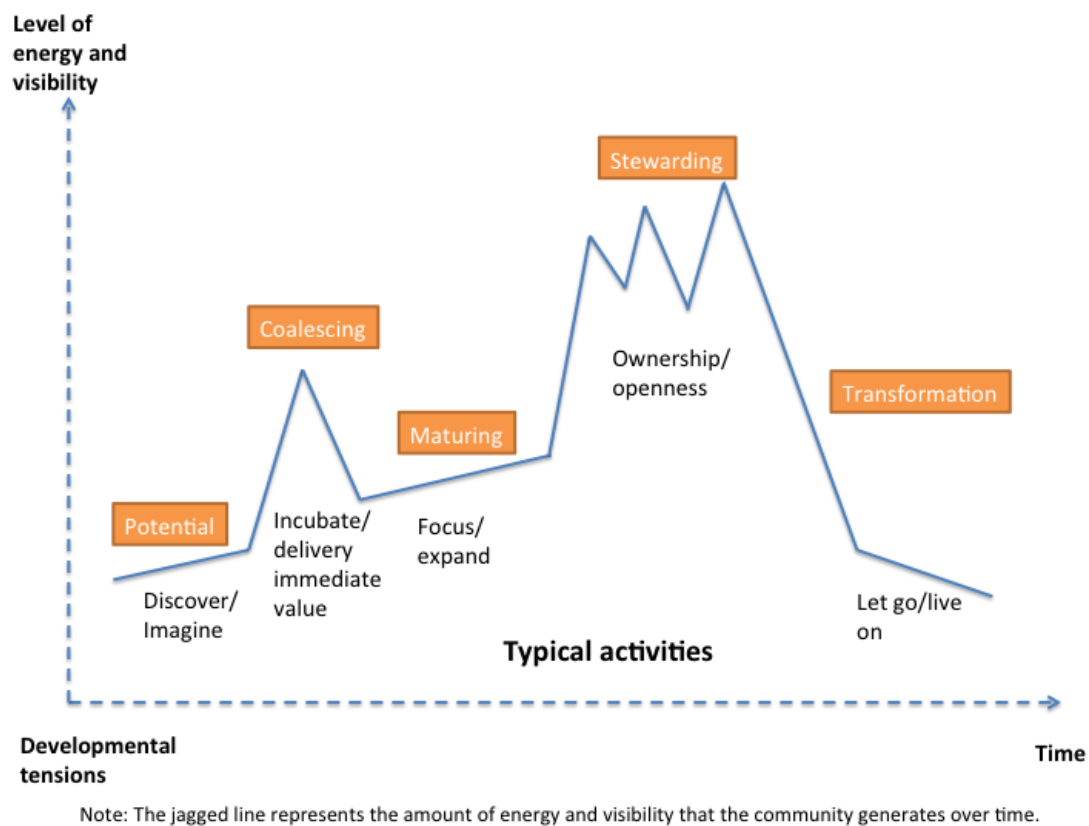


FIGURE 2-5- TYPICAL DEVELOPMENT STAGES IN A COMMUNITY OF PRACTICE (ADAPTED FROM WENGER, MCDERMOTT, & SNYDER, 2002, FIGURE 4.1, P. 69)

To describe individuals' changing participation in a CoP, Lave and Wenger (1991) introduce the concept of legitimate peripheral participation (LPP). In particular, LPP is used to describe changing levels and intensity of participation of an individual as he/she learns to participate in the community (Wenger, 1998, p. 95). It provides a trajectory description of how a newcomer moves from the periphery to the centre of the practice within a CoP. Thus it can be used to illustrate the process of as how newcomers/ novices learn from "old-timers"/ experts and become more actively involved with the activities of the CoP, they develop their competence and knowledge and gradually become recognised as "old-timers"/ experts themselves. Learning occurs as an individual member becomes more involved in the CoP and develops his/her competence and knowledge through such involvement (Rogoff,

1994, p. 209). In other words, learning in CoPs can be described as an individual member “coming to participate in a community” (Wenger, 1998, p. 95).

Lagache (1993), for example, applied the notion of CoPs, and particularly, LPP, in his study of a group that consisted of members who were interested in recreational scuba driving. He tracked how a member proceeded from a novice to a casual sightseer, and to a professional or speciality diver, and finally, an old-timer (see Figure 2-6). Although not an online-based group, the way in which Lagache studied and tracked the changes in the participation paths of the members could be a useful approach for this study.

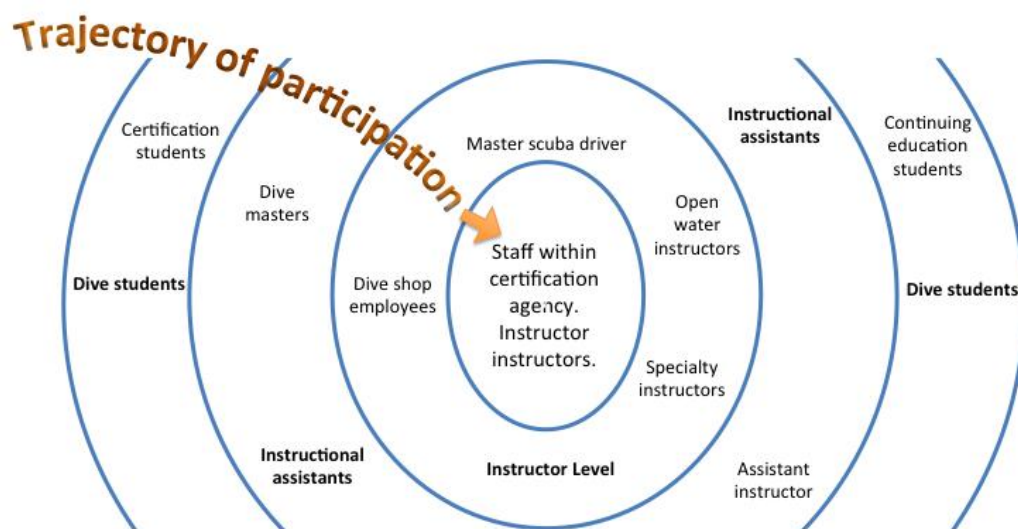


FIGURE 2-6 – CHANGES IN PARTICIPATION PATHS OF SCUBA INSTRUCTORS DESCRIBED USING LPP (ADAPTED FROM LAGACHE, 1993, FIGURE 6, P. 14)

Wenger (1998) develops the ideas of CoP and LPP further and observes that learning in groups and communities consists of several aspects. This is illustrated in his social theory of learning model as shown in Figure 2-7.



FIGURE 2-7- COMPONENTS OF SOCIAL THEORY OF LEARNING (WENGER, 1998, P. 5)

Wenger (1998) conceptualises learning in a CoP as: learning as belonging, learning as becoming, learning as experiencing and learning as doing. Learning, in this sense, is about the understanding of what it means to be a member of the group (becoming), aligning one's identity to that of the group (belonging), constructing meaning in and through interaction with the group (experiencing), and developing and applying skills and knowledge (doing) so as to become an expert in the group from the initial peripheral stage. It is important to note that the community as depicted in the figure does not refer to the community of practice approach; rather it is building a sense of community.

The concept of CoP offers a synthesised view for studying both individual and social aspects of learning (Linehan & McCarthy, 2000; Linehan & McCarthy, 2001). By providing the resources and structures for fostering members' participation, CoP can serve as both content and context for learning (Barab et al., 2002). It addresses what individuals learn in terms of content and describes learning in the context of individuals' changing participation in the social networks of relations. Hence, CoP provides important insights into our understanding of how, by participating in a

group, one becomes knowledgeably skilful, develop an identity and feel a sense of belonging.

However, some scholars have also expressed their criticisms and reservations towards this model. Storberg-Walker (2008), for example, contends that “CoPs seem to have developed into an umbrella concept without specification (from a functionalist perspective) or internal clarity (interpretive perspective)” (p. 556). Likewise, Bentley, Browman, and Poole (2010) also suggest that the CoP model lacks conceptual clarity. On the one hand, the CoP model is a flexible model and thus has been applied in the work of many disciplines; on the other hand, it has become so stretched in its application that we may risk neglecting the varied and complex nature of the groups we are studying and overlooking the nuances if we adopt the model in an unreflective way.

Additionally, it is also observed that not all online groups are, and necessarily develop to become, CoPs (Agresti, 2003). Thus, casual and convenient labelling of online groups as an online CoP, may distract us from understanding the heterogeneous and complex nature of online groups, their developmental processes and dynamics, and how these may play a part in the ways their members learn. In consideration of this, I argue although the community of practice model does provide us with an understanding of interactions amongst group members, learning processes and identity formation, it may not always be applicable to online groups.

Furthermore, although CoP is a useful model for studying learning of individuals within a group, it may be inadequate in two respects. Firstly, CoP focuses on learning as an individual. More specifically, it describes the trajectories and changes in participation of an individual member in a group/community through legitimate peripheral participation (LPP). Wenger’s (1998) social theory of learning also explains how an individual learns to be, do, become and participate in the group / community. However, there are other planes of analysis for describing and examining learning, namely interpersonal and group (see Section 2.3), that are important but not well covered in CoP. Secondly, CoP does not emphasise differences in the way learning takes place as the group transits from one stage of its development to another. i.e.

learning occurring in a group that is in its nascent stage of development may be different from that in a group and that has matured. We may not yet know whether learning is indeed different at different stages of group development. However, if there is truly a difference, CoP may not be able to capture it.

Besides CoP, there are other models that look at learning in groups. One model was proposed by Gunawardena, Lowe and Anderson (1997) and may be helpful in studying how people in online groups co-create knowledge through interaction. The underlying assumption of this model is that interaction “is the essential process of putting together the pieces in the co-creation of knowledge” (Gunawardena, 1999, p. 412). There are five phases in Gunawardena *et al.* (1997)’s model. Phase 1 involves sharing and comparing information. Palloff and Pratt (2007) describe this phase as the “time early in the formation of the group where participants test each other out, as it were, to determine what strengths and knowledge each brings to the group” (p. 6). The second phase involves the discovery and identification of potential dissonance or disagreement of ideas amongst the members. To reconcile this inconsistency of ideas, the group moves to the third phase that involves the negotiation of meaning. In Phase 4, the members put the concept or idea to the test by challenging it against their own experiences or personal understanding. Finally, in phase 5, new knowledge is illustrated by the members making summarising statements or metacognitive statements, indicating their new understanding of the topic. This model is depicted in Figure 2-8.

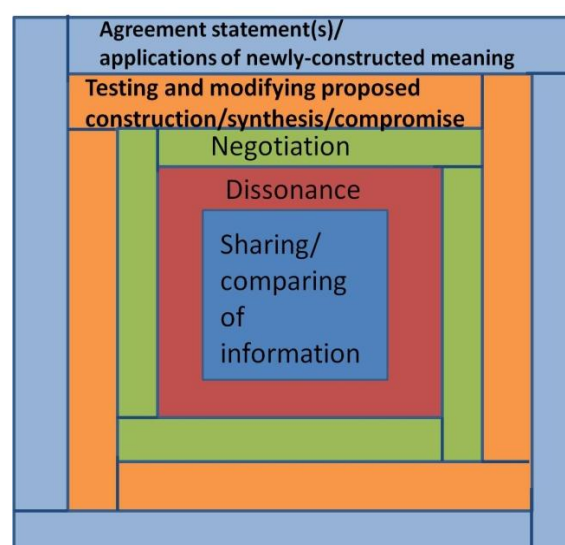
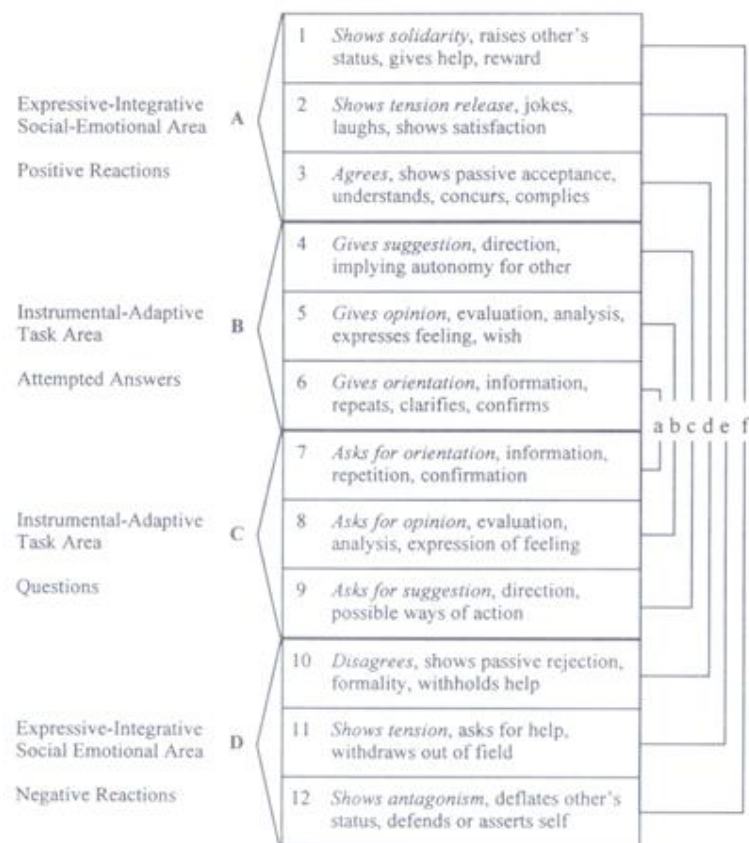


FIGURE 2-8- A CONSTRUCTIVIST MODEL OF COMPUTER-MEDIATED INTERACTION
(GUNAWARDENA ET AL., 1997, P. 411)

However, this model mainly examines construction of knowledge in task-oriented interaction within the groups. As observed by Kelly and Bostrom (1995), in group interaction, in addition to task-oriented interaction, socio-oriented interactions such as maintaining a positive environment or dealing with differences in opinions constructively are also important. For the purpose of this study, other indicators are needed to address construction of knowledge in socio-emotional interactions, which I have observed to be an important aspect of interaction in all three groups studied. Examples of these indicators can be found in Bales's (1950) Interaction Process Analysis (IPA) framework (Figure 2-9). In this framework, Bales divided key aspects of group interaction into six generalised problems. Three of them belong to "socio-emotional area" while the other three are in "task based areas". For emotional areas, Bales (1950) observes that they entail mainly interpersonal problems like 1) deciding whether to show agreement or disagreement (problem of decision), 2) generating or defusing tensions (problem of tension management) and 3) strengthening or weakening of the group's sense of belonging (problem of integration). Bales's (1950) IPA thus presents a possible model for one to access the indicators related to socio-emotional aspects of group interaction. However, unlike Gunawardena *et al.*'s (1997) model, which links interaction with knowledge creation, Bales's (1950) IPA stops short of linking such indicators to learning.



Key:

- | | | |
|----------------------------|-----------------------------------|-----------------------------|
| a. Problems of orientation | b. Problems of evaluation | c. Problems of control |
| d. Problems of decision | e. Problems of tension-management | f.. Problems of integration |

FIGURE 2-9- BALES' (1950) INTERACTION PROCESS ANALYSIS (IPA) FRAMEWORK (P. 258)

Furthermore, the unit of analysis in both models is usually single episode of activities. These two models will be helpful when thinking about the data and when examining single activities more closely. These individual activities, if studied on a regular basis and over a period of time, could be compared and allow one to ascertain the depth and nature of the changes taking place. Stahl (2005) also observes that “the kind of ‘learning’ that happens in a brief interaction is not the kind of learning that educators look for over months” (p. 81). Observing group activities over a sustained

period of time thus enables one to capture not only discrete episodes of activities, but also account for changes in group processes, occurring over a longer duration.

Salmon, Nie and Edirisingha (2010) propose a model that seemingly combines task and socio-emotional learning. In it, they use a five-stage model to address the various learning stages that a user would possibly have to experience when using the virtual world. Salmon *et al.* (2010) suggest that learners and their instructors will first have to be equipped with basic skills such as those of navigating their avatars and using the public and private chat channels to communicate with others. With these basic skills in hand, they could then proceed on to the second stage that is to establish an online identity and interact with other avatars and the virtual environment. Their findings suggest that once learners feel comfortable and confident about being in the virtual environment, they become more at ease when socialising with their peers and are observed to make jokes, share personal information and feelings with one another. Having done so, learners move on to the third stage – sharing and comparing information related to the subject matter, and helping others meet their individual goals. Salmon *et al.* (2010) observe that in Second Life, learners have to reflect and respond quickly, and at times, use gestures or reference to objects to make their point clearer. After sharing and comparing information, learners are observed to proceed to the fourth stage – knowledge construction. During this stage, learners construct knowledge by exchanging views with one another and working collaboratively towards a common goal. Finally, the fifth and last stage is development where learners reflect on their experiences in Second Life, develop a meta-cognitive view of this learning process and “attempt to integrate their learning experience from the online environment into other forms of learning” (Salmon, Nie & Edirisingha, 2010, p. 179). The model proposed by Salmon *et al.* (2010) is a good attempt at understanding and analysing learning in groups. It explains the importance of integrating socio-emotionally into a group, before knowledge can be constructed or shared. Moreover, it is based specifically on learning in virtual world and is particularly relevant to the context of this thesis. However, like CoP, it seems to be directed more at tracking an individual’s learning stages and does not consider the other planes of learning. Furthermore, this model

also fails to account for the effects of group-development on learning. Like CoP, Salmon *et al.*'s (2010) model is useful but yet limited in examining the learning.

To address learning beyond individuals, Heo (2008) suggests that Rogoff's (1998) planes of analysis may be helpful in identifying learning in online-based groups. This involves examining learning processes in individuals, interpersonal relations among individuals, and groups (see also Section 2.3). These three planes make it possible to capture the dynamics involving both individuals and their collective endeavours. Although the planes differ from "levels of analysis" that treat each unit as a separate entity, all three planes are interrelated and are taken into consideration as a whole (Rogoff, 1995; Rogoff, 1998; Heo, 2008; Heo & Breuleux, 2008). By adopting this analytical framework, learning can be described as involving members' acquisition of knowledge and skills (learning in individuals), construction of meanings through networks of socially negotiated practices (learning through interpersonal relations) and experiences and evolved behaviours of group as a collective entity (learning at the group level).

2.4. RESEARCH FRAMEWORK AND RESEARCH QUESTIONS

Drawing from the above discussion, a few important points are deemed particularly relevant to this study. As mentioned in section 2.3, both individual and social aspects of learning have to be taken into consideration in order to identify and examine how learning takes place in the social virtual world context. I have also chosen to address learning at three planes: in terms of individual members' participation in their respective groups, the ways in which they interact with other members and how the groups develop.

For the selection of groups used in the study, I have chosen three groups that are of similar typology. All three groups were member-initiated and of a social nature, although they also had task-based activities. This is because of my intention to examine learning in a more naturalistic setting. These groups however differ when I look at their goals, interests, size, as well the style and mode of communications amongst members and external parties. Each of these groups has its unique

attributes, and as the group develops over time, these attributes are also modified. As I did not have prior information on what attributes would be modified, I have used an ethnographic approach to immerse myself into the group and obtain a first-hand account of the group's development. Changes in attributes can be elicited by observing the activities and milestone events happening over a sustained period of time (nine months). The purpose and reasons for choosing this methodology will be discussed in the next chapter.

I have also used Mousavidin and Goel's (2009) four key elements as a framework to pick out the attributes associated with group development and the observed group dynamics that has led to those changes. Using this framework, I argue that in order to better understand how learning is fostered and how learning occurs in groups, it is necessary to examine learning with relation to group development and dynamics. The environment, which the group is in, also plays an important role in elucidating how it will develop. For this thesis, I am looking specifically at Second Life. Given the distinctive characteristics and the nature of self-organising groups in Second Life, I argue that it is necessary to extend our focus beyond individuals' participation. There is also a need to examine group development, study group processes and dynamics, as well as effects of external influences from the broader context, such as the Second Life community and Linden Lab, the developers of this social virtual world. These can in turn be condensed into three plane of analysis (personal, interpersonal and group). With these assumptions and approaches, I propose a research framework used in this thesis. Figure 2-10 shows a graphical representation of the research framework.

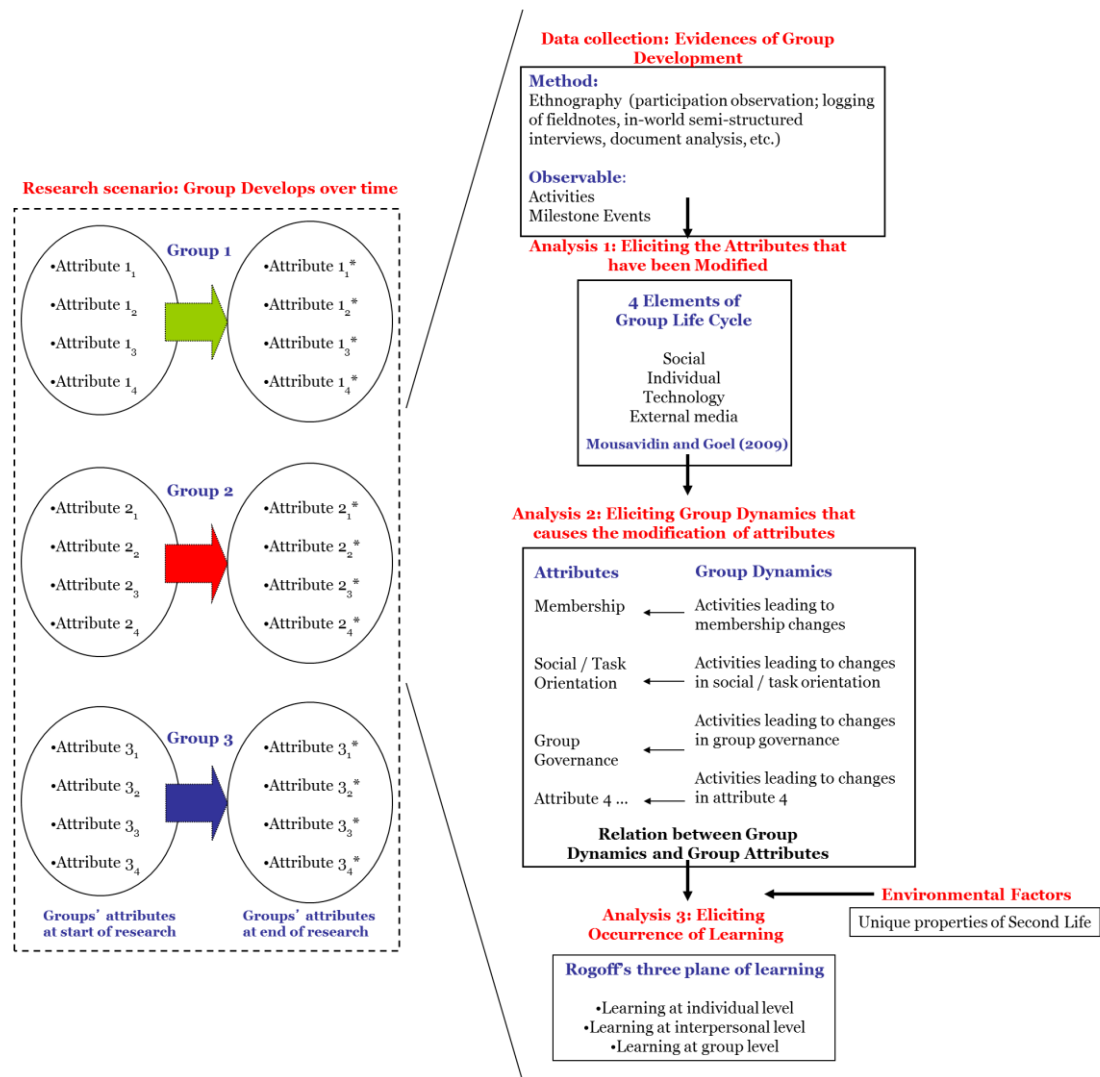


FIGURE 2-10- GRAPHICAL REPRESENTATION OF THE RESEARCH FRAMEWORK.

The premise of the framework is that group development causes intrinsic group attributes to change. It is necessary to use a systematic approach to elicit these attributes and relate the changes to learning. To do that, one needs to first collect data for the study. For the data collection, I had used ethnography to observe activities and milestone events. From these artefacts of development, I could identify the attributes that had been modified, using the four unique categories proposed by Mousavadin and Goel (2009) as a framework. Once identified, event logs that led to those changes in attributes were extracted from the activity log. These were the group dynamics that influenced the group development. Finally,

connections between group development, dynamics with learning were drawn using Rogoff's three planes of analysis.

Finally, with this framework in mind, I crafted out the research questions for this study:

1. What are the salient attributes of the three groups and how have they changed as the groups developed over time?
2. What can be observed of the ways in which learning occurs along the three planes of analysis: individuals, interpersonal relations, and group?
3. How does group development affect learning and vice versa?

CHAPTER 3 – METHODOLOGY AND RESEARCH DESIGN

As the objective of this study is to examine the ways which members in social groups learn in the virtual world context, I chose to conduct the study in the naturalistic settings, so as to be able to engage with the members of the group and to understand the situation from the members' point of view. Particularly, an ethnographic-based approach was chosen as the primary research methodology, to tease out the various ways in which learning occurred.

I begin this chapter by discussing the considerations and implications of adopting ethnography as the methodology guiding the study. Next, I describe the research design of the study and how the ethnography was conducted. This is followed by a description of the data gathering and analytical methods, and a discussion of the steps taken in ensuring credibility, transferability and trustworthiness of the data. Finally, the ethical issues arising from the adopted methodology will be addressed.

3.1. METHODOLOGICAL CONSIDERATIONS AND IMPLICATIONS OF ADOPTING AN ETHNOGRAPHIC-BASED APPROACH

The underlying assumption of ethnography is that to learn about a phenomenon or a culture which is largely unknown or under-explored, and to understand how people make sense of it, a researcher has to become immersed into the natural context in which it occurs, over a considerable period of time (see, for example, Blomberg *et al.*, 1993; Hathaway, 1995; Hammersley & Atkinson, 2007). The goal is often to provide a rich description and analysis of the nature of the phenomenon or culture, and present it as seen or perceived by the participants.

This study is concerned with how members create meanings through their participation in the group and interaction with other members, and how learning occurs in the respective groups and in turn affects participation and interaction. Ethnographical groundwork is thought to be a suitable method for data collection because it is able to provide unbiased information that is unadulterated by the data collection process. This approach is also supported by Bell (2009) who observes that detailed anthropological engagement with the cultures of virtual worlds is a vital

step to understanding how learning takes place, or might take place, in social virtual worlds like Second Life (p. 515).

The study examines three different groups that have different characteristics and objectives. The groups were formed in Second Life, making virtual ethnography necessary. Doing ethnography in the virtual world is more challenging primarily because of the difficulty in observing the participants directly. For example, unless the members explicitly express them, the emotions and body languages of the members are often hidden behind the avatar. It is also more difficult for one to establish rapport given the limited mode of interaction in a virtual world setting.

Moreover, studies on virtual worlds usually involve either the online environment only, or both the online and offline environments. For the former, scholars like Boellstorff (2008; 2010) argue that the online environment is in itself a culture in its own right and thus examining this online culture where people interact with one another would be sufficient. For the latter, it has been argued that offline settings matter as these physical venues would give clues as to who the participants are, what they do, why they do certain things and how they access the online world during offline settings. This is particularly pertinent for studies focusing on the experiences of users of virtual worlds, as it is possible that their offline lives may influence their virtual experiences, and vice versa. Accordingly, an integration of ethnographic methods, both traditional and virtual, will be helpful in developing rich and comprehensive accounts of the occurrences in both the online and offline settings (Wilson, 2006).

For this study, I have chosen to follow the relations of the members, within and outside of Second Life. For example, if the members communicate outside of Second Life, through email or external website, I would follow these communication and interaction with them through these means. During the ethnographic study, I found that a few members in the Education and Science Group met outside of Second Life. For the Education Group, a few members met when they attended two education conferences in the States. I kept in contact with a couple of these members while they were there and asked them about what they thought of their interactions in the

offline setting, during my online interviews with them. For the Science Group, a few core group members met up in Belgium when they were there to apply for the non-profit organisation status. Similarly, I kept in contact with them and asked about their views of meeting up in the real-life and what impact did that make to their subsequent interactions.

There were, however, not many episodes, other than the two mentioned above, that members met in the real physical world. The real world interactions constituted only a small part of the total interactions that were recorded. The lack of real-world activities was one of the reasons why the study did not naturally progressed from the virtual world to the real world. For those activities that did, they were dutifully recorded and formed part of the data. More importantly, this study aims to look at the online activities of the members and how they interact in the virtual world. These activities have provided a rich and extensive amount of information for investigation. An extension of the members' activities in the real world is not the main objective of the research.

The study examined three different groups that had different characteristics and objectives. The groups were formed in Second Life, making virtual ethnography necessary. Doing ethnography in the virtual world is more challenging primarily because of the difficulty in observing the participants directly. Like traditional ethnographic study, it too requires meticulous planning. For example, unless the members explicitly express them, the emotions and body languages of the members are often hidden behind the avatar. In finding out how the participants were feeling about a particular episode or event, I tried, as much as possible, to communicate with them through instant messaging or informal chatting soon as they became available. It is also more difficult for one to establish rapport given the limited modes of interaction in a virtual world setting. Thus longer amounts of time may be needed for the researcher to build bonds and establish rapport with the participants. The study was conducted over a period of nine months, during which time I attended the various group events regularly and kept in constant contact with the participants. Thus, they were not only used to my presence, but over time, also saw me as one of them, i.e., a member of the group. It is also necessary to be mindful of the technical

problems that one may encounter when conducting an ethnographic study in Second Life. I had an incident once when my avatar appeared as an opaque black figure on my screen but a participant messaged me through instant messenger that it appeared naked on her screen. I quickly logged out of the system but did not manage to log back in again until couple of hours later. To minimise such situations from happening, I chose to dress my avatar in simple clothing that required a shorter time to rez (or load up) and ensured that I was using the updated version of the software.

As Nardi (2010) notes, “one of the first things an ethnographic investigation requires is finding a way to enter a new culture” (p. 32). Feldman, Bell and Berger (2003) observe that gaining access is not simply a procedure that has to be taken care of prior to the study; rather it is a continuous and dynamic process that involves constant negotiation and attention throughout the course of the study. They also emphasise that the quality of access will influence the amount of information a researcher is able to collect (p. 15). To gain initial access into these groups, I first made contact with the respective group leaders through sending them a message in Second Life, and attaching a notecard detailing the study (Appendix A). I followed up on this contact with an email. Then, I arranged to meet the leader in Second Life or through tele- or video-conferencing to explain the details of the study, such as the purpose of the study, why their group was chosen and how I intended to seek informed consent from their members. In all three cases, the permission of the group leaders and the consent of the group members were sought before entering the site. Throughout the main study, issues of access and consent remain as new members join the group. The ethical concerns arising from gaining informed consent of virtual participants will be discussed in Section 3.7.

3.2. RESEARCH DESIGN

This study attempts to draw links between the development of online groups based in Second Life and the types of learning that occur within the groups. To tease out such learning, one would need to study the development and dynamics of the respective groups through talking to their members and observing and participating

in the groups' events. This section details how the study was done. I did this over a period of nine months, during which interviews on individual members were also made. After the nine-month period, I continued to participate in the groups' activities on an irregular basis so as to keep myself abreast with the latest developments of the groups.

In this section, I will explain how the groups were chosen for the study, how I gained access to the field sites and how I behaved as an ethnographer during the study.

3.2.1. SELECTION OF GROUPS

As the purpose of this study is to examine how learning occurs in self-organising groups, and how the development and dynamics of such groups may have an effect on the ways which learning occurs, it was necessary to consider more than one group, so as to allow for a comparative analysis across the groups. It has been suggested that focusing on multiple cases within the same context can provide one with a deep understanding of the particular social setting and comparative insights. Eisenhardt (1989; 1991), for instance, emphasises the use of contrasting observations from multiple cases to create and highlight thematic constructs. Eisenhardt and Graebner (2007) argue that while a single case can provide a rich account of a phenomenon, multiple cases allow cross comparisons, which can enable one to see if an emergent finding is idiosyncratic to a single case or consistently replicated across several cases. Johnston, Leach and Liu (1999) suggest that empirical data from multiple-case designs are more compelling and credible, and can be used to develop robust theory. They argue that whether or not a researcher finds consistent findings or theorised patterns of differences across the multiple cases, he/she will be able to make a sound argument of the theory that is either under evaluation or being developed. Curtis *et al.* (2000) further suggest that the selection of cases and the development of theory or framework is interrelated, that is, the selection of cases is driven by a conceptual framework or a certain theory that is to be evaluated, and careful examination of the similarities or differences across these cases may, in turn, inform the design and development of the theory/framework. Besides developing or elaborating a theory, multiple case studies

can also be used to “establish the range of generality of a finding or explanation and, at the same time, pin down the conditions under which that finding will occur” (Miles & Huberman, 1994, p. 172).

In consideration of this, I chose to adopt a multiple-case design that would allow me to extend the analysis and to search for cross case patterns and themes. Doing so allowed me to contrast observations from the separate detailed studies of the groups and develop concepts and understandings of the nature of learning in Second Life. For the purpose of this study, three groups were selected for comparison. This is a comfortable number that allows comparison across the cases, while at the same time, maintains a manageable scope and time frame for the study.

Furthermore, this study uses purposeful sampling in the selection of the three groups. In purposeful sampling, cases tend to be selected based on the typicality or possession of particular characteristics as specified by the research objectives (Cohen, Manion & Morrison, 2007, p. 114-115). For example, in their attempt to build a model on the parting ceremonies of organisations facing termination, Harris and Sutton (1986) chose eight organisations based on four categories: private, dependent; private, independent; public, dependent; and public, independent. Such a systematic and purposeful way of selecting cases is perceived to have greater credibility compared to the “personal, ad-hoc” way of selection (Patton, 2002, p. 241). Curtis *et al.* (2000) observe from literature that discusses qualitative samples, noting that they “are designed to make possible analytic generalizations (applied to wider theory on the basis of how selected cases ‘fit’ with general constructs), but not statistical generalizations (applied to wider populations on the basis of representative statistical samples)” (p. 1002). They also suggest six points to keep in mind when making a decision on sampling. These are: 1) relevance to conceptual framework and research questions guiding the study; 2) potential of generating rich information on the phenomenon of interest; 3) potential of enhancing the generalizability of findings; 4) potential of producing convincing accounts and explanation of what is observed; 5) ethical issues that may emerge from choosing the cases and the possibility of gaining ethical clearance for study; and 6) feasibility of study, i.e., addressing logistical and practical issues.

In selecting the groups for my study, I conducted a pilot study in Second Life prior to the main study for about three months. The main purpose of this study was to explore the various types of self-organising, social, informal groups in Second Life that were holding events on a regular basis, and to examine the types of events that they were organising. Using the search engine in Second Life, I went through the list of activities listed under the heading “Education” and “Discussion”. I then attended these events and found that most of the groups were hosting these events at least once every fortnight. I then narrowed down my search to the groups that held events at least once every fortnight, and had some form of discussion or teaching/learning activities. I also talked to the people I met in these groups and sessions, and asked them about the groups that they joined. Studying the nature of these groups, I found that the majority of these groups fall under several categories, including the following: 1) building/scripting classes that taught users how to build and create objects in Second Life; 2) groups that engaged in some form of role-play; 3) groups that talked about philosophical issues; 4) groups that discussed issues related to teaching and learning in virtual worlds; 5) theatrical groups; 6) groups practising certain religious beliefs; 7) support groups and 8) groups that discussed issues related to Science or Mathematics-related topics. Of these categories, I then narrowed down to the types of groups that would be suitable for the purpose and the research framework of the study. It was through this process that groups which revolved around the topics of Education, Philosophy and Science were chosen. At that point, I had narrowed my search to about 7 groups – 3 Education Groups, 2 Philosophy Groups and 2 Science Groups. The three were a good fit with the aims of the thesis insofar as they all pursued an open-ended and sustained learning process. This learning process was in contrast with, for example, the other types of groups in Second Life that were devoted to learning tasks such as how to build objects or engage in role-play. These types of groups typically had fixed and instrumental end-goals.

I continued to attend the events of all of these groups throughout the pilot study. After the pilot study had ended, I contacted the leaders and founders of all of these 7 groups, and 3 agreed to meet with me and discuss the possibilities of taking part in

the study. Coincidentally, of these three groups, one was an Education Group, the second, a Philosophy Group, and the third, a Science Group. A brief description of each of the three groups is given below:

Founded in Second Life in March 2008 by a Science enthusiast, Janice⁶, the Science Group was set up initially to bring about opportunities for interactions amongst those who share common interests in topics related to *Science, Technology, Engineering and Mathematics* (STEM). The group size was maintained at about 20 members, of which four were core group members. The members were mainly from the USA, Russia and countries in Europe such as France, the Netherlands, the UK, and Spain. There are a couple of members from the Asia-Pacific region, such as Japan and Australia. Members had no prior connection to one another before meeting in Second Life. In fact, most of them only got to know each other through the group and many had not met each other in person in real life. They were driven by the desire to share their expertise and knowledge with each other, in this case, on topics related to STEM. The group was formed purely by membership, and not by an agenda imposed by an external organisation. Between March 2008 and September 2010, the group was hosted by an external organisation, and held its activities on the virtual land belonging to the organisation. However, it had full autonomy over the operation of the group and the running of activities. Over time, the Science Group was able to establish themselves as a niche group of domain experts in the areas of STEM. With reference to the literature in Chapter 2 (Section 2.3.1.1), the Science Group could be characterised as that of a member-initiated professional group (Porter, 2004).

The Education Group was formed in 2008 by a PhD student based in the US. Since its establishment, it had held roundtable discussions on specific topics, reading meetings on academic papers, presentation seminars by various guest speakers and even virtual field trips. The group subscribed to an open membership, and in a span of three years, the membership size grew from about 12 members to 400. Amongst

⁶I have given each of the members mentioned in this chapter a pseudonym so as to protect their privacy and uphold confidentiality.

the three groups that were selected, this group had the highest membership enrolment. Like the Science Group, it was also a member-initiated professional group, with the aim of connecting people who were interested in learning more about or sharing information on teaching and learning practices in virtual worlds. Most of its members were based in US and Europe, with a small number of them residing in Asia.

The Philosophy Group was started by a retired teacher of Computer Science and Philosophy. Like the Science and Education Group, this group was also a member-initiated group. The main difference was that this was not a professional group; rather it was a social group that was formed for the purpose of connecting people who were interested in talking about philosophical issues. Although it was a social group, the format of the meetings resembled that of a class, where the founder of the group would give a short presentation on a topic, followed by a group discussion of that topic. The conversation would then be logged and uploaded on the group's blog for further reference and reading. Although it subscribed to an open membership, the group size was kept constant at about twenty over the three years, although there had been old members exiting the group, and new members joining in.

The three groups were similar to each other in terms of being member-initiated and of a social nature. This was intended for the purpose of examining learning that is happening in a more naturalistic setting. However, they differed widely in their goal, interest, size, as well the way the members interacted. From my informal interviews with the founders and members of the groups conducted in Second Life prior to commencing the main study, I further observed that these groups exhibited varying degrees of task and social components. While this was so, the three groups also shared a few common traits. For instance, all three groups were formed in Second Life between the last quarter of 2007 and the first quarter of 2008, each by a single founder. Hence, these groups formed around the same period and had maintained their presence in Second Life for almost three years (up till late-2010 when the fieldwork ended). Applying Curtis *et al.* (2000)'s recommendations for selection of cases, I found that these three groups were relevant to the conceptual framework

(see Figure 2-10) guiding the study. Furthermore, by employing an ethnographic methodology, rich data of the respective groups could potentially be generated. These findings could then be examined for similarities or differences across the three groups, providing explanations of what was to be observed.

Finally, while the selection of cases is important, the selection of sampling within the cases should also be considered carefully too (Hammersley & Atkinson, 2007, p. 35). Jacob (1987; 1988) notes that the purpose of sampling is to get a representative view in the sample. However, as Bryman (2004) observes, in many ethnographic studies, it is often difficult to create a sampling frame from which a random sample might be taken. Instead, he suggests that researchers conducting ethnographic studies “gain access to as wide a range of individuals relevant to the research question as possible, so that many different perspectives and ranges of activity are the focus of attention” (Bryman, 2004, p. 304). Hammersley and Atkinson (2007) observe that by adopting this form of sampling, the researcher is “not only deciding what is and is not relevant to the case under study but also usually sampling from the data available in the case” (p. 35). Following this approach of sampling, I interviewed a spectrum of members, including the founders, core members, ordinary members, and ex-members. Additionally, I continued to collect data until I was not seeing new categories emerging from the data.

3.2.2. GAINING ACCESS TO THE FIELD SITE

As described by Pearce (2009), “you cannot observe a virtual world without being inside it, and in order to be inside it, you have to be “embodied”” (p. 196). To do this, I had to don a virtual persona by getting myself an avatar. I did this by going to the SL’s website and selecting an avatar, as shown in Figure 3-1.

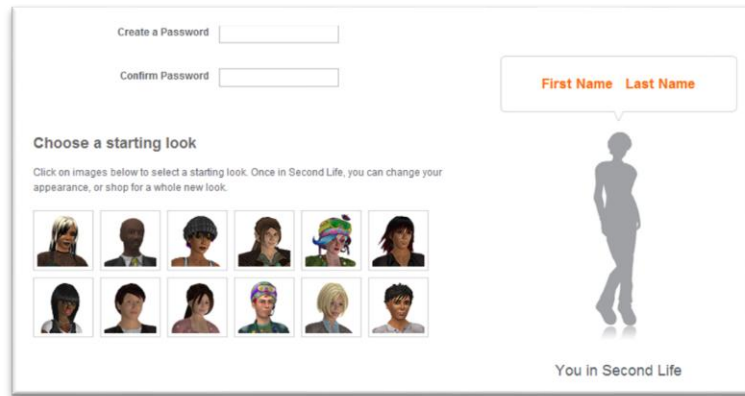


FIGURE 3-1- CHOOSING AN AVATAR (IMAGE CAPTURED FROM
[HTTPS://JOIN.SECONDLIFE.COM/?LANG=EN-US](https://join.secondlife.com/?lang=en-us))

As discussed in the introduction section, studies have shown that the appearance of an avatar will influence how others perceive and interact with it. Having a visual representation through an avatar may also mean that others can easily recognise and remember an individual. Just like in offline settings, people can be quick to make judgements and jump to conclusions from the looks and appearance of an individual (Yee, Ducheneaut & Bailenson, 2009). This is a challenging task in a visually-rich environment like Second Life.

Attempting to fit in the virtual world involves both looking and acting the part (Williams, 2007). Like other researchers I had to learn textual netiquette as well as other forms of communication, like gesturing. I also had to learn to control my avatar so that I would not walk into another avatar, or face the wrong direction when talking to someone. These issues are also observed in online ethnographic studies conducted in text-based environments, where the researcher has to learn textual netiquette (Hine, 2000; Kendall, 2002; Williams, 2007) and “ways of being in the world” (Gee, 1999, p. xii). It was also necessary to pick up the parlance, common abbreviations and other textual conventions used in Second Life. Some of these textual conventions can also be observed in other online textual environments such as instant or text messaging, email or from social networking sites such as MySpace, Facebook or Twitter. There were also other functions, such as controlling the camera functions and orientation, that I had to familiarise myself with.

Pearce (2009) suggests that it may even be necessary for the researcher to appear in a role that it is comparable to those whom s/he is studying. However, “looking and acting” the part is not quite the same as being one of them. Rather, it is a way of being with them, or as Goffman (1989) describes, “close to them”, so that the researcher can not only “listen to what they talk about, but to pick up on their minor grunts and groans as they respond to their situation” (p. 125).

Taking all these factors into consideration, in studying the various three groups, I decided to customise the appearance of my avatar to look as close to me as possible. Thus, I picked a female avatar. I also changed the outfit and looks of my avatar to suit the norms and culture of the respective groups and the nature of the events that I attended. However, the facial appearance, body shape and height of the avatar were kept the same throughout. This was so that my avatar was recognisable to those I was studying, regardless of where I might be in SL.

3.2.3. MY ROLE AS AN ETHNOGRAPHIC RESEARCHER

As an ethnographic researcher, I am the primary instrument of data collection and analysis (Wolcott, 1975). Thus, the decisions that I make and the actions that I take, would all have implications on the data collected. It is important, therefore, that I make a conscientious effort, throughout the study, to be as objective as possible and minimise my own biases.

Furthermore, in order to obtain optimal data, it is necessary for me to establish a level of interpersonal rapport with the groups and their members. I did so by attending most of the group sessions and meetings, and whenever possible, tried to talk to the members informally. Usually the content of such conversation would be about what we did over the week, how we celebrated certain festivals, or what we thought about a certain piece of news. Such casual conversation helped us to understand one another in a more personal way. Furthermore, when tensions arose among the members, I did not take sides; rather, I was there simply to observe how the members responded and reacted to the tensions.

3.3. DATA COLLECTION METHODS

It is suggested that ethnography is an approach encompassing a variety of methods (Sveningsson, 2004). Similarly, Walford (2008) argues that a study which adopts just one particular method, however exhaustively, cannot be considered to be ethnography. Rather, he observes that studies adopting an ethnographic approach “usually need many different forms of data and employ a variety of different methods to generate it” (Walford, 2008, p. 9). Further, it is observed by Bresler (1996) that prolonged observations and semi-structured interviews are often used in ethnographic studies so as to “gain multiple interpretations and expand empathic understanding” (p. 134).

I employed several techniques in the study, which primarily included field notes from attending the various meetings of the groups and interactions with the members, semi-structured interviews conducted in Second Life, participation observation, chat logs from the meetings and secondary document from the groups’ blogs, websites, and other social networking sites. This provides a holistic picture based on multiple sources of data, and at the same time achieves the goal of ethnographic immersion.

In addition, in conducting the study, I found it both important and useful to connect with the wider Second Life community, i.e., its users as well as the developers of Linden Lab. It was through talking to a number of users during the pilot study that I observed that many of them found joining a group to be a meaningful activity. Some of them introduced me to the various groups that they were members of, brought me along for the groups’ events, and gave me the links of the external websites that their groups had set up. During the main study, I continued to explore other islands that had educational activities in Second Life and talked to people that I met when I was there. I also met with a couple of Linden Lab employees and people who were conducting research in and about Second Life. In doing so, I was able to be kept in the loop of the latest updates and news about Second Life as well as some of the research work that was going on. It was mainly through the Second Life community that I secured information of changes taking place in Linden Lab and the developments that they were planning for Second Life. As this study involved

studying how individuals and groups reacted and adapted to these changes, it was important for me to know about such changes and developments as soon as possible. This was so that I could better link such reactions and adaptations to what was happening in the wider context.

3.3.1. CONDUCTING OBSERVATION OF PARTICIPATION

The central idea of participation is to enter into the group that is studied, experience the ways of the group and to observe activities appropriate to the situation (Woods, 1986). As observed by Walford (2008), “the best way of getting this information is to ask those people and observe them in their everyday activities” (p. 11).

In this study, I initially took on the role of an overt observer (i.e., I made known my identity) for all of the three groups. The group members were very welcoming and receiving towards me. It was a fruitful way of getting to know the group in terms of its structure, norms, etc. However, I found that by doing observation only and not participating in the discussion or activities, I was not able to get deeper into my understanding of the groups or how people were making sense of their interactions and participation. As observed by Burgoon and Newton (1991),

observers are not exposed to the same levels of stimuli that cause cognitive or affective reactions in subjects. They are therefore less inclined to scan the environment for cues to interpret situations or behavior. As a result, observers often lack situational cues or contextual information necessary to make "accurate" judgments or behavioral interpretations. Not only do participants rely more heavily than observers on contextual and environmental information to interpret behavior, they also have physiological response mechanisms providing additional data.

However, although there are advantages of playing the part of a participant, there are also implications for doing so. As Ybema and Kamsteeg (2009) observe, immersed or active participants “run the risk of blocking their observational and interpretive capacities” (p. 104). To minimise such risk yet be able to enjoy the benefits of playing the part of a participant, I chose to take the role of what DeWalt and DeWalt (2002) describe as peripheral-member researcher. As a peripheral-

member researcher, I engaged in moderate participation, in other words, I became a member of the respective groups, but ensured that I kept myself from being too immersed into the role. In doing so, I was able to interact frequently with the members and be recognised as one of them (i.e. they did not see me as an outsider). Whenever possible, I tried to participate in the group discussion and activity. However, when conflicts arose or when there were disagreements, I did not intervene nor make any comment. Through engaging in moderate participation as a peripheral-member researcher, I was able to gather information about the structural and functional dimensions of the respective groups, and gain insights into the roles, relationships, norms, as well as motivations and barriers to changes of these attributes.

Emerson, Fretz and Shaw (1995) observe that good ethnographers must learn to remember dialogue and movement like an actor, to see colours and shapes like a painter, and to sense moods and rhythms like a poet. Keeping this in mind, I made conscious and diligent efforts to be sensitive and perceptive to what was going on in the groups, the sentiments of the members, so as to provide, as accurate as possible, vivid depictions of the various episodes that occurred in the respective groups.

Besides having an eye for detail and sensitivity to what is going on, Burgess (1982) points out that researchers have to deliberate on when, whom and what to observe. Making these decisions, he notes, will involve considering the following elements: time, people and event (Burgess, 1982, p. 115). In this study, most of the events were conducted in the daytime following the time zone of the United States (where most of the group members were located), which was often just before midnight in the United Kingdom, where I was based. The three groups that I studied met in Second Life, at least once a week and for about 2-3 hours each session. In addition, there were occasional events such as seasonal festivals, urgent meetings or other informal, social events. The data for the study thus included the routine events and extraordinary activities. So as to widen the scope and increase the depth of the study through prolonged engagement and persistent observation (Lincoln & Guba, 1985), I attended as many as 80% of these events over the nine-month period.

Conducting participant observations of participants and groups in-world in SL was made more difficult by the fact that participants could log in and out from SL at any time. It was thus difficult to keep track of and monitor the movements of the participants (Williams, 2007). This was especially so if there were many participants present. Also, the stability of the Internet sometimes affected the time and speed which the graphics was loaded up, causing significant actions or events to be missed out. To circumvent these, as recommended by Williams (2007), I recorded some of the in-world events using the in-screen capturing software, *Snapz Pro X*, whenever these problems occurred. This was so that I could watch these events later and note down any neglected information. I also recorded events where participants were using mainly voice to communicate (which would otherwise be difficult to transcribe while conducting my observation), events with a huge turnout of more than 50 people, and field trips. For all other events, only the text conversations were recorded in the form of chat logs. These digital recordings also captured avatar movement, gestures and chat bubbles which were used to complement textual data of chat logs, observation notes and field notes (Dicks, Soyinka & Coffey, 2006).

3.3.2. CONDUCTING SEMI-STRUCTURED INTERVIEWS IN SECOND LIFE

While participant observation aims to examine events and interactions amongst members during these events, interviews are conducted with the intention of revealing whether and how members learn from such an activity. Interviews can reveal their personal perspectives and interpretations. Semi-structured interviews were employed in this study because they were more flexible than structured interviews and allowed for issues to be discussed on a more impromptu basis. Further, Wass and Well (1994) point out that semi-structured interviews can be used to explore and explain themes, which have emerged from activities.

As discussed previously, the number of members attending the events of the groups was usually between 10 to 15 for the Science and Philosophy Groups and about 40 in the Education Group. The participants whom I had interviewed included both the group founders and the group members. I interviewed 7 members in the Science Group, 8 in the Education Group, and 5 in the Philosophy Group. For each member,

at least 2 interviews were conducted in the nine-month period, once when the study first began, and the second when the study was about to come to a close.

The final sample consisted of 19 white adults and 1 of Asian origin. 12 were men and 8 were women and who were in different age groups. One person declined to reveal his age, one was in his 20s, ten were in their 30s, five were between 41 to 50, one was between 51 to 60, and two were between 61 to 70. The length of time as a member of their respective groups ranged from 1 to 3 years. Level of education spanned from high school graduate to doctorate. Occupations included teacher, university lecturer, computer consultant, graphics designer, counsellor, administrative manager, writer, student, retiree and homemaker (see Table 1).

No.	Name of interviewee (Pseudonym)	Group	Role in groups	Member of group since	Age range in real life	Occupation in real life
1	Janice	Science	Founder	2008	31-40	Homemaker
2	Benjamin	Science	Core member	2008	41-50	University lecturer
3	Howard	Science	Core member	2009	31-40	Website developer
4	Beth	Science	Core member	2009	31-40	Administration officer in a University
5	Margaret	Science	Ordinary member	2009	41-50	Computer engineer
6	Kenneth	Science	Ordinary member	2009	61-70	Retired Scientist
7	Stan	Science	Ordinary member	2009	51-60	Retired army officer
8	Zack	Education	Founder	2008	31-40	Doctoral student
9	Alicia	Education	Core member	2008	31-40	Educator
10	Oto	Education	Core member	2008	Did not want to reveal age	Lecturer in a College
11	Lynette	Education	Core member	2009	31-40	University lecturer
12	Lev	Education	Ordinary member	2010	31-40	Educator
13	Gina	Education	Ordinary member	2009	31-40	Graphics designer
14	Will	Education	Ordinary member	2010	21-30	Counsellor
15	Paul	Education	Ordinary member	2010	41-50	Computer engineer
16	Malcolm	Philosophy	Founder	2008	61-70	Retired Teacher

Note: for the Philosophy Group, there was no core group. Hence the members were listed as active/inactive member according to their participate rate.

TABLE 1 - LIST OF INTERVIEWEES

3.3.3. LOGGING OF FIELDNOTES

Emerson, Fretz and Shaw (1995) suggest that the continued evaluations collected in the field notes permit an on-going reflective dialogue to help the researcher understand when saturation and completeness have been reached. Fieldnotes, they (*ibid*) observe, are accumulating accounts of an ethnographer's observations and experiences of the field site and should be recorded in a regular, systematic manner. These recordings should include the following: (1) records of what one sees, experiences, and learns ("data"), the methods of seeing, experiencing and learning, and the findings drawn in the process; (2) indigenous accounts, meanings and concerns of the people studied; (3) contemporaneously and timely accounts of the lives, routines and meanings of the people studied; and (4) detailed descriptions of the processes of interaction.

In this study, fieldnotes were recorded and analysed meticulously in close relation to other data. They helped transform direct observations into vivid descriptions and provided me with the opportunity to include my own voice and thoughts in the narrative. My fieldwork logbook consisted of the following: 1) condensed accounts taken during interviews, field observations and descriptions of events and activities; 2) expanded accounts written after a field session or an interview, based on the condensed accounts; 3) personal reflections which included expressing concerns, problems met, mistakes and rectifications, thoughts and experiences, etc.; 4) initial analysis and interpretation of data prior to the thematic analysis done using *NVivo8*.

3.4. ANALYSIS OF DATA

The groups explored in this study were of an informal nature and members' participation was voluntary and spontaneous. For the purpose of this study which was to understand how learning occurred, it was important to find ways of characterising and observing the changes in members' interactions and learning processes in the groups, in ways that revealed how they were enabled in the virtual world environments. In consideration of this, I took the decision to take an interpretive, thematic approach in analysing the data. The raw data consisted of chat logs, field notes, interview transcripts, observations notes, video data and secondary

documents (such as emails, websites, captured screenshots of the groups' pages on their social networking sites).

In keeping with the ethnographic approach, themes were allowed to emerge from the data, rather than attempting to fit them into preconceived categories or predefined themes. This allowed notable potential themes to be identified, as I participated in the group discussions and interacted with the members. These themes were then further explored during subsequent observations and interviews. The qualitative analysis software, NVivo8, was used to code and organise the data. This analysis had the general goal of contextualising group processes and development more broadly, and relating them to the various aspects of learning. In this manner, the central focus was on building a thematic analysis through open coding (Strauss & Corbin, 1990).

The data was analysed through an iterative and circular process of reducing data, synthesising themes and concluding trends, as suggested by Miles and Huberman (1994). They further explain the three stages of qualitative data analysis as follows: 1) data reduction which will help in sharpening, sorting, discarding and organising the data; 2) data display which involves working on the reduced data and displaying it so that emerging themes and patterns can be found; 3) conclusion drawing and verification where patterns, regularities are observed, and possible explanations can be made.

I engaged in this iterative process of qualitative analysis in three phases: 1) the initial data analysis phase (4rd – 5th month); and 2) the second phase of data analysis (7th – 8th month). The final phase was done at the end of the data collection. The interview data was examined together with the observation notes, field notes and the video recordings of the events which used voice. In each phase, the three stages of data reduction, theme synthesis and conclusion drawing were carried out. These conclusions were examined and analysed together with the data collected in the subsequent phase. Doing data reduction and creation of displays in three consecutive phases had allowed me to test for the “plausibility, confirmability, and robustness” of the data analysed in each of these three phases (Miles and Huberman,

1994, p. 430), so as to ensure reliability and validity. Data were periodically analysed and interpreted to detect patterns of behaviour or identify themes. When a strong theme or pattern was identified, I categorised it and sought out more examples of these patterns/themes and attempted to establish links with these new lines of enquiry. This evolving ethnographic approach guiding the process of data collection and analysis, made it necessary for me to go back and forth with reviewing the literature and the data throughout the study.

3.5. STEPS TAKEN IN ENSURING RELIABILITY AND VALIDITY OF STUDY

Creswell (2007; 2009) asserts the importance of illustrating the research design clearly so as to increase the validity of the study. This study applied a qualitative approach in looking at how learning occurs in groups within the social virtual world environment. As discussed earlier, meaning is constructed through interactions amongst members of the group. By immersing oneself into the environment or group under study, and interacting with the members, the subjectivity of the researcher can be illuminated. To minimise subjectivity in data collection, throughout the course of the study I constantly and conscientiously reflected upon my preconceptions and addressed the biases that I might bring into the study as suggested by Hammersley and Atkinson (2007). I did so by reflecting on my prior views of virtual worlds and of Second Life in my fieldnotes journal. In the process of conducting the study, I dutifully kept a record of my encounters with the virtual world and the residents within it.

Another concern is the reliability of the information collected due to interviewer's and interviewee's bias. Easterby-Smith, Thorpe and Lowe (1991) suggest that researchers may demonstrate subjectivity in their interpretation of the interviewee's responses, and vice versa. In order to minimise my own biases, I formulated my interview questions with the help of my peers from my study group. I also took effort to avoid asking leading questions during interviews. To overcome interviewee's biases, the researcher will need to gain credibility and obtain the confidence of the interviewee. I overcame this by ensuring that each of my

interviewees fully understood the purpose of the study and was given the assurance that all data collected would be kept confidential. Before delving into the interview proper, I started with a few introductory questions, so that the interviewee felt more comfortable in sharing his/her thoughts with me. I also engaged the interviewee's help in choosing the interview venue in Second Life, the mode of communication and time, making sure that these arrangements would be most convenient for him/her.

Tracy (2010) argues against applying criteria that are underpinned by positivist traditions to qualitative research, i.e., a position that data must be verifiable. Citing Guba and Lincoln (2005), she reasons that doing so is no different from directing Catholic questions to a Methodist. According to Golafshani (2003), reliability and validity in qualitative research should instead be conceptualised as credibility, transferability and trustworthiness.

Credibility for qualitative research relies on the researcher's interpretation of the findings (Hoepfl, 1997). Thus, it is important to make clear the data collection procedures and the analytical methods. Transferability refers to the degree to which the original situation can be "transferred" to a different situation. This study sought to address the issue of transferability by following the analytical method proposed by Miles and Huberman (1994) and studying more than one group. I described, in this thesis, the rationale for choosing the three cases clearly. I also described the cases as much as possible, without compromising on ethical issues. In addition, I strived to address the reasons for choosing the ethnographic approach as well as the methods of collecting and analysing data. The scope and limitations of choosing such a research design were made explicit as well. In doing so, I hope to be transparent and encompassing, thereby ensuring credibility and transferability. Finally, according to Lincoln and Guba (1985), trustworthiness can be determined through an "inquiry audit" (p. 317). Together with a few colleagues at the University, we formed a study group and during the course of the study, they had helped me reviewed my report, checked for consistency and provided suggestions.

3.6. STEPS TAKEN IN ADDRESSING ETHICAL CONCERNS

Virtual worlds can potentially serve as sites where a variety of methodologies can be carried out, presenting new opportunities for research (Bainbridge, 2007; Eynon, Fry & Schroeder, 2008; Eynon, Schroeder & Fry, 2009). Along with new opportunities however, are new challenges, which include ethical issues surrounding virtual world research. Williams (2007) notes that these issues are not necessarily new or specific to virtual world research; rather “they are entrenched in the history of the methods more generally” (p. 20). While McKee and Porter (2009) acknowledge that some of these ethical issues are similar to those observed in offline and Internet-based research, they contend that the participatory and immersive nature of virtual worlds gives rise to distinctive ethical concerns. It is useful to consider unique environmental factors that make apparent some of these ethical issues (Reid, 1996), however, it is more important to discuss ethical issues in association with the chosen research methodology. This is emphasised by Eynon, Fry and Schroeder (2008) who observe that “ethics and research methods are closely interrelated” (p. 23).

In this section, I will address ethical issues concerning virtual world research in relation to the proposed methodology and methods guiding the study. I will also comment on the approaches I had taken in mitigating and resolving these issues. These approaches were informed by the ethical guidelines developed by the Association of Internet Researchers (Ess & committee, 2002) and the British Educational Research Association (2004).

As observed by Duncan (2009), “participants both deserve and require confidentiality in order to share their personal stories... a lack of confidentiality can significantly hamper the type of information that is gathered” (p. 1698). The issue of confidentiality is particularly important in ethnographic studies as participants are often sharing their personal stories, experiences and thoughts with the researcher. Before commencing the study, I contacted group leaders of the group, informing him/her of the study and the procedures that were to be put in place to protect the identity of the participants. I ensured that the participants were informed and were aware of the purpose of the study, what the participation entailed, the duration of

the study and that the particulars of the participants. They were also informed that their names (both real names and those of their avatars) would be anonymised. Furthermore, they were given the assurance that the data collected was confidential and password-protected in my personal computer, which only I had access to.

With the availability of powerful search engines, data and information gathered in the study and published in a research journal or other online web pages could easily be found. For example, a quotation from a chat log could be searched for and found if it has been not been modified. Thus, extra care must be taken in preventing some of these security issues may threaten the participants' rights to privacy and confidentiality. Boellstorff (2008) advocates exercising caution in handling such issues, suggesting that not only do names have to be changed, including that of the groups; in some cases, the contents of the information would have to be modified as well. In consideration of this, I took the decision not to use the real names, including those of the groups, or the names of the avatars belonging to the members.

Acquiring informed consent prior to participating is essential and necessary, regardless of whether the study is conducted online or offline. However, attaining informed consent could be trickier for online-based research. For instance, there may be difficulty in ensuring that the participants have read and understood fully information regarding the study, before giving their consent to participate. It is common practice to write the description of the study on a notecard which can be distributed to participants and which can be stored in their personal SL inventory. Prior to conducting the pilot study, I sent out a notecard to all group leaders and members. The notecard included the web address of the electronic informed consent form (see Appendix D) on which the members could access and indicate their consent by checking the appropriate box. These forms were made available and collated before the study commenced. If any member indicated on the e-form that he/she did not wish to participate in the study at any point of the study, any data linked to he/she would not be used in any way in the study. Fortunately this did not occur.

Pearce (2009) suggests that before interviewing participants, the researcher should ask the participant if they have read and understood the purpose of the study and double check if they are willing to participate in the interview. This can be done either verbally or through text, and can be recorded either way. If necessary, technological tools such as video conferencing tool can also be used to answer any questions that the participants may have, at any point of the study. Before commencing on any interview with participants, I double-checked with them through text chat and ensured that they had read and understood the contents of the information sheet and informed consent form. I also asked them if they were willing to participate in the interview. If the answer was no in either or both of the questions, the interview would not be conducted. Again, there was no occurrence of this in the study.

Additionally, it is observed that the close proximity and interaction between the participants and the researcher as entailed by the ethnographic methodology may make the process of withdrawal highly challenging for participants (Duncan et al., 2009). I had made provisions for this by assuring the participants that they could, at any point of the study, withdraw their consent to participate. I have included in the informed consent form that they could do so simply by informing me of their decision. If they decided to withdraw, their participation in the research study would immediately cease and any prior information obtained would not be used. No participant indicated that they would like to withdraw from the study.

In this study, I subscribed to overt research, which as observed by O'Reilly (2005), "is conducted openly, with the researcher's identity being known to all participants" (p. 60). When entering SL as a researcher, it is common practice for the researcher to identify themselves via their profile page in Second Life. The profile page is attached to their avatar, and could be accessed easily by others. Both the real-life and SL picture and information can be posted in the profile. Furthermore, I have also added a text bubble on the top of the avatar, showing my identity as a researcher.

Due to the difficulty in assessing the real identity of the participants, it may not be possible to verify with certainty if the potential participant is a minor or a vulnerable

adult. To be registered as a member of Second Life, individuals will have to certify that they are indeed above 18 years old. To circumvent this, Williams (2007) suggests that the researcher could verify the identity of the participants through video-conferencing. In the case of this study, due to the long and sustained period of interaction that I had with my participants, I had many opportunities to find out more about them and ascertain that all my participants were older than 18. There were a few cases in which some participants wanted to keep their real-life identities private and did not want to reveal personal information about themselves. In cases like these, I assured them that I would anonymise their names and took care in coding the data, so that the data would not be linked back to them. I also told them that I could show them the coded data that I had generated in my report, if they would like to review them. However, no participant had asked me for this.

As demonstrated in the above discussion, it is important to examine ethical issues in relation to the context and design of the study, and to apply ethical principles accordingly. However, the conduct of responsible and ethical research is not just a matter of codes, guidelines or procedures alone. It ultimately lies on the commitment on the part of the researcher to protect the interests and rights of the participants (Waskul & Douglass, 1996).

3.7. WRITING UP AND PRESENTING THE ETHNOGRAPHIC DATA

In terms of presenting ethnographic data, I have been particularly inspired by the works of both William Foote Whyte's (1943) *Street Corner Society: The Social Structure of an Italian Slum* and Bonnie Nardi's (2010) *My Life as a Night Elf Priest: An Anthropological Account of World of Warcraft*.

First published in the 1940s, Whyte's account of a poor Italian neighbourhood in Boston's North-End was one of the very first attempts to apply the sociological principles and techniques to studying small groups of people and their social structure. To get closer to the residents, Whyte moved in to an apartment in the neighbourhood and learned to speak Italian. Whyte's vivid narrations of the changes in the relationships among the informants and their counterparts and the changes taking place within the community, brought to view the intricate and complex

relations of the individual characters, the street gangs and the "corner boys". Yet, at the same time, he did not neglect to depict the mundane, ordinary, day-to-day event of the community, and that served as the backdrop against such intricacies and obscurities, which would otherwise go unnoticed. In doing so, he captured the nuances of the social dynamics of his informants and demonstrated with much success that Cornerville was a community that had a well-organised social structure. Whyte's ethnographic sensitivity and appreciation of the extraordinary amidst the ordinary in presenting his ethnographic work served as an inspiration to me.

Nardi, who began as a relative stranger to massively multiplayer online role playing games (MMORPGs), spent almost three years researching and actively participating in the game-based virtual world, World of Warcraft (WoW). In her book, she documented her interaction with the virtual world, beginning with the selection of her personal avatar, a female, night elf priest, followed by her involvement in several player-run guilds⁷. Through "thick description" of her own in-game experiences, participant-observation, interviews and document analysis, Nardi blended her own personal experiences with those of her guild-mates and other WoW players, and chronicled how the game-play interwove into the lives of the individual players. She vividly described how people who were geographically apart came together in the virtual world to engage in game-play, which at times, seemed to be organised in a work-like structure. In the course of such collaborative game-play, Nardi observed that conventional boundaries between individual and collective identity and agency were often blurred. Using activity theory and the work of John Dewey, Nardi built on her argument that playing games was a socially and culturally embedded, task-driven and goal-oriented activity. Nardi skillfully interwoven theoretical concepts with her ethnographic-based findings.

In short, both Whyte's and Nardi's works served as useful models and as an inspiration for me in understanding and writing about the dynamics of small groups in a rich and well-rounded way.

⁷ Guilds are self-organising groups formed and managed by players themselves to help facilitate communication and game play.

CHAPTER 4 – ANALYSIS OF THE FINDINGS OF THE SCIENCE GROUP

This chapter reports the findings of Science Group, the first of the three groups studied. Following the framework presented in Chapter 2, I identified various attributes of the group that changed during the course of my study. These attributes were in turn related to 4 broad elements influencing a group's lifecycle, as proposed by Mousavidin *et al.* (2009), namely individual, social (group), technology and external media. Attributes were picked out after studying the activities and milestone events using an ethnography approach. Furthermore, the group dynamics associated with these attributes were documented, so that one can understand the context in which they were modified and connect them to learning processes. I also attempted to analyse learning using three planes of analysis proposed by Rogoff (1985; 1988), i.e., individual, interpersonal and group. In the case of the Science Group, seven structural changes in the group's attributes were observed. They were 1) membership policy, 2) repertoire of activities offered by the group, 3) emphasis of members' credentials, 4) group's hierarchical structure, 5) use of existing features in SL and new media, 6) norms and practices of the group, 7) relationship and interaction with external communities.

4.1. DESCRIPTION OF THE SCIENCE GROUP

Between March 2008 and September 2010, the Science Group met about once a fortnight on a regular basis. These meetings were usually planned during the first quarter of the year, with members volunteering to give a presentation or chair a meeting. There were two main types of events – one was of a more formal nature where a member or a team of members would present their research work or subjects of expertise that spanned across a wide diversity of disciplines, ranging from stem cell research and genome expression to particle physics and telecommunications; the other was less formal where members met to discuss topics of a more discursive nature, such as the effects of globalisation or the philosophy of science. On some occasions, the group would meet to confer administrative issues, such as plans for development, membership recruitment or

gather consensus on future group's directions. Sometimes, there would also be virtual field trips organised by members to showcase their creations in SL and share their knowledge in a more visually stimulating setting. On average, about ten to fifteen members would attend the sessions each time. According to my observations, the group was a close-knit one. During group discussions, hardly any lurking behaviour was observed and attendees of these meetings participated actively and contributed to the discussion.

Besides organising discussions and seminars, the Science Group also provided opportunities for members to collaborate on STEM-based (Science Technology Engineering and Mathematics) projects. These projects mainly involved designing objects and buildings on land spaces belonging to the host. The Science Group saw itself as a platform where members could come together to meet, interact and network with each other. On their own initiative, they could gather like-minded individuals or those with the necessary skill-sets, to work on collaborative products or projects. Through organising regular show-and-tell events (e.g. seminars or presentations) and providing a platform for people of diverse background to meet and incubate ideas, the Science Group has successfully enabled both the context and the content for members to engage in STEM activities within Second Life.

Since its establishment three years ago in 2007, the group had been working towards meeting these aims. For the Science Group, their main objective was “to connect different disciplines” and to “provide free Science education globally”. Initially, the main reason for setting up the group in 2008 was “to connect different disciplines” by providing members a place where they could attend seminars and discuss scientific matters. Nevertheless, at that point, the group did not want to establish itself as simply a gathering place for people interested in STEM to come together to discuss related topics. The general consensus amongst the members then was that there were already groups in Second Life that catered to this. Hence they decided to concentrate on forming a professional Science Group, consisting of domain experts and professionals in STEM-related areas as well science enthusiasts. The members would meet once every fortnight to discuss issues that concerned them. The Science Group provided these members with a venue to discuss topics of

interest (i.e., context), and thereby, offered them opportunities to situate their knowledge, negotiate meanings and share information through these regular discussions (i.e., content).

Providing free Science education had always been a long-term vision for the group. However, the group had not been able to work towards this goal until late-2010, due to issues such as shortage of resources and the practicalities of running classes in Second Life. It was decided in a meeting in 2010 that the group should apply for a grant from a research foundation in the United States to run free STEM classes in Second Life. The group was still waiting to hear about the outcome of the grant at the time of writing. In the meantime, the core group members funded the cost of running the classes using their own money. The bulk of these personal funds were mainly used to pay for rental of virtual land and purchases of virtual furniture. The instructors of these classes were doing it voluntarily and not receiving any payment⁸. Topics discussed were extensive, and included Earth Sciences, Telecommunications, Bioinformatics and Genetics, Archaeology and Popular Perceptions of Science.

Besides providing free classes, the group was also keen to establish itself as a non-profit learning organisation. In mid-June 2011, four core members, including Janice (the founder of the group), met in Brussels, Belgium, to finalise their official application to form a *non-governmental organisation* (NGO). This was another milestone for the group towards achieving their goal of offering free STEM classes in Second Life.

4.2. A BRIEF ACCOUNT OF A VIRTUAL FIELD TRIP

Many of the activities in the Science Group were organised by the members themselves, mostly out of their own initiative and pockets. Despite such decentralised arrangement, the quality of presentation and activities were observed to be high. One of the highlights of my participation in the group's activities was an

⁸ Apart from donating their time freely, I would estimate that the costs of running these classes (land rental etc.) would have come to about USD 2000 (with subsidy from Linden Lab; and USD 3000-4000 after the subsidy policy was removed).

archaeological field trip organised by a member called 'Stan'. To allow the reader to have a sense of the activities in SL and how the field trip was conducted, I have included this brief account which has been written based on the field note taken during the field trip:

Donning a long white cotton-textured dress, my avatar, Jozen, waits patiently at the designated meeting area with several other avatars. It is just five minutes past the meeting time, and everyone is happily chatting away while waiting for a couple more to turn up for the field trip. On my computer screen, I see a few animated avatars raising their arms and moving their fingers in swift intervals. In the chat log window at the bottom left hand of the screen, the dialogue is moving up the screen very quickly, and emoticons like '☺' and abbreviations like 'rofl' (roll on the floor laughing) are appearing rather frequently. Occasionally, there is the sound of laughter coming out of my speaker system.

This field trip is organised by Stan, who had designed and built the virtual island. A retired army officer who had served with the United States army in real life, Stan tells us that the idea of constructing the virtual sites of Eritrea and Ethiopia was inspired by his involvement in excavation projects there in the late-1960s and early-1970s when he was posted there.

I find weekend gatherings more relaxed and casual compared to the meetings on weekdays. Like always, the conversation begins with a round of casual greeting, followed by a quick sharing of some of the memorable events in the past week. Janice, the leader of the group, shows her appreciation by thanking Stan for organising this trip, noting that this is the first field trip that the group has been on. It is not long before everyone starts commenting on what our avatars are wearing. The female avatars are dressed in a one-piece white robe adorned with an orangey-red lode running down the middle of the robe while the males are dressed in a white shirt and a pair of matching white pants. Stan had earlier made these and distributed them to us, a week before the trip. As Stan explains, the design of these garments is inspired by the traditional Ethiopia costume, Shamma. We are all in agreement that wearing the garments will enhance the overall experience, given that the purpose of

this field trip is for us to get acquainted with some of the ancient sites and artefacts such as those of Matara in Eritrea, and Yeha in Tigray Province, northern Ethiopia.

A couple of minutes later, the avatars of Gareth, Jacob and Heather arrive one after another and we begin on our journey. Heather apologetically explains that she has not the time to change her avatar into the Shamma before logging in to the virtual world system. Janice tells Heather not to worry about dressing her avatar. Not wanting to be the odd one out, Heather is keen for her avatar to be dressed in the robe. She asks us to go ahead and she will catch up with us once she has done so. (Like in real life, avatar in SL was noted to follow social norms, in this case, conforming to the dress code of the rest of the group. Such observations are evidence of the personification of avatars, as well as a deeper sense of immersion by the users)

As we move along, Stan highlights a few sites, buildings and artefacts that we will be viewing in the hour-long trip. As he does so, he begins to switch from text chat to voice chat. It is my first time hearing his deep, low, American-accented voice through the speaker system, as the group prefers using text chat as the main mode of communication during our meetings. It is quite a sight to see fifteen avatars following behind Stan. We can fly our avatars in this virtual world but no one is doing so, choosing instead to navigate and move using the direction keys on the keyboards. At each individual site, Stan waits patiently for everyone to gather around him before explaining the surroundings with much zest. As our avatars walk along the yellow-sanded land, I feel myself being enveloped by the vastness of the surroundings. Except for us and native animals and insects, the place is almost deserted. (The use of voice and text provided multi-modal communication between the presenter and his audiences. Voice is a more natural way of presenting ideas while text allows uninterrupted and more subtle way to exchange views or ask questions. Option to 'fly' added a little fantasy in the realm of SL, while the presence of animals and insect lent realism. All these are the affordance of SL that have been exploited during the fieldtrip)

Crossing a bridge, we come to the first site. It is a traditional village modelled after a village in Matara in the late-1960s. There are a couple of round huts with conical,

thatched roof made of rye straw. These huts are constructed within a short distance of each other and look almost identical. The interior of the huts contains a stove and a bed. Heather asks if this is reflective of the huts and Stan explains that this is the basic design of the interior, which is usually more elaborated than this.

Moving on, we arrive at the bottom of a steep hill. Stan explains that we have to climb up the ladder up the hill to get to the top, where we will be able to view a temple of worship. Taking turns, we climb up the ladder one at a time. Navigating and moving the avatar up the ladder is much harder than it looks and a couple of us find it to be a difficult task. After some encouraging words and useful advice, all of us manage to get our avatars to the top of the hill. It feels to me like a good group bonding activity. Given that most of our meetings are of a discussion nature, opportunities for such bonding activities are hard to come by. (Activities in SL can be 'action-based', e.g. taking turn to climb a ladder, despite knowing that the user is actually sitting behind the comfort of the computer screen. Such virtual "actions" may provide addition stimulus to the mind and add realism in the activity)

The final stop is a temple where people worship the Sabaeen God, Almouqah. Stan explains that he had replicated this virtual temple based on a temple in Yeha. As it is a well-preserved temple built in the 5th century, it remains to be an important religious site in Yeha and is a popular tourist site. Adjusting the mouse cursor on the door of the temple, I click the right button on my mouse and to select the option 'open'. Upon entering, I see an altar at the front of the temple. Supported by four pillars, the layout of the rectangular-shaped temple is simple. Apart from a few splashes of vibrant colours from the altar area and six red and yellow round cushions lying on the floor in front of the temple, the interior of the temple is mainly white in colour. Just like the door, it is possible to interact with these cushions. Clicking on one of them, Janice's avatar begins to dance, spinning in a circular motion rhythmically. As she dances, the bottom of her Shamma twirls around, reminding me of the Ottoman dance I saw in Istanbul, Turkey. A few avatars begin to join in, while the others tour around the temple. I notice that no one is engaging in conversation since we entered the temple. Perhaps it is the solemnity of the site, or maybe it is because we are at the final stop of our trip. (Second Life allows simultaneous interaction with

other users, like dancing. Collective participation in such virtual 'social event' may actually improve relationships amongst individuals, just like what it would be like in real life. It is also surprising that the solemnity of the temple can still be felt despite it being a virtual replica. Perhaps the blurring of virtual world and real world is more acute than one would realise).

Leaving the temple, we express our thanks to Stan for showing us around and praise him for his hard and brilliant work on building the virtual island. Clapping and cheering sounds come through my speaker system. Before parting ways, Janice reminds us of the next meeting in a couple of days' time and that the snapshots taken by Gareth of this field trip will be uploaded on the group's website in a day or two. Saying goodbye to everyone, I log Jozen out of the virtual world system and begin to document my thoughts on today's trip on my fieldnotes log book.

It can be seen that this field trip was highly visual and spatial in nature: more typically, discussions would take place with everyone seated. However, this extract also highlights how an educational site in the world can be used to bring the group together in a learning endeavour.

4.3. CHANGES IN GROUP DEVELOPMENT AND DYNAMICS

In the course of the ethnographic study on the Science Group, seven structural changes were identified. These changes were the result of interactions amongst members and members with their external environment. The nexus of interactions was never static but constantly formed and reformed by group dynamics. It was also through such group dynamics that learning ensues. By recording and analysing the group's attributes, one is able to track their changes, understand the group dynamics that give rise to these changes, and infer the different aspects of learning that may be taking place. In this section, I will expound on each of the structural changes identified. I have highlighted these seven changes for they are ones that I regard as prominent and key to understanding learning in this group.

4.3.1. EXTENDING MEMBERSHIP BEYOND A NICHE GROUP

Cook and Yanow (1993) observe that one of the ways in which groups reconstitute and reorganise themselves is through the acquisition of new members. As new members join in and become part of the group, their behaviours and actions will increasingly influence that of the group. A group with committed and strongly-linked members facilitates collective meaning-making in its members, but in the long term, may run into the risk of becoming less progressive, as knowledge that supports the identity and current practices of dominant members is likely to be adopted more readily than knowledge that challenges current identity and practice (St-Amour, 2006). Hence, it is not uncommon to observe that groups often renew their membership plans, in line with their long-term objectives.

The findings suggest that for the Science Group, one of the more critical elements in building its group learning capacity was to extend their membership to a wider audience, stretching out to both domain experts and non-domain experts. As the group established itself over the three years since its formation and gained recognition in the Second Life community, especially amongst those who were interested in Science-related topics, the founder of the group, Janice, together with the core group members, made the decision to extend the membership to include science enthusiasts. However, instead of integrating the members into the group, they decided to set up another group, calling it 'Students Group'. From about twenty members in March 2009, a year after the group was formed, the Science Group expanded their membership to sixty members and another twenty-five members⁹ in their sub-group, Science Student Group. According to Janice, she created the sub-group because she wanted to maintain the original group as it was, but at the same time, open up the membership to those outside the field of STEM. In an interview with Janice, she gave her reasons for doing so, "because when I ask new scientists to join... I cannot claim we are a scientist group...someone can easily be a student or something...for which I run a student's group...I make a difference between the two". Through informal conversations with members regarding this issue, it was found that

⁹ This figure was obtained from the group profile page in Second Life on 31st May 2011.

the members had mixed views about this. Benjamin, who was a lecturer in Bioinformatics in the United States of America, felt that the Science Group ought to include both real-life scientists (or professionals/researchers in the areas of STEM) as well as science enthusiasts. Leonard, a group member who was a retired scientist in the US, offers his thought on this issue, “I tend to think anything we do should be non-geeky. Our purpose, it seems to me, is to promote scientific interaction via presentations.” Nikki, who works as a botanist, in the US, recognised that opening up the group membership was in conflict with the group ethos. He commented that “I am not for open admission because it may hinder the initial purpose of the group, in which case the group will splinter and new groups will form that meet the members’ needs”. Yet, as observed by Tiffany, “I thought one of the goals was to help people embrace science again, instead of being intimidated by it. So having a non-science community base should be part of the picture or list.” She believed that extending membership to non-scientists or non-domain experts was the aim of the group. Some of the members whom I had spoken to were supportive of setting up another sub-group for students or science enthusiasts, as they viewed this as a way to open up the group membership while retaining membership exclusivity in the main group. A couple of them were more sceptical about this and thought that the group should remain status quo.

As Victor pointed out in an interview, given the diversity of the group, he thought that it was important to maintain an equal weight on the opinions and arguments made by each and every member, regardless of whether or not they are new or core members, professionals or non-professionals in STEM. Another member, Keith, also stated in an informal discussion that “we just have to make sure that everyone's presence while in this group is exemplary - young, new avies¹⁰ should be appreciated and nurtured”. For the Science Group, providing all members equal opportunities and acknowledging their contribution had always been one of the aims of the group. It had been observed during the time I spent with the group that the members of the group respected one another's opinions and often responded positively (even

¹⁰ Abbreviation for ‘avatars’.

though they might not necessarily agree with one another) and shared their views freely. With the new influx of members and within a short period of time (the membership went up three-fold in a year), ensuring that members felt at ease about sharing and contributing to the group, and were acknowledged for their efforts, would be increasingly important for the group.

As Thomas and Brown (2007) observe, diversity brings about “a rich mix of diverse talents and abilities” (p. 87). The diversity of the disciplines and expertise amongst the group members, as Janice, the group founder, put it in an interview, had not only brought new perspectives to the group, but also challenges towards working together and solving problems in order to achieve the objectives of the Science Group. In changing from a small exclusive group to an open expanded one, the Science Group could build a more diverse repertoire of topics being discussed, expand their pool of resources, and open up more opportunities to draw together the expertise of members. This is indeed important if the group wishes to broaden its collaborative learning and continue to establish itself as a learning organisation in the long run. However, opening up membership to students and non-practitioners of STEM was thought to have diluted the quality and exclusivity of the group, which was a concern for some of the members. As observed from the findings, it caused tension amongst some of the members who see this move as contravening to the initial objective of the group. The Science Group tried to reach a compromise by placing students and non-STEM members into a subgroup that was differentiated from the core group. These members could participate in the activities of the Science Group and at the same time not compromising the group’s objective of serving as a focal point for STEM expert to interact. However, segregation could lead to fractionation. This had indeed happened as the Science Group was recently reported to have splintered into two, exactly along the lines of expert versus non-expert, i.e., a main group consisting of members who had some form of expertise in STEM-related topics (most of them were members who had joined since 2008 or 2009), and a sub group made up of enthusiasts, novices, students, etc., who were keen to learn and find out more about STEM-related topics (most of them were new members who joined only in late-2009 or early-2010).

Introduction of new members and interactions between new and old members not only brought about structural changes to the group, but also resulted in learning in its individual members. For instance, new members had to learn to become part of the group, such as the group norms, getting to know the other members of the group, learning how best to engage in the group activities, etc. Current members have to renew the norms, form new links with members and realign the group's identity, in response to the influx of fresh members. Such interactions appear to be a direct manifestation of Wenger's perspective of learning by belonging and becoming. Furthermore, through conflicts and dissonances on the membership policies amongst core members, as well as influx of participation, contribution and expertise from new members, new experiences and understanding were formed. This could suggest further learning by acquiring new experiences (i.e., learning by experiencing).

Furthermore, by continuously encouraging membership growth, nurturing communal sentiments and modifying group norms as a way of responding to structural changes, the group as a collection unit had to learn to identify tensions, negotiate, cooperate and adapt accordingly. These are all a preamble of learning under Wenger's (1998) social theory of learning. The Science Group had created an environment that promoted group cohesion amongst members. Newbies were nurtured and made to feel welcome. All these support the building up of social cohesion within the group, where learning was manifested as members felt more belonged in and committed to the group.

4.3.2. DEVELOPING A REPERTOIRE OF ACTIVITIES IN SUPPORTING LEARNING

When the Science Group was first founded in 2008, the main aim then was to bring together a group of STEM professionals such that they could gather to discuss and share topics of interest or to engage in collaborative projects. In the nine months that I spent with the group, it was observed that less emphasis was being placed on collaborative projects amongst members, and more efforts were being channelled into developing free structured STEM classes for Science enthusiasts in Second Life and broadening the variety of group events. There was a gradual shift of emphasis,

from a close knitted group that was exclusive only to STEM experts, to a group that was akin to a non-profit learning organisation.

When the group was first formed, engaging and co-operating in cross-disciplinary work internationally was the key objective, whereas providing free STEM classes was not on the immediate agenda. Janice emphasised that for this group, “cooperation is the key. We need to work internationally together and for this group.... cross-disciplinary work is the future as well. I hope this group can help them to connect and discuss their possibilities”. She described with great pride about how this cross-disciplinary connections could be observed in the group, “when Leonard is searching for cancer solutions... Ethan may have the answer in his programming... or Cecilia gets inspired by something that is happening in the Universe... it can be explained by Jeremy :)”. Vivian, an archivist based in the US, acknowledged in an interview that, “many breakthroughs come from interdisciplinary work” and it was mainly for this reason that she joined the Science Group. In a group strategic meeting discussing the future directions of the group, Darius, a researcher working in the field of particle physics, made a distinction between working together on collaborative projects which he defined as “multi-disciplinary”, and linking closely the various aspects of Science together, describing the latter as “trans-disciplinary”. That, in his view, should be the focus of the group and which could be worked towards providing opportunities for discussions and classes on wide-ranging topics. Gabrielle, a physics teacher based in the US, responded by saying that this could be viewed as a progression. From these examples, it could be seen that effort to promote collaboration and cross / trans-disciplinary projects was still the mainstay of the group.

There were several examples of successful collaborative projects by the members of the Science Group. One of them was a scripting project of the Stonehenge in Second Life created by two members (see Figure 4-1 below).



FIGURE 4-1 - A SCREENSHOT OF THE VIRTUAL STONEHENGE.

In an interview with one of the builders, Helena, who was a communication technologist based in the UK, described how the project came about and how she worked together with Levy, who was based in Russia:

“Through conversation and participation in events, members get to know what you are interested in - I was encouraged to build Stonehenge because of some interaction I had with the group during an astronomy talk. I live in Wiltshire, close to where the majority of the stones were sourced. I have been fascinated by Stonehenge for the last 20 years. I had a lot of calculations in spreadsheets about Stonehenge before I ever got into SL, in some ways that helped with the construction. Levy saw me struggling to move and rotate objects accurately and we worked together to build the planetarium part. It is his sky - my ground, though my understanding of astronomy was greater than his, he could get all the components working through scripts. It was a real joy (to work together). I think there's about 200 hours' effort from me - about the same from Levy.”

Being an ardent fan of planetary science, Helena had been very interested in the design and alignments of Stonehenge since more than twenty years ago. She resided in South England and had visited Stonehenge many times due to the proximity. In my interview with Helena, she commented that the group had encouraged her to build a virtual Stonehenge in Second Life after she gave a presentation on the monument during a formal discussion session. Although Helena had the necessary skills to build

objects in Second Life, she was not entirely confident that she would manage the precise mathematical calculation and the complicated scripts to build the virtual monument accurately. On knowing her difficulties, another member of the group, Levy, volunteered to help. He worked as a lecturer of mathematics in Russia. They met in Second Life on several occasions to discuss and build. Their combined efforts and hard work were not in vain. They managed to create a virtual Stonehenge collaboratively after, as Helena described, “200 hours’ effort from me – and about the same for Levy”. This example is an excellent demonstration of how collaboration had led to synergy, artefact creation and opportunities to access new knowledge domains, which would probably take longer time or not have occurred at all, if either of the individuals was to do the work alone. Through this collaborative effort, both Helena and Levy learned through experimenting, interpreting, reflecting and applying their respective knowledge and skills in the virtual world setting, for the creation of the virtual monument. They each contributed equal share of hard work and time into this project. The Science Group had not only provided the conditions that sparked off the project, but also helped to realise and sustain it through recognition and support.

Working on building and designing projects allowed the externalisation of an individual’s internal cognitive processes so that they were available to the other group members (Perry & Thomas, 1995; Perry & Sanderson, 1998). In doing so, individuals could express their ideas in the group. Indeed, in the Science Group, it was observed that its members built on ideas and suggestions that were discussed in the meetings and tried them out on their individual projects, which were later showcased to the group. Such learning is often iterative; learners may try out one idea, refine their design, and build upon what they have learned (Kolodner *et al.*, 1998). Thus, the creation of external representations opened up internal cognition and the rationale behind individual actions and plans to the other people which these plans and activities affected.

Another goal of the Science Group to develop more structured classes was also taking shape. In providing the infrastructure and logistics for sharing topics related to STEM, the Science Group offered opportunities for members, who may not be

recognised as domain experts in real-life but possessed knowledge in the subject area, to do some teaching. An instructor who was running the sessions on astronomy said, after the end of the first introductory class, that “passing on knowledge” and teaching have always been what he had wanted to do, but did not have the opportunity to do so in real life. Occasionally, he would give classes or run sessions in the community centre near his home in the UK, but that was about the closest that he has got in doing something he was passionate about. At the end of the session, it was observed that many of the attendees expressed their thanks for the “engaging session” and “for doing a great job”. One of the attendees commented that he was a great teacher and she would be attending all the seminars for this class. These structural classes provided a means for members of the Science Group to share their expertise and knowledge with other members, despite them not being domain experts in STEM.

Besides offering structural classes, the Science Group also organised virtual field trips for its members. Since the field trip to the virtual archaeological site, the Science Group had organised at least three more field trips to other islands within Second Life and to other virtual world platforms. By expanding the various types of activities for group members, the Science Group helped create learning activities that catered to different needs of the members. For members who were seeking collaborative projects with others, the Science Group helped provide networking opportunities and resources that they might require. In creating structural classes related to the various areas of STEM, the Science Group provided instructors who were keen to share their expertise and knowledge with others with a venue to do so. It also facilitated the running of classes that were free and accessible to Second Life users who were interested in attending STEM-related classes.

Two predominant traits of learning can be observed here. By supporting collaboration and facilitating classroom-style teaching, members of the Science Group learned by fulfilling the actions and tasks that they undertook, whether as a student, instructor, moderator, facilitator or collaborator. Through interaction with others, they exchanged expertise, skills and experiences. Applying Wenger’s (1998) social theory of learning, this is clearly related to action-oriented and experience-

oriented learning processes, i.e. Wenger's (1998) concept of "learning as doing" and "learning as experiencing" appear to be the two predominant learning traits in particular.

4.3.3. ENSURING THE CREDENTIALS AND BACKGROUNDS OF MEMBERS

The Science Group had successfully projected itself as a centre where experts from different domains in STEM can come together to exchange ideas and collaborate. This has resulted in collaborative learning outcomes, which may not have been achievable independently by individual members. However, it was slowly changing into a centre for teaching, where domain experts shared their knowledge with others, in the form of presentation, virtual field trips or classes. Non-domain expert could make use of these avenues to quickly access knowledge from the experts and accelerate individual learning. However, a potential drawback in becoming such a centre of pedagogy is the risk of promulgating the wrong information. Owing to the anonymous nature and diverse membership of online groups, it is sometimes difficult to ascertain the true identity of the presenter and veracity of information presented. There were also no moderators to regulate the materials being shared. Goodwill, integrity and self-verification became increasingly important to ensure the success of this model of learning. This criterion was observed to become even more pertinent when membership opens up further.

As Kendall (2002) observes, groups often employ a variety of strategies to control membership and participation, depending on their objectives and purposes. In the case of the Science Group, there appeared to be a tension between those wanting to open up the membership to people who are interested in Science-related subjects, but are not necessarily experts or practitioners, with those preferring to keep the group private and exclusive so as to maintain credibility of the members. This issue of membership scrutiny was made more difficult in the virtual world setting where having and maintaining an anonymous identity has always been a common practice.

Janice was firm about ensuring good credentials of the members, right from the start when they were first recruited. She strongly believed that disclosing one's identity was important and thought that one of the ways to change the way people

perceived Second Life was to make one's identity known. As she mentioned in one of the group's discussion meetings, "maybe I am too much a pioneer but... aren't we the ones who can change SL's image... by not being afraid of connecting our real life identities and activities in here???" When Janice started the group, she searched in Second Life for members who established themselves in the virtual environment through working on projects or contributing to events related to the area of STEM and invited them to join the group. She was, in particular, seeking out potential members who were working in the areas of STEM and she was keen to find out the real-life identity of each and every member. Since then, members were either recruited through recommendation or word-of-mouth. Janice would arrange to meet and interview them in Second Life, request for their email addresses, and even ask for their real-life names and identities. However, this information was kept confidential and the person's real-life identity would not be revealed to other members if he/she was not keen to do so. It has been observed in my interview with Janice that most members were willing to share their real-life identity with the group, with the exception of only a few. Further to this, members were also requested to put in some details about themselves on the group's website. These included details such as their real-life profession, the country where they were residing in, as well as their views on questions such as "Going back to your childhood... what questions did you ask yourself, parents or teachers?", "How did you experience the educational system?" and "Looking at your own field and interests...with whom or which field would you like to discuss to find answers?".

It was observed that members of the Science Group had mixed feelings about disclosing their real life identity. Disclosing of real-life identity including email addresses and professions in real life was an issue of concern for some members within the group. As the group had filed for a grant to run classes in Second Life, it became necessary for those who had volunteered to instruct or moderate the classes to reveal their real-life identities. When asked through informal conversations, it was found that out of the eight members who were involved in this project and grant application, all but one did not have any issue with disclosing their real-life identity. In my interview with this member, he revealed that he was not

keen on disclosing his identity as he believed that his Second Life's identity (along with his character and personality) was as real as what he portrayed. Since that was the case, he did not think it was necessary to reveal who he was in real-life. This member had a furry avatar (i.e., that of an animal). However, as the grant application drew nearer, he relented in the end, and since it was compulsory for all applicants (core members in this case) to reveal who they were, he thought it would be in the group's best interest for him to do so as well.

The Science Group members' discussions on identity revealed the perennial conflict between anonymity and disclosure in virtual worlds. The link connecting real life identity and avatar is amorphous and difficult to ascertain and decide. As observed in her ethnographic study on a text-based virtual world, Kendall (2002) finds that people "cannot easily invent new types of identities that have no relationship to the other participants' offline experiences" (p. 45). It was observed that members of the Science Group often shared considerable information regarding their offline lives, soliciting advice or assistance with work or personal problems during group meetings. Such personal exposures required a level of trust that would be difficult to achieve in an environment full of shifting, ambiguous personae. Moreover, because of the length and frequency of their association, an anonymous or shifting identity would be hard to maintain. As Benjamin observed, it is "difficult to keep a mask on for long".

It was found that members of the Science Group may be more likely to disclose his / her identity if the main purpose to be in Second Life was for work and business. As Benjamin mentioned, he perceived Second Life to be an extension of his "professional life and personal networks". Hence, he was willing to disclose his RL identity, including his name and institution. Keith observed that if real life was involved, disclosure would be necessary. He mentioned during the group meeting, "my feeling is that if the group has RL activities as well as SL activities, disclosure is necessary". Similarly, Betty said that she was "here on business so I (she) must be contactable by students and faculty". However, there were also some who did not come into SL for work purposes and did not wish to disclose their real-life identity. Kathlyn said that "I did not come into SL for work reasons, so when I set up my initial

avatar, I had no clue of ever disclosing my RL identity and I could learn and play here without fear of embarrassment. I am an academic, like many of you...but when I wished to start doing professional work here, the organisation required disclosure...so I created this avatar.” Some members felt that there were ways around the issue of anonymity. Ellis observed that there was some degree of control over how much one would like to reveal about oneself and one’s avatar. She suggested that one way to stay "moderately" anonymous was not to give out one’s real life name and email in the profile, but “to have other pages on the internet that mix both your RL identity with (name of avatar) following that. For example, listing your avatar name on LinkedIn or Facebook”. Towards the end of the fieldwork, it was observed that the Science Group had started using Facebook as another mode of communication outside of Second Life. The use of social networking sites like Facebook and LinkedIn, was not well-received at the beginning. Only a couple of members joined in the Facebook Group or used LinkedIn as a way of networking with the other members. On interviewing a few members, it was observed that they welcomed the idea of having other modes of communication outside of Second Life, but the use of these sites would imply that their real-life identities might be revealed to other members. Two of them were comfortable with disclosing this information; however, they did not feel at ease about sharing their postings on Facebook with other members, since these postings were usually snapshots of their personal lives.

Despite the good efforts put into place by Janice to ensure the credentials and identity of the members in the main Science Group, it was observed that inaccurate information made by presenters could still be a potential problem for the group. This was not a problem when the group size was kept small and members had established basic information, such as, what each did in real life, or what their research area was. However, when the group size began to grow, and new members introduced into the group, credibility of members became more difficult to track. There had been an instance where a talk by one of the members that was found to contain a fair amount of inaccuracies. The presenter was a new member of the group and was asked to present his research work. A number of members felt that the content was not accurate, perhaps due to the lack of preparation or experience

in the field. One of the members, Lydia, was of the view that accuracy was important mainly because of the nature of the subject matter – Science. She commented that “if you are doing science, you are [your] words and [your] work in here will speak for you”. This talk brought to the surface the importance of accuracy, especially for a group with a number of experts in the field. After that presentation, the new member stopped attending the group events and had not been contactable since.

Betty, a professional development manager in a Higher Institution in the US, thought that having credible people is important, especially since the group is a professional group for scientists. As she mentioned in an interview, Betty noted that credentials needed to be crosschecked, otherwise “we suffer when we have unqualified people teaching science”. Likewise, Leonard also mentioned in an informal interview that he felt the need to ensure credibility, especially for presenters or instructors, especially if the group wanted to promote itself as a “serious Science Group”.

Accuracy of information is an important issue for any organisation or group seeking to position itself as a credible centre for teaching and learning. Part of the rigour of ensuring this is the selection of teachers with the right credentials. Hiding one’s identity under the guise of an avatar is clearly in contrary to the effort of establishing credibility. This was why there was a continuing emphasis by Janice to make the identity of members as transparent as possible. As the Science Group aspired to establish itself as an online education hub, it was faced with this dilemma. On one hand, it wanted to expand its membership so as to infuse fresh ideas and talents. On the other hand, an enlarged membership risked letting in unqualified presenters or instructors into the group. This dilemma is more pertinent in the virtual world where anonymity is an important feature, presenting either an asset or liability. The group, as an entity, need to negotiate the tension between conflicting interests of the group and individuals and in doing so, learn as a collective. Individual group members must also have the confidence in the information he/she is receiving in order to learn effectively. This depends, to a very large extent, on the credibility of the presenter / instructor.

This episode had brought to fore, the differences in expectation between the individual members and that of the group at large. Groups strive to establish norms for members to follow (e.g. the norm of giving one's real life identity). Such norms were, however, also constantly modified, with accordance to the negotiation of its members. In the case of the Science Group, members in agreement to those changes stayed behind, while dissidents chose to leave the group. There were also those who would attempt to negotiate the terms and argue the rationale behind their views, but the result of such negotiations, as evident from the findings of the Science Group, was ultimately dependent on the member(s) who had the most authority (in this case, Janice). It was through such interactions and negotiations with other members in the group that one could strengthen (or weaken) one's group identity and interpersonal relationship with others. It was also through such interactions and negotiations that learning manifested itself. In this respect, members had to learn to negotiate his/ her personal expectation with that of the group.

4.3.4. ESTABLISHING HIERARCHICAL STRUCTURES

There were some noticeable changes in the hierarchical structure and roles of the members in the Science Group as the group developed. Janice, who started the group three years ago, continued to command respect from the other group members. Although she was not a scientist or an academic in the field, members often praised her work and showed appreciation for her commitment to the group. This had often been reflected during group events as well as interviews that I had conducted with some of the members. Over the last three years, Janice was well supported by the members in the group especially the core group, which had about four members in 2009, but now doubled to eight.

However, as the group progressed from an initial discussion group of about twenty members to a more organised and structured group, whose aim was to connect professionals and provide free classes to Science enthusiasts in Second Life, it became increasingly difficult for Janice to run the group on her own. As a result, roles and work had to be distributed and a more complex hierarchical structure began to take shape. Benjamin mentioned in an interview, "I got to know many of

the inner members, including Janice, so I became an "officer" for the group...." The group was still centrally controlled, but there appeared to be a greater and equal distribution, at least for the core group members. Aaron, Janice's real-life and Second Life partner, was in charge of the logistical duties and managed the group's website. Another core group member, Gerald, took the initiative to relocate the group when the group was no longer hosted by a previous Science organisation. When Janice had to be away for a couple of months to see to her personal matters, Benjamin took over the reins and coordinated the group meetings on her behalf. Benjamin had temporarily moved up the leadership hierarchy, taking over from Janice in the running of the group during her absence. In the course of doing so, he had redefined his role in the group and his relationship with the other members.

The Science Group started off as a small nucleus but expanded rapidly over time. Inevitably, a more complex hierarchical structure and managerial effort were required to maintain good governance. Janice had learnt how to delegate work to the selected core members while the some of the core members like Benjamin took on more leadership responsibilities.

On a broader level, leadership transition commonly forms a part of the structural changes in many groups or organisations. As members respond and adapt to such changes, their sense of identity and how they interact with the other group members will change. In negotiating one's own identity in alignment with the structural changes taking place in the group, individual members have to acquire new knowledge. Learning, in this case, is not about tangible knowledge acquisition from an expert in a particular domain area or through collaboration. Instead, it involves development of interpersonal skills (social and managerial skills) through interaction, practicing and managing. In particular, they have to learn how to respond to the new hierarchical structure and to learn how to perform their new roles and duties accordingly.

4.3.5. INFLUENCES OF VIRTUAL SPACES

In the beginning, the Science Group only had a formal open auditorium where its activities were run. This was later expanded to include discussion and meeting

rooms as the group developed. It was observed that the group met in different rooms in their virtual building, depending on the nature of the events. For instance, the group met in the main auditorium (see Figure 4-2), which resembled a relatively large lecture room in the real physical world, when a member or an invited guest was giving an academic presentation. In such sessions, the presenter tended to present in voice for about half an hour. This was followed by an hour long discussion, in which the audience typed their questions and comments in text and the presenter answered in voice. In these sessions, the conversation tended to be of a more serious tone and formal nature, with some occasional sharing of anecdotes related to the topic being discussed. Often, there was no moderator for these sessions. Preloaded slides were usually used in these sessions. A Word document of the text-based conversation, recorded during these sessions, was also uploaded onto the group's website.

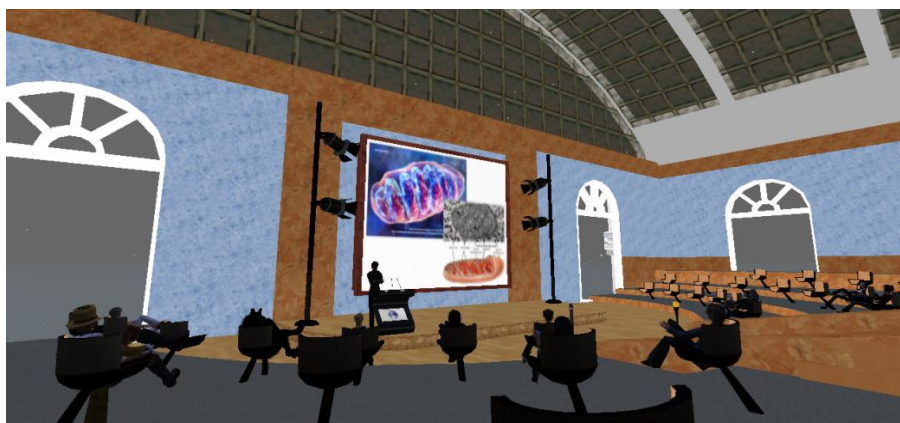


FIGURE 4-2 - A SCREENSHOT OF A PRESENTATION IN THE VIRTUAL AUDITORIUM.

There was another auditorium, where members could go to, when they were discussing group-related topics. The discussion on disclosure of identity took place in this virtual auditorium. The seats were semi-circular chairs and could sit three to four members per chair (see Figure 4-3). The member who moderated the session would stand at the podium. Slides were usually not used in these sessions. Text was the main mode of communication and voice was not used. The content of the

discussions tended to be more private in nature and were usually not uploaded onto the group's website.



FIGURE 4-3 - A SCREENSHOT OF ANOTHER AUDITORIUM WITH CIRCULAR CHAIRS.

When the group met for their informal meetings, they would gather in a meeting room which resembles a living room in a home, with four sofas and a couple of arm chairs (Figure 4-4). In these meetings, the topics of discussion would usually be related to the broad, general topics such as “what is the time, where does it start and when does it end”. During these sessions, members were observed to be more casual, for instance, some of the avatars of the members could be observed to be sitting on the floor or standing. Again, text was the main mode of communication and voice was not used. Like the academic presentations, the word documents of the text-based conversation recorded during these sessions were usually uploaded onto the group's website.



FIGURE 4-4 - A SCREENSHOT OF AN INFORMAL DISCUSSION MEETING.

The design of spaces in the virtual worlds often reflects the group's objectives, which, in turn, can influence the ways which the members of the group behave. In the case of the Science Group, having different rooms for different purposes not only suggested the range of events it has, but also the various ways that the group expected the sessions to be conducted. In other words, though the Science Group did not have a clearly defined set of rules on behaviour and norms for each of these activities, by designing the rooms with elements of realism, the group was, to some extent, prescribing the "modes of behaving" in these virtual rooms.

During the group events, the main mode of communication was often text, although the presenter of the seminar might choose to do so in voice, while all other members communicate using text. Besides contacting each other in Second Life, the group also communicated through email and social networking tools like Twitter. These tools had been set up in March 2010 and September 2010 respectively. These social networking tools were often used to disseminate information on upcoming events and also events organised by other groups that might be of interest to the members. The text-based chat logs of the group discussions and seminars had been uploaded onto the webpage. The calendar of events could also be found on the webpage. It was observed from the Twitter and Facebook pages that not all members of the group were subscribed to these social network sites. Hence, email, the group website and instant messages sent in Second Life remained the main modes of communication for the group members. It was also observed that through

these different modes of communication and customised venue for delivering them, the Science Group was able to communicate more effectively and quickly with its members.

As described above, the infrastructures provided by the group were specially designed to encourage its member to participate in formal and informal activities. The role of the environment, albeit virtual, also has an effect on learning. Such virtual premises influences the way learning may take place. For example, the informal room promoted casual interaction and bond-building amongst members, thus promoting learning at social / interpersonal level where interaction is necessary. In contrast, the formal lecture theatre, which was reserved for presentations and lectures, tended to promote a lecture-style interaction and thus emphasised more the introspective learning at the personal level. Structural changes in the infrastructure of the group therefore have an indirect but important influence on the learning of its members. Besides virtual premises, we have also seen the use of text, voice, presentation to facilitate learning. Other facilities like social networking sites were also added when they became matured. These are some of the characteristics of SL that made it such a powerful tool in reaching out to people.

4.3.6. NURTURING COMMUNAL SENTIMENTS AND ESTABLISHING GROUP NORMS

It was observed that the Science Group placed much emphasis on nurturing communal sentiments in new and old members alike and in doing so, made it quicker and easier for members to identify themselves with the group. The cohesiveness and identity of the group became stronger as a result of this. As Tyler and Blader (2001) suggest, “We expect that when people are identified as such with their group, they will be more willing to act cooperatively toward the group—investing their time and energy in working to see the group succeed” (p. 210). It was observed that members of the Science Group saw themselves as a cohesive group, and they worked diligently through a range of strategies and activities to help define who they were, sometimes by making distinctions between other groups. During group meetings and individual interviews, members would often speak in the

collective “we”, as well as identifying qualities and values of the group. Janice, for example, mentioned in an interview, “well I like all of us as a group... we have so much knowledge and dedication... it’s impressive”.

Furthermore, it was observed that members of the Science Group put in time and effort into welcoming and nurturing new members. When I first attended the meeting, I was welcomed warmly. Although there were occasions when I felt that I did not understand the topic enough to contribute, I was nonetheless comfortable to raise questions and was not in any way pressured into thinking that I was inadequate to do so. The mood was always a welcoming one, and reciprocity and words of praise or thanks were frequently observed. Furthermore, although there was a good mix of both domain experts and non-experts in this group, there have not been any instances where comments from the former would take precedence or be perceived as more important. This was also observed by Benjamin, who commented in one of the group meetings, “In this forum, your argument is weighted equally with everyone else’s”. This was also the case for the STEM classes.

Forsyth (2010) observes that “when cohesion is based on individual-level attraction and those who are liked leave the group, the remaining members are more likely to quit... (If) cohesion is based on group-level attraction, people remain members even when specific members leave the group” (p. 119). In the Science Group, it was observed that the group cohesion was held together mainly by the efforts of the group founder, Janice. The group members respected her and acknowledged her efforts in bringing this group together. When I completed my fieldwork, it was observed that the cohesion of the group still very much relied on individual-level attraction. Janice was observed to be still holding on to the reins in the group, but as discussed earlier, she was observed to have begun delegating work to the other core members of the group. If this trend continues as the group develops, it is likely that there may be a gradual shift from individual-level attraction to group-level attraction.

Through comparing the archived chat logs dating from when the group started, with the observation notes collected over the nine-month period, it was observed that the meetings were more formal when the group was first formed, but as the

members got to know one another more, they started to ease up and have discussion meetings that were of a less formal nature. As Janice explained during an interview, “well at the start I was very formal... because I wanted to run the meetings smoothly. Nowadays it’s more informal around here... I want everyone to feel at home... when people do, they become more inspirational and give their best”. This seems to work well, as it provided a safe and welcoming environment for its members. Benjamin, who also belonged to another Science professional group in Second Life, thought that he felt a stronger association with the Science Group, saying that “This is HOME” to him.

The Science Group viewed membership very seriously and did not encourage dormant membership. Members were expected to participate regularly in its events and meetings. Janice believed that doing so was an indication of showing commitment and dedication to the group. As Janice commented in an interview, “some people write in and we never ever see them at a meeting. Some write in and never log in again. I understand they have their reasons but I cannot allow it for the others. Everyone puts a lot of effort in these meetings... they put it on their real life agenda, ask partners to have this time off from their real life, work, family etc., so for them I will ensure that all the others are dedicated as well”.

However, like many virtual and online groups, membership was observed to be quite fluid in the sense that there was no clearly stated rule or guideline about exiting the group. During the period of fieldwork, at least two members were observed to have left the group. One of them was a core group member, Levy, who wrote an email to the Janice, briefly expressing his desire to leave the group in September 2010, but did not give any reason for his decision. However, Janice believed that he left the group as he did not agree on the group’s decision to open up the membership and offering classes to other users who might not be working in areas related to STEM. In January 2011, it was observed that Levy started attending in a couple of sessions again, but still did not participate in the core group meetings. Nevertheless, he was not penalised in any way because of this incident and other members were still as welcoming and friendly as they were before. This was not surprising, however, as the

group was still in the process of establishing group rules and norms, which adheres more to the style of an informal learning organisation.

Besides having the expectation that members attend events and meetings regularly and maintain active membership, the Science Group was observed to have a few other group norms on how members were expected to behave towards one another. However, these were neither clearly defined rules nor were they strictly enforced. During the formal sessions, members were asked to refrain from giving any comments until after the presentation is over. A reminder often was, but not always, mentioned before the start of the meeting. Members were also encouraged to raise their opinions or ask questions using text chat rather than voice. During the period that I spent with the group, I had not observed any instances of grieving¹¹ or situations which called for intervention from the founder of the group or the core group members. Neither had any member been penalised for not observing the rules.

It is evident that the Science Group had made the effort to promote members' sense of belonging to the group. For example, group events were deliberately run more informally, regular members' participation was encouraged, and members (especially newbies) were treated collegially. These efforts paid off and the cohesiveness of the group was thought to be strong at the end of my study. A cohesive group suggests strong bonds amongst its members, which is in turn likely to encourage direct and more robust communication and exchanges. Collaborative learning at interpersonal level may ensue. However, as the group grows in size, it might become more difficult to maintain cordial relationships. Indeed, the Science Group was found to have splintered up into two independent groups about a year after my study has ended.

¹¹ Grieving is a term which applies to activities or actions designed to make another player's life or experience in Second Life unpleasant.

4.3.7. INTERACTING WITH THE SECOND LIFE ENVIRONMENT AND THE LARGER SCIENCE COMMUNITY

Choi (2002) observes that groups which manage their external relationships well tend to be more effective. Such “pattern of connection creates a network of interdependent social exchanges wherein certain people become trusted exchange patterns, who can be called upon for resources and support” (Oh, Chung & Labianca, 2004, p, 860). For the Science Group, connecting with the larger science community in Second Life was becoming increasingly important as it sought to become a non-profit learning organisation. The findings suggest that the Science Group tried to do this by 1) being based in a platform where other science groups were based, and 2) being based in a platform that served other educational organisations.

When Linden Lab announced¹² in October 2010 that they would be removing the subsidised rates of land ownership for all educational and non-profit groups as of January 2011, the Science Group, like many other groups, called for an urgent meeting with the members. There were many issues that were raised in this meeting and members were divided over this issue. As Kathlyn noted, the group needed to be based in a platform that supported community regardless whether they were for profit or non-profit. Others felt that maintaining communication with other science groups based in Second Life was very important. As Janice stated in the meeting, “Sciences need to stick together!!! We have the same participants & audience.” James suggested that, “in the long term, science and education organization should form an own grid... so universities and educators can join that grid... I think it is wise to combine powers... a new grid where educators and universities combine power would be great”.

The group had decided that to stay on in Second Life for the time being, as they thought that the platform best served their needs as compared to other platforms. On relocating to another platform, Benjamin felt that no other platform was as good as Second Life at the moment. He said, “I realize that high end technology is needed,

¹² Please refer to Linden Lab’s blog post on this announcement: <http://community.secondlife.com/t5/Land/bg-p/landandbusiness/date/10-3-2010>

but what I like about SL is that it has no physical boundaries and no social boundaries... this is the world the way I would like to see it". In response to this, Tiffany replied that the "lack of boundaries was what caused many institutions to leave, because there was no real way to give their visitors any buffer from the role-playing population that can be inappropriate many times for a professional audience". Benjamin believed that the group could use their establishment in Second Life to their advantage when it came to working with other science groups. He said, "we are all in this same situation and the more minds and resources behind this, the better." Notably, the group members whom I had interviewed often remarked on the immersiveness of the Second Life environment. In an interview with Betty, who worked as a professional development administrator in real life, she described Second Life to be like a museum. She worked in museums before and found that there were similarities between the two. As she put it, "a museum is interactive and does best submerging the learning into an environment... we call museums free choice learning, learners can pick and choose what they will learn and how much they will participate, in the manner in which they choose... so in museums we have to concentrate on navigation and on enticing them to read when they want to play." Betty tried to draw parallels between the Second Life environment and interactive museum in putting across what she felt learning could be like in such an environment. Benjamin, who worked as a lecturer in computer engineering in a HE institute in the States, compared between the World Wide Web (www or Web in short) and Second Life. He felt that the Second Life environment has unique characteristics that are unlike other Web-based/online environments. In my interview with him, he shared about how he felt such characteristics had on how he perceived and related to the environment. He said:

"...the Web is often one-way, isolating, 1 dimensional, whereas this "world" gives you some "telepresence", some immersiveness, both in identifying as your avatar and identifying the other person next to you as a real person, not just chat. There is an "environment" here with trees and birds and water and sounds and space - the best compromise between face-to-face and distance interactions that I have discovered. The Web cannot even come close."

In consideration of the various factors and after weighing the advantages and disadvantages of being in Second Life, the Science Group decided to stay on in Second Life. This episode illustrates that changes and interaction with external bodies can bring about tensions and new experiences within individuals and within the group itself. These changes act as catalysts that drive changes and decisions, forcing the group and its members to respond, find possibilities and adapt. In doing so, members may become more cohesive, better identify themselves within the group, develop new experiences and become more adept in executing their plans or response. In the period that I was studying the group, significant changes occurred within the group. I have highlighted earlier in this chapter that there were two notable episodes that involved external entities. The first was when their host decided to withdraw their operations from Second Life in September 2009. In response to that, the Science Group relocated its building to another land parcel belonging to the institution which one of the core members was associated with in the real life. The relocation took two weeks and members were given the new SLurl¹³ address through notecards in Second Life and via emails.

In the second episode, upon receipt of the news that Linden Lab would be withdrawing the subsidies, the group members felt that they had to make swift decisions about whether or not to stay on in Second Life or to migrate to another virtual world environment. After the meetings, the Science Group decided to stay put as the majority of the members agreed that compared to the other virtual worlds, Second Life best met their needs. However, they also thought that they should try to use other virtual worlds and assess their suitability. About five members volunteered to do that. In addition to making the decision to stay on in Second Life, this episode propelled the group to work towards providing free STEM classes in Second Life as part of a collaborative effort to draw together the expertise and knowledge of its members. It was clear that the two events caused by external entities had rallied the members to work collaboratively as a unit. They met to

¹³ SLurl is the abbreviation for SECOND LIFE URL. It is a web address that provides direct teleport to a specific location in Second Life.

discuss the matter, made swift decisions, delegated tasks and even inspired new ideas (e.g. applying grants for providing free STEM classes).

As could be seen from the two episodes, each of the actions the group collectively decided upon and taken, formed part of the process to mitigate the impact of the external events. In executing these actions, members may find themselves experiencing new situations and learning how to handle them. Such learning may occur at individual level (e.g., learning the technical know-how of relocate buildings in Second Life), interpersonal level (e.g., learning through discussing with members and finding a solution for the withdrawal of subsidies by Linden Lab) and group level (e.g. the group learned to function as an entity to handle asset migration or cost escalation). According to Schein (1996), members of the group have to work collectively to confront the challenges, identify the tensions, and test their ideas. If the results are successful, the assumptions and values associated with the ideas are perceived as valid and workable. Over a period of time, the group will develop a shared schema from which the assumptions and values are based on, and from which norms and group practices will form.

4.4. SUMMARY OF CHAPTER

In this chapter, the findings of the Science Group were discussed. The thematic analysis of the data illustrated how a group that began with a generally agreed-upon purpose expanded to a complex group of special interest, which ultimately led to a splintering of the original members into other groups of a similar nature. As a result, membership in the Science Group changed over time and then split to accommodate the diverse agendas. Some members remain wedded to the original purpose of the group to focus on the building a community for like-minded individuals or members who shared similar interests in STEM-related topics, but others were more engaged in the tangential discussions to take the group to another level, which was to run free Science classes and to establish the group as a non-profit learning organisation.

As discussed above, the seven structural changes were observed to have taken place as the group developed over the nine months of observation. It was clear from this

analysis that behind each of these changes were complex group dynamics and which also resulted in creation of learning opportunities. Indeed, these structural changes drove some of the most dynamic and informative interactions within the group. From these structural changes, one can readily observe the responses made by individual as well as the group as a whole. These responses sometimes required the individual to make decisions or learn how to solve specific problems or individuals to work together, resulting in greater social-emotional cohesion. In response to these structural changes, members had to work together to address, negotiate and manage these changes. In the process, learning was observed to have occurred. At the individual level, learning was observed to have occurred as members responded to these changes by aligning one's expectations with that of the group, taking up and performing roles and duties such as managing the group, teaching, coordinating efforts towards a collective building project. On a group level, learning was observed to have occurred as the group realigned its objectives and goals, made decisions based on the group's negotiations on issues such as membership, identity disclosure and changes to the Second Life's terms of use, developed hierarchical structures and developed a repertoire of activities so as to cater to the needs of the extended membership.

CHAPTER 5 – ANALYSIS OF THE FINDINGS OF THE EDUCATION GROUP

This chapter discusses the findings of the Education Group. Thematic analysis of the data demonstrates four notable structural changes in the attributes of the group. These changes are: 1) bringing together people of shared beliefs, practices and experiences; 2) cultivating a strong group identity, 3) moving from a centralised to decentralised leadership and 4) increasing the use of technologies for delivery and communication¹⁴. Over this period, the group was observed to have developed and matured. One could track the group's development using the "four elements of group's lifecycle" described by Mousavidin and Goel (2009) (see Chapter 2, section 2.3.2). Group developments were collated in terms of changes in individual members, social structure of the group, the group's use of technology and the group's relationship with external bodies. In this chapter, I also report the salient group dynamics that have led to these changes and relate them to learning at three different planes - individual, interpersonal and group.

This chapter will begin with a brief description of the Education Group. This will then be followed by detailed accounts of how the group's attributes have changed over time and the evidence supporting these changes. Finally, by looking at the group dynamics behind these changes, I have also made inferences of these dynamics to learning.

5.1. DESCRIPTION OF THE EDUCATION GROUP

Zack, a doctoral student based in the United States, founded the Education Group. As Zack described it, he joined Second Life in January 2007 to set up an island for his research group, and as he wandered within the virtual world, he came across a meeting where several educators were chatting about education in virtual worlds; however, the meeting was weakly organised and unstructured. For example, the

¹⁴ There are 4 salient attributes in the Education Group as compared to 7 in the Science Group. This does not, however, indicate fewer meaningful trends observed. On the contrary, these attributes that emerged from the thematic analysis of the data simply imply different focuses of the group and each may contain rich meanings that warrant in-depth analysis.

topics of discussion were decided in an impromptu manner, and no one acted as moderator to regulate the pace and content of the meeting. Zack thought that perhaps he could start a group that allowed people to meet and talk about topics that were relevant to the educational field. He went on to organise meetings, which were hosted on an amphitheatre of the virtual campus belonging to a higher education institution based in the United States. Zack had worked in this institution and obtained permission to use the open-spaced auditorium in the virtual island for these meetings.

In the first meeting, fourteen people turned up. The weekly meeting slowly gained popularity and attracted many educators and practitioners from within Second Life. It had also drawn people who were previously not registered users of Second Life to sign up for accounts so that they could specially attend the sessions. Within a span of three years, the membership grew to about four hundred with an established reputation. It was observed that most of the members were based in the US and Europe. There were also a small proportion of them residing in Asia. Membership in the Education Group was opened to everyone at no cost. Most members worked in the area of education, although some were also engaged in work outside the education sector. These included clinical simulation, literature and creative writing, media and film studies, economics, life skills, technological and faculty support and information literacy. Since the first quarter of 2010, it was observed that on average, about forty or more members attended the weekly meetings, and out of these forty attendees, about three-quarter of them were regulars.

The main objective of the Education Group was decided about six months after its inception. In examining the archived chat logs, it was noted that the main objective was to bring together a community of educators from all over the world and create opportunities for members to engage in exchanges of experiences, knowledge and skills, thoughts and ideas, particularly, but not restricted to, learning and teaching in virtual worlds.

The Education Group had met weekly since its first meeting in March 2007. As the group developed, it expanded not only in size, but also the formats of the meetings.

While it still met for group discussion of educational topics related to virtual worlds, it also held panel discussions, seminars, field trips, social events, etc. for its members. These meetings were usually moderated and transcribed by dedicated volunteers and attended by a broad and diverse group of people. Due to the increase in membership, the group had to reach out to its members using technological and social networking tools outside of the Second Life setting.

5.2. CHANGES IN GROUP ATTRIBUTES AND THE RELATED GROUP DYNAMICS

An analysis of the data collected from the Education Group revealed four major changes in the group's development. Although there were many other changes that took place over the period of study, these four were identified to be thematic changes that defined the major events and development happening in the group. Furthermore, they were the ones that had been inferred to have impacts on learning. Besides knowing the changes that had taken place, it was also instructive to appreciate the context and evidence of these changes. This was achieved by looking at the associated group dynamics. The following sections discuss them in greater detail.

5.2.1. BRINGING TOGETHER PEOPLE OF SHARED BELIEFS, PRACTICES AND EXPERIENCES

On March 4th 2008, a group of 14 people, met in Second Life to talk about "What do we say to, and how do we deal with, skeptics". This was the first meeting of the Education group. The attendees discussed the benefits and challenges of using virtual worlds for educational purposes and how best to convince those who were sceptical about the pedagogical affordances of virtual worlds. This topic seemed to appeal to the attendees, most of who were advocating the use of virtual worlds in their schools, institutions and organisations. The inaugural meeting set the tone and theme for more meetings to come. Over the years, it continued on this theme and developed into an established group that is popular amongst educators seeking to use information technologies to improve the effectiveness of teaching and learning. More crucially, it had provided a focal point for stakeholders of educational practices

from all over the world to come together for discussion, support and to share information.

Like other groups of the same nature in Second Life, the Education Group gathered together a group of people who met on a regular basis. However, the Education Group did more than simply provide its members with a venue to discuss topics of interest; it provided a permanent and open platform for gathering of regular group of experts to exchange ideas and opinion in areas related to education. Constancy in participation and regularity of events allowed the attendees to cultivate trust and engage in robust debates. My findings suggest that the Education Group was a close-knit group and the level of familiarity amongst its members was high. Although sharing of knowledge and information about best work practices and teaching activities in virtual world was the initial reason why people joined the group, social support, bonds and friendships that were cultivated during the events participation were the central reasons why people chose to remain in the Education Group. A similar point was observed in Baym's (2000) ethnographic study of a usenet newsgroup discussing soap operas where she found that people were initially drawn to the wealth of information on the topic, but friendships also emerged strongly in the group. Learning about one another and building interpersonal relationships were observed to be much valued in this group. Such understanding and bonds heighten members' obligation and common interests (Bresman, Birkinshaw & Nobel, 1999), which in turn, could promote sharing of information and (co-)creation of knowledge.

The feeling of being together with a group of friends who share common beliefs of interests comes with the notions of bonding, companionship, socialising, and networking. As observed by Tanis (2007), "finding similarity with others can be an important motivation for joining an online community because perceived similarity, and the feeling that one is part of a larger group, is part of the basic need to belong" (p. 145). This perceived similarity helped members learn from one another. Being a part of the Education Group not only provided them with opportunities to exchange opinions and request advice about problems, it also connected them emotionally through engaging in seemingly insignificant activities like small-talk or dialogue with other members.

A member of the group, Lynette, mentioned in an interview, “we have similar thoughts about education, we don’t always agree, but we can have good academic discussion”. Another member, Penny, said that she joined the group for the professional development but stayed for the fun. Members of the Education Group often commented, in their discussion meetings and the interviews I had with them, that being in the group had helped them feel less isolated from the issues that they were facing. Most of these issues were about their work, which involved designing activities in virtual worlds or convincing colleagues to attempt to use virtual worlds for their practices. For instance, Sean, commented in a discussion meeting that he felt the group “has made me (him) realize that if you (one) want to do something, just do it, and there will be folk around to help. Also, anything worthwhile will be difficult, so don’t give up, it’ll be worth it”. Another member, Lev, who was working on designing a learning space in Second Life for his institution, mentioned that, “this has just been a great group for encouraging me, especially since we lost the leader in our SL project”. Likewise, Gabrielle, said that the group “keeps me from being a complete hermit” and “up to date with what others are doing”.

By continuously nurturing communal sentiments and building interpersonal relationships, group members learned to cooperate and work with each other. As observed by Stoll *et al.* (2006), mutual trust and respect, shared values and goals, genuine feedback and communication are indicators that learning has occurred in the group. Learning was developed (or could be inferred) in the Education Group through: 1) displaying trust, shared values and affective emotions to fellow members through the use of more casual style of communication and mentioning of key phrases like “...encouraging me” or “we have similar thoughts about education...” during interviews – this demonstrates a strong social support for learning; 2) an observed increase in communication, feedback and level of engagement and contribution in the group events. For instance, the members whom I spoke to during the interviews seemed to distinguish between attending group meetings and engaging with it. They emphasised that they tried to not just attend meetings, but make a conscious effort to be regularly and actively involved in conversation, activities, and projects – this demonstrates a strong motivation to participate and

learn; 3) showing appreciation to other members and the group, like thanking the moderators for doing a good job or simply acknowledging someone for his / her effort. Showing appreciation indicates members benefiting from the contributions of other. In this respect, acknowledging such contributions through words of appreciation can also imply that learning has occurred.

It was observed from the chat logs, fieldwork notes and interview transcriptions that the cordial relationship and trust amongst participants in the Education Group allowed members to freely share their own views and challenge others' views. Members need not worry about putting an alternative view forward. Such openness and allowance for alternative voices provided opportunities for individual learners to construct and present their own arguments and learn from each other. By fostering each other's desires to create and share, the group helped individual members experienced the process of designing, creating, and sharing ideas. Through these explorations, discussions and debates, members developed skills important to their personal development and their ability to participate in their respective workplace.

Furthermore, the outcome of such collaborative interaction was a shared databank that included useful information resources and chat log archives from their weekly discussion meetings. For the Education Group, it had always been made known to its members that every chat log of the meetings would be transcribed and uploaded on their website. The group had accumulated more than three years' worth of chat transcripts, information pertaining to their development and other resources that might be useful for its members in creating learning spaces in virtual worlds. Members were observed to refer to this information during their discussions and display appreciation for them. As commented by its member, Dexter, "careful with this transcript.... it's worth its weight in gold 😊" reflected the value of the information being exchanged in the group discussions. These resources were transformed into benefits for individual members, which in turn enabled the group to attract and retain members, hence developing and sustaining its resource base.

In summary, this section presented how the Education Group started off as an informal setup but eventually grew to become a large gathering of experts and

aficionados. The group had a strong thematic emphasis in education, which created a natural focal point for stakeholders to gather. Many of the members were initially there for information, but later stayed on because they had cultivated strong bonds and trust. The close relationship that the members had cultivated, allowed ideas to be shared openly and freely. Moreover, it had also provided members with a strong support base whenever they needed help. The technological capabilities of Second Life also allowed chat logs to be archived and created a wealth of information in a databank that members could refer to.

At the individual level, members were learning from the content of discussion, through interaction with domain experts and the extensive databank of information stored in the chat logs. At the interpersonal level, members' enhanced bonds had provided them a network to share and discuss education related challenges they faced. Besides building on their online social skills, the free flowing discussions and exchanges also had a multiplying effect on the value and quality of information generated, as could be seen from how some of the members valued the importance of archives and chat logs.

5.2.2. CULTIVATING GROUP IDENTITY

Since its establishment in 2008, the Education Group had been building a group identity. In November 2009, the group announced that it was re-branding itself and did so by changing its name, designing a logo, and creating a new website, as well as establishing a presence on social networking sites such as Facebook, Flickr and Twitter. There were two main reasons why the re-branding took place. Firstly, the change in the group's name was done in compliance with the Linden Lab's regulation that took effect on January 2010, which disallowed groups and organisations in Second Life from using "Second Life" or "SL" in their names - the Education Group had "SL" in their original name and had to change it. Secondly, given the growing availability of different types of virtual worlds in the internet, the group thought it was timely to focus its discussion on the wider issue of education within virtual worlds, and not just restricting to only Second Life. There was hence a motivation to decouple SL from the group's name. Owing to the second reason, the group also

started to hold events in other virtual worlds such as Heritage Key, Metaplace and Reaction Grid since November 2009. In fact, it had even successfully executed an organised migration to another virtual world, so that the group's primary activities could be held there. I will further expound on this point in the later section.

When the group changed its name in 2009, one of the members, Gina, who was working as a designer and virtual world programmer in real life, proposed that the group should have a logo and volunteered to design it. The reasons and purpose of having a logo were stated on one of the web-posts on the group's website. On the post, it was mentioned that the logo was designed based on the discourses that the group had, and represented its objectives and ethos. It had three basic colours: white, silver and green. White signified *tabula rasa*, representing a fresh, clean state from which the group could set out to achieve in this virtual environment; silver depicted craftsmanship and the ability to build and create things, as well as the technological and communicative tools connecting its members; and the green emphasised a green environment as the virtual world environment created opportunities for its members to communicate with one another, without having to travel miles. The logo had several circular orbits that represented the main objective of the group that was to explore the educational uses of the various emerging virtual worlds and platforms. They also gave a sense of things being in flux and developing over time, in an environment as such. The designing of the logo also reflected that the group wanted to distinguish itself from other groups of the same nature in Second Life. Clearly, Gina had put in effort into designing the logo. Besides dedicating considerable amount of time and creativity, it could also be inferred that the logo was created with a deep understanding of the group's mission, vision and values.

In examining the archived chat logs and from my fieldwork, it was observed that building a group identity had not been a deliberate action that the group had planned on; rather, it was evident from the findings that this was an unintended outcome of its activities and was a natural course of the group's progression. With a stronger bond cultivated through regular forums and interaction, the members saw a need to further reinforce the group's identity. Many of these efforts, like the

designing of logos, were self-initiated. As individuals spent time to improve on the group's identity, they helped mould the ethos of the group while, at the same time, strengthened their sense of belonging.

At the individual level, each effort to improve the group's identity can be seen as a learning process by the individual to contribute to the group. For example, in designing the logo, Gina had to understand the purpose and vision of the group beyond a superficial level, and come up with her own interpretation of what she thought the group was about. The product of her learning process was a logo that had aptly described the ethos of the group. Similar efforts were also seen in those involved in the building of websites, online networking sites and re-naming the group. By combining efforts to come up with these, members had successfully created a strong identity that was unique to the group. This would not have been possible if individuals had worked in isolation. It was a case where the summation of everybody's effort (in cultivating a strong group identity) was apparently greater than the sum of individual parts (e.g., coming up with a logo or group name). During such process of shared creation, individuals who normally view things from different vantage points come together to "constructively explore their differences and search for solutions that go beyond their own limited vision of what is possible" (Gray, 1989, p. 5). In so doing, they can also "create a shared understanding that none had previously possessed or could have come to on their own" (Schrage, 1990, p. 40). This, I argue, is the crux of interpersonal learning, where the contributions of individual members are combined, multiplied, shared and ultimately benefited by others within the same group.

Finally, the group, as a whole, had also benefited from the efforts of these individuals. The collective effort generated unique group identity and experiences, which were indications of the group development. Knowledge was accumulated; the group became more established and was able to handle challenges better. So when the group decided to widen its reach beyond Second Life, it had the capacity to move as a group and hold events in other virtual worlds. This could be interpreted as learning at the group level, where the group was seen as an entity capable of learning. Thus, in this instance, understanding how learning occurred in the

Education Group, at individual, interpersonal and group levels, can be realised by looking at the dynamics in which the group identity was formed.

5.2.3. FROM A CENTRALISED TO A DECENTRALISED SYSTEM

When the group first began operating in March 2008, Zack, was the main person organising and moderating the meeting. His passion and enthusiasm was an inspiration to the group, which had about fifteen to twenty members at that time. When his workload in real life started to increase, about three to four of the regular attendees stepped in to help organise the meetings. Over time, the core group expanded to six members, including Zack, and together they formed the planning committee of the Group. Oto, who was teaching in a university in the US, took charge of transcribing the meeting chat logs and uploading them onto the group's webpage. Lynette, who worked as a lecturer in a nursing course at a Scottish university, helped organised and moderated the meetings. She was also in charge of the group's Facebook page and would upload the event details on it. Will was a professor teaching a writing programme in a university in the US. He also helped moderated the meetings. Two other core members, Paul and Gabriel, both of whom had extensive experience in organising and managing online groups, helped took charge of the administrative and technical aspects of the group.

However, in February 2010, it was decided amongst the planning committee members that it was timely to dissolve the committee. In an interview with Zack in March 2010, he explained the reasons for doing so:

I saw the group growing and wanted to make sure that it grew appropriately. And perhaps I envisioned it to be bigger than it needed to be from an organizational perspective. I'm not talking about anything that the people who attend the meeting would recognize, I'm talking about internally. Er... so right now I'm looking at the structure of the organization itself and try to make some fine-tuning and some adjustments so that it can operate and not be crushed by sort of its own bureaucratic weight which is very easy for an organization to do. Once you get a core of people who start organizing a particular thing, then there's a lot of stuff that comes with that.... I suppose at this point, what I want, and what the group wants, may be different. I recognize the fact that I was going to turn around today, and say I had enough, I decided

that I reached a logical conclusion from this effort, and I'm going to step away from it, that someone would step up, or people would step up to take my place, to continue the organization.... as a matter of fact, I have a real commitment to seeing the Education Group continue to succeed. But I'm only saying that the organization seems to have its own gravity at this point. And that's a beautiful thing, that's really a great thing."

In a separate interview with Lynette, she mentioned that the decision to dissolve the committee came at a time when the core members felt that the group had the structure in place to run itself, without the need of a centralised committee to take charge of matters. The core members would continue to organise, moderate and transcribe the meetings, but at same time, they would start to seek out and train other members to do so. Furthermore, it was decided amongst the core group members that members should be more involved in decision making as well. In this way, they felt that even if the core members were not available or if any of them were to leave the group, the group should still be able to continue with its regular events without causing too much disruption. It has been observed that when a group managed to embed structure in its roles and procedures, learning in the group will persist, even if there is a sudden change in the management of the group (see, for example, Devadas & Argote, 1995; Argote & Ophir., 2002). In the case of the Education Group, the group tried to maintain continuity and smooth transition of leadership by having a structure to train and mentor volunteers to take on the roles of transcribers, photographers, bloggers for the group's blog, event organisers and moderators. This was so that learning activities could still persist smoothly even as the leadership roles were replaced.

For the Education Group, the role of a moderator was especially important because most of its events were presentation based. The main aim of the group had always been to create an environment where views and ideas could be shared without feeling unwelcome. The moderator therefore had a big responsibility to ensure that he/she did not take sides and that topics were not glossed over. In the case of the Education Group, moderators also served as informal leaders and were essential in creating the boundaries of discussions. At the time of writing, there were about

eight trained moderators in the group. They comprised the “first generation” of moderators and those trained by them. Like the “first generation” of moderators, the “second generation” of moderators volunteered themselves after a call for moderators was put up to its members. These four members were then given the opportunity to take turns to moderate the sessions, under the guidance of the “first generation” of moderators. In these sessions, other members were asked to give comments on their moderation. Advice was also given on the group’s website on how to moderate the sessions.

It had been observed that the discussions could sometimes get heated, especially when guest speakers were invited. All the moderators (even those that were trained by the retiring moderators) performed their role well, as was evident by the amount of praise and thanks that they received from the other group members. Yet, facilitating conversation and allowing people to voice their opinions on the topics being discussed were not easy tasks, especially since it usually involved about forty attendees, more than half of which were actively participating in the conversation. Such moderation required “practice and skill”, as Oto had commented. The effective performance of new members in the role of moderators was a good indication that a smooth transition was carried out and that moderating skills were successfully passed to the understudy.

Another indicator of the decentralised concept of leadership was the democratisation of decisions. By ensuring that information was made available and accessible to members and having discussion with members to gather views prior to making decisions, the Education Group actively involved its members in organisational matters. During the course of the study, there were two main instances that highlighted the group’s approach towards this. The first was when the group decided to do away with the planning committee; the second was when the group had to make swift decisions about staying on in Second Life or migrating to another virtual world due to policy changes made by Linden Lab.

In the last quarter of 2010, when the announcement of the withdrawal of subsidised rates came, the Education Group started considering several alternatives which

included leaving Second Life altogether and migrating to another virtual world environment. The time that the group had to react to this change in policy was shortened after receiving news from their host (which was a university based in the US) that it was going to withdraw its subscription in Second Life with effect from January 2011. After conducting several discussion meetings and doing an online survey to gather members' responses on the matter, the group made a collective decision to stay on in Second Life for the time being, but would also start to build a second virtual home in another virtual world. With several skilful and talented scripters in the group, the second home was created very quickly (in about two weeks) and the group started meeting there in June 2011. Such a smooth migrating process was made possible mainly due to the group's pool of resources and its ability to make swift decisions and execute them at the group level.

This section illustrates the changing style of leadership in the Education Group. When the group was first started, it was headed by Zack and with the help of dedicated volunteers. When the group became more stable, the core organising committee made explicit plans to relinquish their roles and decentralise the running of the group to other members. In ensuring continuity, the core committee also made it a point to train other members to take on important roles such as event organisers, transcribers and moderators. They had also stayed on as mentors. Another interesting feature of this group was the way decisions were made. Instead of being centrally decided by the core committee, decisions were made democratically after consulting all members. This had allowed the group to move cohesively as a whole. In fact, the cohesion was so strong that it was able to withstand two upheaval events. The first being Linden Lab deciding to withdraw subsidies from the Education Group, and the second was when the core committee decided to relinquish their leadership role.

Learning at individual levels happened when members took on new roles and responsibility, as the previous leadership relinquished its role. Just as Zack, Oto, Heather, Will, Paul and Gabriel had to learn to perform the role of transcriber, moderator and organiser of events when the group first started, their understudies also had to learn to fill those shoes that were vacated. Whenever necessary, ad hoc

roles were also created, as could be seen from the emergent of scripters who helped created the new platform for the group in another virtual world within a span of two weeks.

The democratic nature of the group allowed members to have a stake in the decisions made and thus further increased their sense of belonging and cohesion to the group. However, reaching out to everyone for a consensus required dealing with people at the interpersonal level and demanded organisational and social skills. As opposed to individual learning via knowledge assimilation, social skills are characterised by the ability to feel the pulse on the ground, show sensitivity to the nuance of individuals and aptly handle conflicting views. By staying close to the spirit of consensus in making decisions, the Education Group had helped hone the social skills and ultimately promoted learning at the interpersonal level amongst its leadership.

Finally, the group had successfully put in place a system where leadership succession could be carried out. This was further evidence showing how the group had matured and developed resilience in handling changes occurring internally or externally. This was interpreted as manifestation of learning at the group level.

5.2.4. INCREASING THE USE OF TECHNOLOGY IN SECOND LIFE

Most of the activities in the Education Group revolved around discussions concerning the educational uses and applications of virtual worlds. In particular, the Education Group would sometimes choose to hold their discussions in a “roundtable format”. Members would gather around a circular table that would automatically expand whenever a member came and sat around it (see Figure 5-1). The moderator(s) for the meeting would in turn be seated amongst the other attendees. A roundtable like such symbolises equality and fairness and thus promotes freer expression of one’s views. Moreover, the novel “expanding” technology made sure that all audiences were accommodated and would not feel left out. Round table discussions were thus aimed to encourage greater participation amongst the participants. As an illustration, in a meeting with three Linden Lab representatives in 2009, a roundtable format was used instead of a normal seminar. The group did so

to display its desire for its members and the guest speakers to discuss issues freely and on even grounds. To prevent participants from speaking simultaneously and disturbing the flow of the discussion, text chat was used as the main mode of communication during round table meetings.

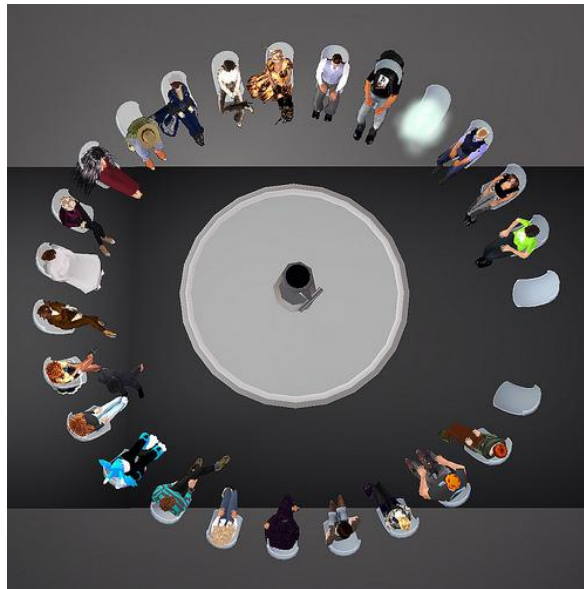


FIGURE 5-1- PICTURE OF A ROUNDTABLE MEETING

For the more traditional seminars, guest speakers would be invited. They would sit at the front of the auditorium, together with the moderator (see Figure 5-2). The speakers and the moderators would use voice during the seminars whereas the audience tended to use text to communicate amongst themselves and with the speakers. For this format, the central of focus was placed on the presenter, with the moderator interjecting at appropriate times to guide the meeting along. Parts of the conversation where voice was used would be transcribed and typed onto the general chat log during the seminar. Like the roundtable meetings, the transcripts of these seminars were recorded, transcribed and posted on the group's website.



FIGURE 5-2 - PICTURE OF A SEMINAR SESSION

In most of the meetings, especially the seminars, as many as 60 members would attend. To gather the views of its members, the Education Group used the web-based tool, Google Moderator, to post questions and vote on them. Questions that received the highest number of votes would be answered first. Google Moderator was a useful online tool because there was no function or application in Second Life that would allow its members to post and vote for questions at the same time. The use of Google Moderator thus provided members the opportunity to voice their thoughts and moderators to keep track of the questions and select the most appropriate question for the presenter to answer. Besides using Google Moderator, the Education Group also made use of social networking tools to enhance its online presence. Sites such as Flickr, Twitter and Facebook were used so as to create opportunities for its members to link up and connect with each other outside of Second Life. Members, especially the active ones, were observed to be frequent users of these networking sites. Use of a wide repertoire of online tools suggested an intention of the group to reach out to members and develop stronger group cohesion.

Finally, the Education Group's activities were not only limited to Second Life. It also held events in other virtual worlds such as Kitely and OpenSimultator¹⁵ and had invited the representatives from these virtual worlds to come and talk to its members. In doing so, the group had shown that it was not averse to holding its activities outside of Second Life and would choose the platform that best suited their needs. In fact, the Education Group eventually did an organised migration to ReactionGrid after educational discount was withdrawn in Second Life. The move, however, was a brief one, as its sponsorship awarded by the virtual world was terminated a couple of months later.

Before making the decision to migrate to another virtual world platform, the Education Group made use of its established contacts to invite representatives from Linden Labs to meet with its members to discuss about the withdrawal of subsidy. This was so that the members could make an informed decision on whether to migrate to another platform or not. During the meeting, the members heard from the Linden Lab's representatives that they had consulted with many of the 2000 Second Life members and tenants who had educational discount for their land rental and subscription to the virtual world before the new guidelines were proposed. The representatives also mentioned that withdrawal of subsidy was "part of any platform maturity cycle" of a corporation. Through this meeting, the group members were given the opportunity to voice their concerns over the new guidelines and subscription plans. Although they did not manage to change the decision of Linden Lab, they were able to make known the problems they faced and to draw Linden Lab's attention to these problems. This episode illustrated an example of how the Education Group, through its network and external links, allowed its members to access information, which they would otherwise not have been privy to if they were standalone residents.

¹⁵ Like Second Life, the members of the Education Group found that other virtual worlds too have their own unique characteristics. For example, some of them reflected that open-source platforms like OpenSimulator is free and easy to use, and can be interconnected with other virtual worlds. Some others observed that some virtual worlds like Kitely do not support the use of voice (at the time of writing) and might not be suited for some learning activities.

In this section, the continuous exploitation of technology by the Education Group was discussed. The use of objects, like an expandable round table, was sufficient to engage the audience in an equitable and collegial manner and encourage ideas sharing. The use of online moderation tools was observed to allow a more seamless interaction between the presenter, moderator and audience. Online networking tools were also used to connect members and relay information, especially when they were outside Second Life. The Education Group had also shown versatility to expand beyond the very environment where they were first formed. Besides Second Life, they had held their activities in other virtual worlds. All these examples indicated that the Education Group was a keen subscriber of opportunistic technologies that might improve the effectiveness of the group.

At the individual level, many opportunities of learning can be inferred. Pertaining to technology usage, every piece of new technology experimented by the group presented a learning curve for the member to overcome. For example, using a new virtual world demanded members to learn the new set of interfaces and commands, especially if it involved using a tool or software external to the Second Life environment. This might not be an easy task, even for an experienced Second Life user. Yet, the Education Group had successfully used these tools and applications, ran events in other online platforms and even completed an organised migration.

The Education Group was enthusiastic in its employment of new technology, probably because the primary goal of the group was exactly looking at how to use technology for learning. One of their main concerns was to examine the affordances and address the limitations of using virtual worlds like Second Life for teaching and learning. Tools like Google Moderator had allowed a more seamless interaction between the presenter, moderator and audiences. Audiences might be motivated to ask better questions (knowing that their questions would be ranked), and moderators had an objective means to assess which questions should be answered first. This might improve the overall quality of interaction and therefore result in better learning outcomes, especially given the limited time the audience can spend with the presenter. The use of online network sites like Facebook had also created

more opportunities for members to connect, communicate and collaborate beyond SL.

A likely outcome of these technology-enhanced interactions is the generation of knowledge and experience that are richer and more diverse than if they were from isolated individual contributions. As mentioned earlier, the multiplying effect of knowledge generation due to group interaction can be interpreted as a form of interpersonal learning. Finally, every piece of technology successfully (or unsuccessfully) used had added to the experience and knowledge base of the group. The group also learned which were the best methods for different kinds of learning scenarios (for example, the use of a roundtable format was useful for free flow discussion and was thus used during the meeting with Linden Lab). This was evidence that the group, as a whole had learned and progressed.

5.3. SUMMARY OF CHAPTER

This chapter discussed four main points that have emerged from the findings of the Education Group. Firstly, the Education Group successfully provided a platform with a strong thematic focus for like-minded members to share ideas or interact informally. As the group developed, members progressively began to build shared beliefs and strengthen their bonds, allowing freer exchanges of ideas and information. Knowledge was also accumulated from archives of chat logs and seminars. Secondly, the group was actively building a group identity, and this was fuelled by a number of member-initiated efforts, e.g. by renaming the group to better describe its objectives and commissioning a logo. Through these activities, members' sense of belonging increased, leading to greater motivation and more frequent participation in events organised by the group. Thirdly, the group had moved from a centralised system of management to a decentralised one where collective decisions were sought. Members were also trained to take over important roles like moderator or transcriber. Through membership training and renewal, skills were deliberately transferred from the senior members to the junior members. Decentralised management also empowered members and further increased their sense of belonging. Fourthly, the Education Group was active in integrating new

technologies into their activities. This had provided the impetus for members to learn how to use these technologies. Furthermore, the technologies had also improved communication and interaction amongst members. Finally, the product of each of these points can be related back to learning examples.

I have also discussed how these four points may have promoted learning in the members. Learning at individual level involved information assimilation through attending seminars, volunteering to work on projects (e.g. designing a logo or re-naming the group), learning to take on new roles vacated by the outgoing leadership or even just learning a new technology adopted by the group. At the interpersonal level, learning happened when social interaction generated knowledge whose sum was greater than the individual parts, for example, the extensive knowledge generated by the chat logs was far richer than the individual contributions of the members or the collective effort in renaming the group or deciding how best to migrate to a new platform. At the same time, interaction honed the social skills of individuals, which affected one's competence in engaging in activities at the interpersonal level. Finally, when the group was examined as an entity, the experiences, processes and knowledge generated within the group could be described as learning at the group level. An obvious way to examine the effectiveness of such learning is to see how the group responds, as an entity, when encountering challenges. For example, the Education Group was able to execute an organised migration to a new platform without incurring many difficulties. As could be observed from this episode, the group had indeed learned, developed and matured to handle the "crisis" with much success.

CHAPTER 6 – ANALYSIS OF THE FINDINGS OF THE PHILOSOPHY GROUP

This chapter presents the findings of the Philosophy Group. Thematic analysis of the data demonstrates five notable structural changes in the attributes of the group. These changes are: 1) defining a classroom style discussion platform; 2) having a small but active membership; 3) having a dominant leadership and managing disagreements; 4) promoting free and robust discussions; and 5) reacting to external events and technology.

Using the four elements of group's lifecycle as described by Mousavidin and Goel (2009) (see Chapter 2, section 2.3.2) as a way to track group's development, it was found that the Philosophy Group remained static in terms of development. It had a few changes in its membership, the roles that they played and the ways in which the group interacted with groups of the same nature or used various forms of media and communicative tools, but these changes were not substantial enough to support its growth. Although it did not develop much since its establishment about three years ago, it managed to sustain its presence and maintain its activities in Second Life.

This chapter will begin with a brief description of Philosophy Group. This will then be followed by detailed accounts of how the group's attributes have changed over time and the evidence supporting these changes. Finally, by looking at the group dynamics behind these changes, I also report the salient group dynamics that have led to these changes and relate them to learning at three different planes - individual, interpersonal and group.

6.1. DESCRIPTION OF THE PHILOSOPHY GROUP

Malcolm, a retired philosophy teacher based in the Netherlands, founded the Philosophy Group in September 2007. Prior to his retirement, he taught computer science and philosophy at College Level for more than twenty years. He had also worked as a computer scientist before switching to a teaching career. Malcolm was very passionate and knowledgeable about philosophy. In an interview, he expressed how he wanted to engage in discussions and debates with others in philosophical

topics, even after his retirement. He started using Second Life in 2006, and joined several other Philosophical Groups in the virtual world. However, he thought that it was hard to sustain a good conversation as membership in these groups were very fluid; people came and went, as they liked. Moreover, there was no clear structure in the topics discussed. The topics were often decided impromptu and sent out just hours before commencement of the session.

Malcolm did not think that this was a good way to conduct a philosophy discussion, and that the capabilities of virtual world was not maximised to its fullest for such a purpose. In my first interview with Malcolm, he mentioned that the virtual world environment had the potential to encourage vibrant interaction and engage in rich dialogue on philosophical issues; however, he believed that such a potential was not tapped upon or achieved by the then-existing philosophy groups. It was this belief that prompted him to start his own group in Second Life. Given his expertise in computer science and skills in graphics designing, Malcolm began to work on the project. He began by first designing and erecting a building on part of his rented land in Second Life. Within the building, he added a small auditorium theatre with semi-circular seating in a light timber colour. He also added a screen on which images could be uploaded and displayed at the front of the auditorium. Outside the building, Malcolm made a little park by planting a couple of trees and adding a couple of benches. He thought that the park could be a venue where members could gather after the discussion meetings to further their discussion, or simply to get to know each other better.

A number of friends and acquaintances that he got to know through the various philosophical sessions were amongst the first few people that joined the group. The first meeting of the group was held in September 2007. Word on this new group eventually reached the wider Philosophy community in Second Life. The group met twice every week, and for about an hour each, throughout the year, except for the months of August and September when they would break off for their summer vacation.

During the meetings, Malcolm would always stand at the podium in the front of the lecture room (see Figure 6-1). Other members would sit around in a semi-circle seating area. At the front of the lecture room and behind where Malcolm stood, was a huge board on which the rules of the class were stated (the forming of the class rules will be discussed later in Section 6.2.1).



FIGURE 6-1 MEETING ROOM OF THE PHILOSOPHY GROUP

When the Philosophy Group was first founded in September 2007, it was intended to be a platform for philosophy discussion. There were eight to ten members attending the meeting each time. Since its first meeting, the Philosophy Group had constantly maintained a constant membership of about twenty members and did not grow beyond that. There were a handful of about five members who regularly attended the group meetings since 2008 or 2009. Members were observed to have come from all walks of life and from various countries. For a small group like this, the group could be considered to be culturally heterogeneous. There seemed to be no indication that the members had any intention to meet beyond Second Life and the activities seemed to be kept within the boundaries of the virtual world environment. This was seemingly different from the other two groups, whose members had meetings outside of Second Life.

6.2. CHANGES IN GROUP DEVELOPMENT AND DYNAMICS

Five defining characteristics of the Philosophy Group were identified through the ethnographic studies, analysis of the discourse (chat logs) and interviews with key members of the group. In the following sections, these characteristics will be expounded and their implications for learning discussed.

6.2.1. DEFINING A CLASSROOM STYLE DISCUSSION STRUCTURE

Like other groups of the same nature in Second Life, the Philosophy Group gathered together a group of people who met on a regular basis to discuss matters that were of interest to them. However, the Philosophy Group did more than simply providing its members with a venue to discuss topics of interest. Over a period of three years, it had built a group identity that differentiated itself from other groups of the same nature. It wanted to establish an informal philosophy class that would encourage debate and allow discussion. To achieve this, the Philosophy Group tried to create a classroom-like structure around its topical discussions, allocating about 15 minutes for lecture and 30 minutes for discussion during each session. This objective and scope of the group were conceptualised even at the very beginning, when the group was first formed. In the first meeting, about 10 members attended, and they had a discussion on how to best run a group that discussed philosophical issues. Malcolm proposed a series of topics that he thought would be of interest. The proposed topics were broad and wide-ranging. They included various philosophical ideologies and philosophers, including the pre-Socratics, rationalists, empiricists and existentialists. Malcolm even made a meticulous list of 100 philosophers that he thought should be discussed in the subsequent meetings. This list was systematically pored through in the meetings that followed. He also decided to post the topics on note-cards and send them out before the meetings so that members could prepare for the discussions in advance. The attendees agreed that having clear topics would provide a structure and agenda for the subsequent meetings. For example, an attendee, Carrie, commented during the meeting that a structure was useful, as it would help her “focus on the topics”. By establishing a “curriculum” at the very beginning, the Philosophy Group built a shared understanding towards what was to

be expected from the meetings. The format of the sessions in the Philosophy Group became so entrenched that every subsequent sessions followed the proposed format.

Furthermore, rules were also set and enforced by Malcolm on how members should behave during these sessions. These rules were simple and easy to follow and were displayed on the board at the front of the room (refer to Figure 6-1). Some of the key rules included 1) avoid interrupting the lecture or dominating the conversation; 2) respect each other's views and do not ridicule; 3) keep to two lines (or 17 words) each time. These rules resembled those that can be found in a typical classroom. Occasionally, the members had to be reminded of the group norms. However, in my observations, I had not come across any instances where members appeared annoyed or took offence, when they were reminded of these norms. Rather, they promptly apologised and carried on with the conversation, taking heed of the norms after that. Setting such rules had further made the structure of the meeting more rigid and classroom-like.

Though not explicitly stated, the arrangement of the Philosophy Group generally followed that of a classroom. This could be seen by the format of how each session was run. A typical session would start off with a short lecture and then followed by a discussion / debate. Moreover, a clear agenda was stated before each session, akin to informing the "students" of the syllabus and what to expect in the next class. Finally, like a typical classroom, there were ground rules laid down for all members to follow so that the session could proceed smoothly. However, the Philosophy Group also differed from traditional classroom style in two respects.

Firstly, it was noted that the emphasis of the meeting was not on learning *per se*. Rather, the main objective of the Philosophy Group was to provide a place for people to share information and resources on a certain philosopher or philosophical issue and to debate on these philosophical ideologies and beliefs. In the case of the Philosophy Group, whether members could actively follow the discussion was not critical to the flow of the discussion. Some members might become disengaged from the discourse, either because of unfamiliarity with the abstract subject matter or

lapsing behind during the quick discussion tempo. For example Lawrence mentioned during a meeting, “i need more time to get this into my head, but i love it”. Chloe also said that “....just when I think 'I've got it'.... it slips away”. Although they had brought up that they were not able to keep with the discussion, there was no intervention by Malcolm or another member, nor was there any intentional effort to slow the pace down; rather, the discussion went on. In my observations, I found that Malcolm did not always step in to intervene when the discussion moved into another direction or when a member commented that he or she was not able to follow the discussion. On the occasions that he did stop the discussion, it was mainly to remind a member about the ground rules or if his personal views were in conflict with what was commented, or if his beliefs were being challenged.

Secondly, no clear structure or outcome was expected from the discussion. Unlike the other groups where a purpose was prescribed for the discussion (e.g. presenting a new scientific theory or implementation of a new pedagogy concept in virtual world), discussion in a philosophy group was less directed and more free-flowing. This could sometimes cause the discussion to drift off tangentially. For example, the group was discussing about the philosopher, Rousseau. It was mentioned by Malcolm that in his view, Rousseau was a chauvinistic man. At this point, the conversation took a turn towards status of men and women. A member, Sophie, brought up her personal observation that women in the Mediterranean were still the ones working in the kitchen instead of men, unlike in the US. A couple of members laughed in response to this comment. Another member, Francis, went further to propose that the group could arrange to have dinner together in SL. It was at this point that a third member, Oscar, highlighted the digression and made the statement “can someone please tell me how the heck our conversation got to where it is now?” Again, neither Malcolm nor any other member was observed to re-direct the focus of the meeting.

The lectures at the start of the meetings set the preamble for subsequent discussions. Some members came prepared for the “class” in that they had done pre-reading on the philosopher or philosophical issues that were to be discussed.

They could thus share the knowledge they had researched. Those who did not could still benefit by simply participating as an audience in the discussion. Individuals could thus benefit from the information contributed by others in the group. The learning process was further aided by the organised nature of the discussion session. However, it was observed that the content of discussion could sometimes be obscure, difficult to understand or might deviate from the original scope. This was partially due to the difficulty of the subject matter and also a lack of motivation to achieve any learning outcomes from the discussions. In this respect, the individual learning might not have been as effective as it could have been, especially for those who were unable to follow the discussion. As the moderator for the discussion, Malcolm had to constantly hone his interpersonal skills to challenge members who had broken the rules, while at the same time, taking care not to be overly zealous and discourage robust discussions. No such demands of interpersonal skills were required for the other members. Finally, by establishing a set of norms and practices in running the meetings, the group could be seen as improving in its ability to conduct and sustain such meetings. This may be seen as an aspect of learning at the group level.

6.2.2. HAVING A SMALL BUT ACTIVE MEMBERSHIP

The members of the Philosophy Group came from all walks of life and from various countries. Most were from the United States of America and Western European countries, while some were from non-English speaking countries. Malcolm noted that several members were not native speakers of English Language. This was one of the reasons why Malcolm preferred to use text rather than voice in all the meetings. He thought that speaking in voice could put those with poor command of English in a disadvantage. In his opinion, non-native speakers could better follow the conversation presented in text, since "...when you do voice, your words are gone after being spoken... (but) when you use text chat...people can read back, reread and understand more easily". Furthermore, it was also observed that when English was not their first language, it made it difficult to share views, negotiate ideas and at times, follow the session. For example, Adriana remarked during one of the sessions

that, “the english is not easy for me so I don’t talk but listening”; Ivan mentioned that he was “lost in translation... too difficult for me ...my english I think”. This was more evident if one needed to explain abstract philosophical ideas in words. A good command of English is needed for the subject matter.

In my interview with Malcolm, he said that he did not like using voice in Second Life. He thought that voice intruded the virtual world and would ruin the dream-like fantasy of being in one and made members “... become such ordinary people again ...”. He further commented that communication via text was easier, especially for members with a weak command of English. Yet, voice is often perceived to be a more natural way of presenting and conveying ideas (see, for example, Williams, Caplan & Xiong, 2007). Text, on the contrary, is slower, more impersonal and lacks additional dimensions (e.g. tone of the voice, pace of speech) to carry deeper meaning. Nonetheless, text is sometimes preferred because it can be easily archived and shared amongst members. This would be useful for the small group like the Philosophy Group, which did not have transcribers to convert voice to text.

The average number of participants in each session was about 10 to 12, of which about half were regular members. The others half did not show a fixed pattern of participation. Some of them were observed to have come for a few sessions and then cease to participate in the subsequent classes. Most of the members preferred not to disclose their identity or occupation. Some of them mentioned during interviews that they were graduates of high schools or colleges. However, none of them were educators specialising in philosophy, except for Malcolm. Before commencement of each session, members would usually gather to mingle. From the conversations I had with them, I sensed that most of the members were keener to use the sessions for social interaction rather than to acquire information or knowledge. This was observed too from the group’s dialogue and discussion during meetings. Apart from the lecture, which was almost entirely focused on the topic, it seemed that more than half of the conversation was of a socialising type, and the other half devoted to the topics at hand. This could be seen from the topics that they talked about, which were usually social in nature. Nonetheless, it was observed that

some attendees would make the effort to prepare for the “classes”, based on the topics that were given in advance.

The following excerpt is an excellent example showing how they have prepared for the discussion:

...
Malcolm: So much on Frankena
Gwendolyn: He is very interesting
Pauline: yes I liked very much
Gwendolyn: his chapters were easy to follow
Malcolm: Yes it is an interesting approach
Gwendolyn: I will read the whole thing when i have time
Malcolm: What is so interesting is that he combines a utilitarian theory with a virtue theory
Rachel: yes
Pauline: I liked that he gives a general view besides his position, I felt situated
...

From this conversation, it could be deduced that Gwendolyn, Rachel and Pauline had read the book recommended by Malcolm prior to the discussion. Gwendolyn explicitly stated that she had read some of the chapters and wanting to read more. Both Rachel and Pauline made general remarks that suggested at least a quick scan of the book.

The meeting was always led and moderated by Malcolm. A typical discussion would begin with him making a statement or posing question(s). This would then be followed by a discussion or a debate on the topic. The following is an example of how a discussion would usually transpire:

(Background: Malcolm was discussing the concept of nothingness)
Malcolm: the word nothing is a combination of not and something...so it makes no sense to try to find a reference for nothing
Matthew: vacuum?
Kelly: and we understand not as SOMETHING opposed to nothing
Kelly: and something is... nothing is what...
Matthew: zen understood that to think about nothing, one must stop thinking
Kelly: we cannot understand nothing without referring to something...
Matthew: "if you have nothing, throw it away"
Malcolm: nothing means... I am not referring to any particular object or entity

Kelly: not in my direction Matt, lol
Matthew: lol
Malcolm: don't start throwing with nothing in class Matthew, order in class!!
...

From the chat logs, it could be seen that clarification and debates were common during the group's discussion. Different members had different interpretations of the topic and sought to clarify those interpretations by airing them. Ideas and concepts were then scrutinised by the other members, who might counter argue or express agreement. Members could thus understand the perspective of others through engaging in such discussions / debates. However, it was also noticed that some of the arguments were discussed only superficially and ended prematurely without reaching a consensus. This would happen when the threads of thought were disrupted by a member making an unrelated comment, like the example above.

Through examining the archived chat logs in 2007-2008 and from my time spent with the group between early-2009 to early-2010, Alvin, Gwendolyn, Oscar, Levi, Kelly, Beatrice and Bernice were identified as the regular participants of the meetings. They attended most of the discussion, showed a keen interest in this subject and were active in promoting the Philosophy Group. Alvin, for example, took the trouble to assemble the group's chat logs into an e-book and made it publicly available. Gwendolyn even brought along her virtual partner to attend the session, who eventually also became a regular of the group. Like many groups in SL, the Philosophy Group had a small group of members who were active and eager to contribute in the group activities. They were not domain experts *per se*, but were nonetheless knowledgeable and were willing to do research and share their findings. However, their number remained small. Despite existing since 2007, the size of the philosophy did not change substantially. While new members joined the group, others left after attended a few sessions. On one hand, a small, self-contained group of regular members allowed close relationships to build up, and thus encouraged freer exchange of ideas. On the other hand, small membership could restrict the infusion of new ideas and perspectives into the discussion and thus limit the opportunities to learn.

To summarise, the Philosophy Group was a relatively small group. Most of its members were proficient in the English language but there were some who were not. This might have deterred them from contributing to the discussion. Most, if not all, of the members were amateurs and were not trained in philosophy. Many of the members attended the meetings for social interaction. However, some have demonstrated their desire to contribute to the group discussion by doing research and sharing their findings. The active members were dedicated and had attended many of its meetings and participated actively in the discussion. Some had even initiated projects to help promote the group (e.g. compilation of an e-book by Alvin).

By reading up on the topics before the discussion, members acquired knowledge and learned about the subject matter. They further achieved collective learning when they shared information that they read, and clarified their understandings with arguments and counter arguments. Through such activities, the members worked together to develop a deeper coherence and rounded argument around the topic of discussion, thus learning more than if they were to learn as isolated individuals (interpersonal learning). However, such interpersonal learning was limited by two constraints. The first was that the size of the Philosophy Group remained small and discussions usually involved only a handful of people. There was thus limited diversity in the topics discussed and the perspectives presented. This had restricted the breadth of knowledge that could be generated. The second was that most members regarded the meeting as a social interaction platform rather than a learning platform. As such, discussions were easily distracted by tangential comments. Furthermore, most members were amateurs and might not have a profound understanding in the subject matter. It was therefore difficult to delve deeply into the topics. These had restricted the depth of the ideas that could be generated.

6.2.3. HAVING A DOMINANT LEADERSHIP AND MANAGING DISAGREEMENTS

The Philosophy Group was observed to have a centralised hierarchical structure. Pivotal to this structure is the presence of a figurehead who framed, directed and

steered the discussion. This role was assumed by Malcolm. Besides starting the group single-handedly, he also set the topics of discussion, attended all meetings and consistently gave a fifteen minutes lecture during each session. Malcolm also moderated the discussion and enforced the 'class' rules. His usual location at the centre of the podium gave further evidence of his pole position in the group hierarchy. Malcolm was thought to be always in control of the group. This could be seen from some of the remarks he made during the discussion:

Malcolm: order in class!!

Malcolm: let me make one final remark before I dismiss class....

Malcolm: ATTENTION plz...:-)

In an interview with Malcolm, it was observed that he saw these sessions as more of a debate rather than a class. He believed that to facilitate effective debate, there would be a need to provide opportunities for members to identify controversial topics. However, in contrast, some members had commented that they were not given enough room and encouragement to provide and develop counter examples or arguments. They felt that they had not had the opportunity to expand on and balance the argument on both sides, which was important to a fruitful debate. On a few occasions during my participation, it was observed that members seemed to find it difficult to negotiate their thoughts and ideas, especially to Malcolm. This could be due to the imbalance in power in the group, which fell on Malcolm essentially. He was the central figure in the sessions, framing the boundaries of the discussion. The following are some examples extracted from the study:

A member who attended the meetings a couple of times, Florian, wrote on the group's blog,

".... lecture is what Malcolm does... interesting questions he brings up but don't let anyone question his authority or you will be banned from class like I was".

To which Malcolm responded rather vehemently,

"Pathetique, Florian, you were just rude and offending, not at all questioning any authority".

Another member, Penelope, also highlighted the difficulties in voicing alternative views by saying,

"I agree we need to think about things, but sometimes we need to alter our approach to a question also, I think. Well, if we continue to look at a problem the same way and can't find an answer like that, maybe we need to look at the problem from a new angle? I know what you are saying, but I was thinking more of asking the questions from another angle".

Damian, who was observed to be quite articulate and forthcoming with his thoughts, also had difficulty trying to make sense of how much leeway he had in verbalising his views. He asked Malcolm in one of the meetings,

"Sorry Sir I am one who will easily start a conversation if needed and just love the debate. But I can shut up if needed... you did ask for questions, that's all".

Malcolm appeared encouraging and responded that he made a good point and he should not feel that he needed to hold back from asking questions or voicing his opinions. However, he emphasised that in doing so, it was also important to respect each other, and not go overboard in loading one's opinion onto another. On a separate occasion, another member, Simon asked Malcolm point-blank whether he had "... any physical proof that dualism does not exist or are you propitiating your own interpretation and beliefs?". This was because he felt that Malcolm was not very receptive to his ideas.

All the above examples illustrated that in a group like this, where the central authority figure is one person, the person has the power to frame the boundaries of the discussion. Members might find it difficult to put forward alternative arguments. This might stifle motivation, diversity of perspective and ultimately learning. Such a hierarchical structure appeared to take the characteristics of a class, rather than an open debate, because there had a skewed power balance clearly in favour of Malcolm (the teacher of the class).

However, neither was Malcolm a strict disciplinarian and intolerant towards opposing views. His role in the Philosophy Group's meeting was more like a teacher,

making sure that the class ran smoothly. This can be seen in the following two examples.

First, an important feature of his classroom approach is his enforcement of the rules and regulations. The following transcript is an illustration of how Malcolm enforced the “class” rules in a firm but balanced way:

Penelope: Surely it must be the firing of the brain as a whole, so maybe it is a mistake to look for the 'one' place, I am thinking. Maybe the entire function of the brain is to 'be' us, and the parts we can isolate and attribute our separate functioning processes to are just that, only parts that make up the reason our brain exists in the first place - to run our bodies and to give us a sense of 'self' or consciousness? I apologise if my question sounds silly.

Malcolm: smiles at Penelope. You just committed a sin ^_^

Penelope blushes

Malcolm: Even though your name tag says Innocent ...:-) You offended against ~rule 5 :)

Penelope: Maybe I should change it to dumb, as a warning... *smiles contritely

Malcolm: no no....dont! We are a small group now...so no problem...

Penelope: Well.. I just have a problem with philosophy at times being a little less than practical, for me :)

Malcolm: I only mean that it doesn't work to drop large pieces of text in a discussion like this...

Penelope: I do apologise

Malcolm: no no...it is ok...you are rather new here... you are excused

Penelope: I only asked because I thought we could... It is my first visit, yes

Such norms and rules provided members with clear set of instructions of how they should discuss specific topics of philosophy, express their thoughts, and share their experiences. As observed, Malcolm was not overtly domineering or stern in his ways in this occasion (but he was observed to be so in a couple of occasions, an example of which was described earlier in this section). By enforcing these rules while making a conscious effort to encourage members to participate and feel good about their participation, Malcolm had learnt to strike a balance between allowing members to meet their need for discussion, approval, belonging and self-esteem, and maintaining an efficient structure for ideas to flow and for debate.

The second example was evident in his pedagogic style, i.e., the way he asked prompting dialogues in order to engage people in philosophical discussions. These questions were posed after the 15-minute lecture by Malcolm and were meant to establish reference points for the follow-on discussion. The intention of these questions was to create ambiguity, produce puzzlement and invoke deep, thoughtful responses in members. As a retired classroom teacher, Malcolm recognised the importance of guiding group talk, especially in the virtual environment. He noted that the conversation could potentially take off in a direction that might be irrelevant to the topic being discussed. It was therefore important for him to do a good job at moderating the discussion.

As the instructor/teacher of the class, Malcolm had sought feedback and was careful not to create an environment that was too formal. He had also tried to motivate the members by thanking them for contributing to the group, giving them recognition and even apologising to them whenever he felt he was at fault. There was thus a deliberate effort by Malcolm to establish a good relationship between him and the rest of the group. This was seen to be important because as the figurehead of the group, his relationship with the other members would directly affect the members' relationship with the group. The following are conversation excerpts from the chat logs that showed how he had done so:

1. Malcolm thanked the group for their effort by saying: "First of all I want to thank you for the interest you have shown in this project...I appreciate it greatly...and it is highly motivating for me...and I get the impression that our blog is discovered too ...our lecture and discussions are viewed more than 160 times ... I guess a lot of readers aren't in SL... so we are reaching more people than only SL inhabitants"(Malcolm shared recognition with others)
2. Then I thank you for your participation😊. (Malcolm was generous with praise)
3. I am sorry I came down so hard on you Catlin...(Malcolm showed humility by apologising)

In summary, it could be observed that the Philosophy Group had a clear hierarchical structure, with Malcolm standing firmly at its apex. The group appeared, in many ways, like a classroom and Malcolm was the teacher. This could be seen by the way

he enforced the class rules and his pedagogic style of asking questions, prompting members and controlling the discussion. Nonetheless, Malcolm had tried to maintain an environment where members could feel encouraged to engage freely in discussion. However, he was not always successful, as could be seen by some negative comments made by the members. Of the above members mentioned in this section, Florian, Damian and Simon, were observed to have only attended the group meetings a couple of times, and did not come back again. When asked about this during the interview, Malcolm responded that it was normal for people to have diverging views, especially in philosophy. He said that he respected the views of others, but was not always comfortable in the ways these views were presented. However, Malcolm reflected that he remained committed to his cause, which was to provide an arena for discussion and debate on philosophical issues in Second Life.

This section focuses on Malcolm's role as the leader of the group. As an unofficial instructor, he was motivated to do research on the topics to be discussed, articulate his views and opinions to the other members during the lecture, moderate the discussion and actively response to questions or comments made by the members. It was clear that he had contributed significantly to the running of this group and had probably learnt and acquired much knowledge from the research and discussions. Furthermore, his leadership role also required him to manage interpersonal relationships with other members, so that they would feel encouraged to contribute to the discussions. Though it did not always turn out well, Malcolm had, on many occasions, showed that he was capable to be stern and fair. For Malcolm, the process of forming and running the group had allowed him to learn both at the individual level (knowledge acquisition) and interpersonal level (social relation with other members). However, less could be said for the other members. Some had commented about the limited scope which they were allowed to bring into the discussion. The topics of discussion were also defined by Malcolm prior to each meeting. Undeniably, there were debates and discussions happening during the meetings, but they could have been more robust if the Malcolm had made the discussion more free flowing. Learning by members was therefore thought to be constrained by Malcolm's style of leadership and the strong hierarchical structure.

6.2.4. NURTURING A SENSE OF BELONGING

The Philosophy Group had tried to make new members feel welcome and maintain a cordial and relationship amongst existing members. This would help strengthen the social connections between individuals and improve individuals' sense of belonging to the group. The motivation of these efforts was to create an environment that was friendly and conducive for members to express their thoughts and externalise their ideas.

On one occasion, for example, Malcolm sought feedback by asking a new member, Kavina, about her experience after the discussion:

Malcolm: What is your impression Kavina....do you like the class?

Kavina: i appreciate it

Kavina: It has been a new sl experience for me

Malcolm: do you know the blog of the class?

Kavina: it is difficult to discuss in these circumstances

Kavina: but worth it

Kavina: some of the people seemed to have broad agendas

Kavina: so I appreciate what you are doing

Communicating with new members and finding out if they are feeling comfortable in the group and environment is important in induction. Malcolm and other members of this group were observed to be friendly towards new members. This helped , both in inducting and retaining new members. Kavina, for instance, continued to attend the sessions, during the period of the study.

Another aspect of improving members' relationship was the contributions and interaction by members themselves. Regular members were observed to play a big role in realising this. As a regular member of the group, Alvin took the effort to compile an e-book, which contained the chat logs of the Philosophy Group. More importantly, the e-book also included the avatar of all the members who had attended the sessions. This was thought to have a positive effect on building a sense of belonging to the group. There was, however, not much self-initiated work happening in the Philosophy Group as compared to the Science or Education Group, which had a higher membership count. Nonetheless, many of the regular members

were observed to have fitted well and were happy. For example, Gwendolyn commented that, “I wonder if they laugh as much as we do at the discussions”. Oscar also candidly mentioned that “you folk make me laugh ... and I learn best when I laugh”.

For the Philosophy Group, which was predominantly classroom like, enhanced relations could be established through teacher/members’ interaction as well as regular and friendly communications between members. Earlier, we saw that Malcolm created a sitting area outside of the auditorium for people to engage in private discussion, before or after the session. However, members attending the regular meeting were not observed to be using this space; rather, they would assemble in the lecture/discussion room once they teleported to the meeting venue to catch up with one another, prior to commencement of the session. After the session, about half of them would gather in another venue, to chat and dance. Their chat conversation, however, would not be on the topic discussed in the session, but rather, casual questions about what had happened in that week or some of the events they had taken part in in Second Life over the past week. Malcolm would usually not join them in these after-session meetings, although he was invited.

Good relationships amongst members and greater sense of belonging were thought to have promoted freer discussion in the Philosophy Group. This was deduced from the observation that regular members, who had verbalised their “happiness” during the group activities, were also those who had participated freely and more openly in the debates and discussion. A freer and open discussion enabled one to develop, criticise, expand, defend and externalise one’s positions. As observed by Ackermann (2004), externalising ideas is essential for communication as it allows people to negotiate meaning in tangible ways. In the Philosophy Group sessions, the externalisation of an individual’s internal cognitive processes occurred through the use of text and in a discussion/debate format. In this way, learning was seen as a process where members understood the discourses and responded to statements made by others through externalising their thoughts into words.

As observed, more experienced members or members who had attended the

meetings quite regularly were indeed more vocal and spontaneous during the group's discussions. More experienced members were also observed to be satisfied and happy with the debates, as evident from their thoughts after the sessions, such as "Thank you for the brain exercise. Thanks all for a stimulating discussion" (Jerome) and "Thank you Malcolm, I have a lot to think about again" (Bernice).

However, this does not mean that new members were apprehensive in contributing to robust debates. Indeed, the chat logs had showed numerous insightful comments made by new members. For example, Brandon, a relatively new member to the group, was quick to disagree with Malcolm and made a somewhat long and robust argument about the topic of subjectivity and objectivity:

"I would suggest that "good" is a measure of standard by each individual, as good can only be an individual perspective. That does not discount that what is good for one person might be good or bad for another. Let's take stealing as an example: it is "good" in economic terms (in a warped way) because the thief is the beneficiary, while "bad" for the victim. Why cannot good be defined objectively from an individualistic perspective - i.e, that which is earned and supports life without harming others? As Pauline said, "yellow" can be defined objectively as well - it can be defined based on wavelength. Though a blind person may not be able to visualize yellow, that doesn't mean it cannot be defined objectively. How many people can visualize a wavelength - does that mean they cannot understand the term yellow? To me, I keep coming back to standards. How can you discuss ethics without standards as a tenet?"

When prompted about his infringement of the 17-word rule, Brandon quickly apologised. Furthermore, he commented that he has been "holding back" prior to that outburst. This suggested that although Brandon had been participating actively in the debate, he could have argued more robustly.

In summary, it was observed that both Malcolm and the group of regular members had made the effort to improve members' experience. As a figurehead of the group, Malcolm showed his appreciation to the members and was also seen collecting feedback from new members. Current members, especially those regular ones,

generally appeared happy with the group and participated actively in debates. However, amongst them, only Alvin was seen to have done additional work, beyond members' usual involvement in the discussions. This could be due to the dominant leadership of Malcolm, who wielded significant control on the activities of the group. Many of the groups' activities were inspired and coordinated by him. New members might have held back and not participated freely during the discussion. The purpose of cultivating a good member relationship was so that members can feel encouraged to contribute to the discussions and debates. All in all, the relationship amongst members, old and new, was observed to be good and this might have helped in providing a platform that is conducive for discussion.

In the previous section, I have discussed how Malcolm, as a figurehead of the group, achieved individual and interpersonal learning. I have also commented on how learning by the other members might be constrained. In this section, I further expanded on Malcolm's effort to cultivate a cordial membership relationship. He tried to engage new/regular members, through which he further honed his social skills. These were people skills that could be practiced through interacting with others at an interpersonal level. Another group of people mentioned in this section were the regular members. They appeared close knit and participated actively in discussions. Through active participation, they were able to acquire knowledge, interpret and finally externalise them for verification. Such processes formed the basis of individual learning under the cognitive constructivism and social constructivism frameworks. The regular members also learned from the viewpoints of others and achieved knowledge that was created via social interactions (interpersonal learning). The third group were the newbies who had yet been assimilated into the group and thus might not be able to contribute freely during discussion. Members belonging to this group were thought to be less able to benefit from the group discussions, as compared to the Science and Education Groups. Malcolm's motivation of providing a cordial and casual environment was exactly to allow the newbies to swiftly transition to becoming regulars, so that their learning could be enhanced.

6.2.5. REACTING TO EXTERNAL EVENTS AND TECHNOLOGY

The Philosophy Group did not make use of many technology tools and functionalities in Second Life. Unlike the Education Group and Science Group, it did not have many different venues for different purposes (apart from the inside and outside space). Neither did it hold field trips for greater immersion, nor used fancy software to moderate discussions. All it had used were note cards and notices to remind members of the meetings and topic to be discussed. However, even this was later defunct and superseded by the personal blog created by Malcolm. The blog contained all the chat logs that the group had, as well as messages that Malcolm wanted to communicate to the members. From the discussions, it could be deduced that some members made use of Malcolm's blog to obtain information or revisit the discussion that was previously held. Malcolm's blog thus became an extension of the group's resources outside Second Life.

The Philosophy Group operated in a self-sufficient way. It did not actively engage external groups and was not too concerned about the happenings in Second Life. While the Science and the Education Group, and indeed, many educational groups and non-profit organisations fretted over Linden Lab's change in policy over a continued subsidised rate for land ownership, it was observed that the Philosophy Group was less disturbed by this issue. The group went about its activities as it normally would. The issue of the subsidy withdrawal was not even mentioned or discussed during the meetings. Rental cost in Second Life was paid mainly from Malcolm's own pocket. Eventually, as the group became more established, some members started to chip in by making donations. The increase in rental thus affected mainly Malcolm, who took the increase in his stride. In another episode, the group became a victim of a "griever attack". Grievers are residents who go around interrupting activities held by groups in Second Life. Their main aim is to spoil the pleasure of others. Due to a griever attack, the discussion log was lost because Linden Lab intervened and shut down the system. Oscar tried to save the chat log before Second Life crashed but failed to save it. The response to this attack was generally mild and taken in a positive light. Malcolm commented that "... this is an interesting learning experience...". Alvin added that, "... practical experience

supplanted the discussion...a living lab.” Though most of the chat logs were lost, the Philosophy Group saw this as only a small setback and did not pursue the matter or adopt any additional precaution in response to future attacks. These two episodes showed that the Philosophy Group was more interested in getting on with their role as a platform for discussing philosophy rather than as an active member of the wider community in Second Life. Owing to this, it was thought that the opportunities for the Philosophy Group to develop and learn from external parties in Second Life were rather limited.

This section has provides a glimpse of how the Philosophy Group used technology and its relationship with external parties in Second Life. In summary, the technology was limited only to note cards and notices. However, these were later dropped in favour of the personal blog by Malcolm. Text was the only mode of communication between members. The Philosophy Group was also self-contained and did not interact with other groups in Second Life or actively trying to influence the Second Life policies. The price hike and griefer attack affected them but had not changed the way they run their activities.

The use of technology can help in presenting information in new ways, so as to potentially elicit interest and motivate people to learn (as seen in some of the examples in the Science and Education Groups’ findings). Despite these advantages, it appeared that the Philosophy Group was not keen to use technology to further enhance its activities. It was content to use conventional text-based communication, supplemented by Malcolm’s blog, which doubled up as an information archive. Not only were there opportunity costs, in terms of learning, when novel technologies were passed over, but sticking to old technology might make the group appear uninteresting to potential members. This might stifle the growth of the group. Furthermore, the Philosophy Group also did not made use of the extensive reach of Second Life to establish contacts with other groups of similar nature. As such, it remained small and self-contained, with an active membership about 20 to 30 people. With fewer interactions and a lack of critical mass, learning at individual and interpersonal level might be affected. Thus far, I have not mentioned the potential of group learning. This is because a group can only grow as an entity and increase its

versatility if there were a diverse group of members adopting different roles to serve in the group. For the Philosophy Group, this appeared to be lacking. In fact, the development of the group seemed to have remained stagnant for over the period of study.

6.3. SUMMARY OF CHAPTER

This chapter discussed the main themes that have emerged from the findings of the Philosophy Group. Firstly, the Philosophy Group operated like an informal classroom, with lectures, a curriculum to follow and rules to obey. Secondly, the membership of the group was small and comprised mainly amateurs who had an interest in interacting socially with others who shared a similar interest in philosophy. About half of the participants attending each meeting were regular. They were committed and would read up on the topic prior to the discussion. Thirdly, the Philosophy Group had a dominant leader. Malcolm framed, directed and steered the discussion and enforced the class 'rules'. This might have inevitably caused conflict between him and some newer members of the group. Fourthly, it could be seen that despite his dominant leadership style, Malcolm had tried to create an informal and cordial relationship amongst members. By creating a friendly and social environment, combined with an informal classroom-like structure, he hoped to encourage freer and robust discussions. Finally, it was observed that the Philosophy Group was not keen to adopt new technology to augment its activities. Neither was it keen to engage other groups of similar nature on Second Life. Consequently, the group did not appear to have progressed much in terms of group development and group dynamics. In fact, its structure remained static since its first year of establishment. As a result, although the group had been in Second Life for more than three years, the group size remained small.

Learning was encouraged through forming good relationships with the instructor/moderator as well as the other group members, and having a structure for the meetings. However, in creating a classroom-like structure, and holding the meetings through an instructor-led approach, most of the control seemed to have resided in the instructor (in this case, the founder of the group). Conversely, less autonomy

was given to the members. In such arrangement, it was noted that Malcolm, who had to put in the most work, also benefited the most in terms of learning how to manage the group and acquiring knowledge through preparing for the lectures and discussions. The next group of learners were the regular members who had participated actively in the debate and learned from Malcolm. For the newer members, it was found that they might not be able to engage freely in the discussion. Some of them had even crossed swords with Malcolm. Finally, because the Philosophy Group was self-contained, its size remained small and this might have restricted opportunities for its members to learn.

CHAPTER 7 – DISCUSSION AND SYNTHESIS OF FINDINGS

This chapter discusses the themes that emerged from the three respective groups. I start with a comparison of the nature of the three groups, focusing on the three attributes that were identified in the literature review. They are 1) membership, 2) social-/task-orientation and 3) group governance. These attributes had been identified as important factors influencing learning. From the findings, two more attributes are added. They are: 4) use of technology and 5) relationships and contacts with external parties. By looking at these attributes, one can understand the context in which the changes occurred and the group dynamics that effected them. Once the salient attributes and their group dynamics have been presented, I will discuss evidence of learning and how it occurred vis-à-vis the group dynamics. In order to systematically analyse learning, I will use Rogoff's (1995; 1998) three planes of analysis: 1) in individuals, 2) through interpersonal relations, and 3) in the group. Finally, based on the above discussion, I propose a framework for identifying and understanding how learning occurs in groups in the context of social virtual worlds.

7.1. SALIENT ATTRIBUTES OF THE THREE GROUPS AND HOW THEY HAD CHANGED OVER TIME

As reflected in the literature review, there are three notable attributes in the three groups that were studied. Two more attributes were further identified after the results were analysed. In this section, I will expand on these attributes, discussing how similar or different they were in the three groups, and how they were related to the groups' development and dynamics.

7.1.1. MEMBERSHIP

In simple terms, a group is essentially a sum of its constituting members. As such, membership plays a very important role in defining the character of the group. From the findings, three main differences in membership were observed in the three groups. These are: 1) membership policies (e.g. open / closed); 2) membership size and demography, and 3) disclosure of real-life identity.

Membership Policies

One of the main differences in membership policies amongst the three groups was the way members were admitted into the group. The Science Group had initially subscribed to a closed membership, where members were admitted only after they had been reviewed by Janice, the group leader. This had resulted in an exclusive group that consisted of members who were practitioners of Science, Technology Engineering and Mathematics (STEM). Through the filtering process, Janice tried to ensure that every member admitted into the group carried with him / her, niche expertise, credibility and a potential to contribute either via collaborative work or as instructors for the online courses conducted by the group. At the same time, the other members were also confident that the instructors giving the course were experts in that domain area. Moreover, dormant membership was discouraged, further resulting in active participation amongst the relatively small group of people. Later on, membership of the Science Group was expanded to include students and science enthusiasts. This had broadened the membership base, but at the same time diluted the concentration of expertise in the group. In contrast, both the Education Group and the Philosophy Group had maintained an open membership. Anyone in Second Life was free to join and leave the group. Even with that, the two groups took different trajectories. While the Education Group expanded in size, the Philosophy Group did not. Furthermore, despite having an open membership, the Education Group was able to gather like-minded members that had interests in or were practitioners of online education. On the contrary, members in the Philosophy Group were amateurs who joined largely for social reasons. This bifurcation showed that the development of groups is a dynamic process that is affected by a confluence of many other factors like the differences in the nature of the group's tasks and social orientation, group governance and the extent of engagement with external parties. These factors will be discussed in the later sections.

The Education Group had apparently benefited from the open membership policies through increasing its membership pool and yet was still able to attract members who were committed to its objectives. The Philosophy Group, on the contrary, remained stagnant despite open membership. Finally, the Science Group had an

influx of members that were diverse, including students and non-practitioners of STEM when it opened its membership. Therefore, from the study of the three groups, it appears that a close membership policy does not necessary lead to smaller group size (as observed in the Science Group prior to opening of membership). However, such a policy also appears to serve as a way of selecting members whose attributes better fitted the group. The converse is however not observed, i.e. a more relaxed membership policy does not mean faster membership growth (Philosophy Group). Neither does it mean that the group would get members who are less likely to contribute (Education Group).

Membership Size and demography

As mentioned earlier, despite having open membership, the Philosophy Group was slow to grow in size. The membership number was kept constant at 20, although there were about 5-6 regular members over the three years. In contrast, the Education Group was observed to have grown significantly in size, from about 15 to 400 members in a span of three years, many of whom were stakeholders involved in educational practices, such as teachers, academics or administrators interested in using virtual worlds and other technological applications for education. Although the Science Group kept a closed membership, it grew faster than the Philosophy Group, from about 15 members to 60 members, including the sub-group consisting of about 20 students and non-STEM practitioners.

It is observed from the literature that as membership size increased, members' participation decreased (see, for example, Wheelan, 2009). Compared to groups that are smaller in size, members in larger groups tend to be less satisfied, less participative, and are less likely to cooperate with one another (Levine & Moreland, 1990, p. 593). There could also more lurking or inappropriate behaviour in larger groups (Latané, Williams & Harkins, 1979; Wagner, 1995; Chidambaram & Tung, 2005), perhaps because group members feel that their actions may go unnoticed or that some members may be hogging the conversation. However, in observing the events and meetings of the three groups over a period of nine months, interviewing and talking to members, and examining the archived chat logs since the groups were

founded, I did not find significant evidence to suggest that as membership size increased, participation decreased. There was some noticeable drop in a few individuals' participation rates, which was consistent with the findings from the literature. However, for the majority of the members in each of the three respective groups, participation levels in individuals were kept roughly constant, i.e. those who participated actively continued to do so, and for those who tended to be less vocal in voicing their opinions were observed to actively participate in their respective groups in other ways, such as creating the website or helping to organise events. Some of the members were even observed to have increased their participation in the group as they became more attached to the group.

The literature also suggests that the amount of communication may decrease as the group size increases (see, for example, Tyson, 1998; Lowry *et al.*, 2006). At this point, it is necessary to emphasise that communication and participation are viewed separately, as they may not necessarily equate to the same thing. Nonetheless, they may be interdependent parameters, i.e., members who are more active in their participation in the group would tend to communicate more and be more willing to share their thoughts and ideas with fellow members. It is however not the aim of this study to draw generalised conclusions or causal links between the two; neither were the findings conclusive enough for me to do so. Existing studies have found that in larger groups, fewer members participated in discussions and communication tends to be dominated by a subset of the membership (see, Wheelan & McKeage, 1993, p. 61). Similar observations were made in all the three groups. For instance, in the Education Group with an average size of 40 attendees, about 10-15 members would be actively engaging in the conversation, and about 10 members would occasionally voice their opinions and thoughts. The others gave occasional comments while a handful of about 5-6 people were observed not to participate in the conversation. It is thus interesting to note that while participation of members was somewhat unabated, communication appeared to be affected. This argument might appear contradictory in the first instance and I will attempt to clarify: it was observed that those who had already participated actively prior to the group's increase in size did not show a reduced rate of participation even after the group

had expanded. There were also other avenues of participation which members could take part in, like doing a task or organising an activity. Participation rate and opportunities were thus not significantly affected by an increase in group's size. Evident in the Education Group and Science Group's findings, opportunities for participation were observed to have even increased because there were more interactions amongst members and a variety of activities for members to participate in. In contrast, if interaction and communication among members of the online group usually takes the form of dialogues which are context specific and, more importantly, sequential, i.e., one has to finish his/her point before the other can begin, members' participation can be restricted by the lack of content knowledge, communication modes and opportunities for interaction. This is especially so if the group's dialogues are hogged by a small band of people in the group. It might hamper others from joining in or starting a new topic. In such groups, it is possible that increasing membership may further reduce members' participation rates and modes. For all of the three groups, it appears from the findings that the core group members and existing members of the group made a conscious effort to integrate new members into the group and made them feel welcome. Although some members were observed to be more active and outspoken during the respective group sessions, but hogging of dialogue or conversation was rarely observed in all of the three groups. Although new members were observed to take a couple of sessions before they felt comfortable to contribute their thoughts in the group discussion or participate in the activities, most of them did not appear to have or indicate that they had problems trying to get into the conversation or participate in the activities (such as field trips).

One of the advantages of introducing new members to a group is the interaction between new members and existing members. This may bring about structural changes to the group. New members bring in new knowledge and practices, but had to learn to become part of the group, while old members renewed the norms, in response to the influx of fresh members. Wenger (1998) also describes such interactions as generational encounters between newcomers and old-timers. He also observes that such encounters provide opportunities for existing members to

renegotiate their identities, and new members to align their individual identity with that of the group (Wenger, *ibid*, p. 157). Furthermore, through conflicts and dissonances about the membership policies amongst core members, as well as influx of participation, contribution and expertise from new members, new experiences and understanding can be formed.

The flip side of having bigger and more diverse membership is that the dissonances that arise need to be managed carefully. Otherwise, it would be detrimental to the development of the group. The importance of this point is evident in the three groups studied. The Philosophy Group comprised mainly a small band of amateurs. Without diverse membership, they were observed to depend constantly on the group leader for direction and inputs and had remained stagnant. The Science Group had a heterogeneous mix that spread across a wider spectrum of STEM subjects. They also had non-STEM practitioners amongst their midst. However, conflict among the members led to the eventual separation of the group into two. The Education Group had a more homogeneous membership, comprising mainly members who were interested in practicing education in virtual worlds. This group was the most successful amongst the three, growing from strength to strength and was even competent enough to do a successful migration from Second Life to an alternative virtual world platform.

Disclosure of real-life identity

Disclosure of real-life identity and details is a problem peculiar to virtual worlds. It was an issue for some of the members in the groups that were studied. For the Science Group, some members subscribed to the view that they could be who they like to be in Second Life, and thus their avatar might not necessarily be similar to how they looked like in real-life. It was observed that these members usually chose a furry or robot character as their avatar. They did not think that it was a problem, as long as they were sincere and honest when interacting with others, and open to sharing information on the STEM-related topics with their fellow members. It was also mentioned during one of their meetings that the accuracy of information was viewed as more important by the majority of its members, as compared to the

disclosure of identity. Yet, in my interviews with two members, they voiced their concern for this as they thought that the accuracy of the information being shared on the STEM-related topics was closely linked to who they were in real-life. They thought that this was especially so as the group was discussing subjects and topics that involved factual content.

Most of the members of the Philosophy Group tended not to share or disclose information about their real-life identities. Although there were times during the meetings that they revealed some information, like what their occupations were in real-life, where they came from, etc., members of the Philosophy Group did not seem to be too concerned with the disclosure of real-life identities. Rather, they appeared to be comfortable discussing philosophical issues without first knowing such information. In contrast, members of the Education Group had made it one of the group's norms to make known their real-life identities, although this was not enforced as a hard rule, and members had a choice whether or not to disclose this information. The founder requested members to introduce themselves in the first meeting (although he made it clear that they need not give out their real-life identities if they preferred not to) and this gradually became a habitual activity at the beginning of each meeting. The founder, the core group members and the volunteers, also set an example by sharing with the members their real-life identities, including information such as what were their occupation and which institution/organisation / company were they affiliated to or working for. Over time, it was observed that the majority of the members were willing to (and in many cases, readily shared the information without being prompted) disclose their real-life identities.

Members had indicated that disclosure of identity in Second Life was important for greater credibility in the information promulgated. This was especially important in the Science and Education Group where credibility and accuracy of information were needed. Their members joined the group to discuss and seek solutions to problems they faced, or learn new information. For the Philosophy Group, members were there mainly for social reasons and the topics of discussion were often subjective in

nature. Under this scenario, knowing the true identity of the person became less important.

Efforts to implement identity disclosure were also different between the Science and Education Group. On one hand, the Science Group controlled identity disclosure through a single gateway - via Janice who would interview the potential member before letting him, her join the group. On the other hand, the Education Group had a non-obligatory practice to disclose one's identity and depended on trust and self-initiative of members to do so. In the former case, some members had expressed their dissatisfaction but for the latter, most members were willing to disclose their real life identity.

7.1.2. SOCIAL AND TASK ORIENTATION OF THE GROUP

As the groups developed, they showed significant differences in terms of task and social orientation. Task orientation refers to the objectives that the group had defined and how they go about fulfilling them. Although not meant to be formal learning groups, the three groups studied were observed to be concentrating more on task-based activities, rather than on socio-emotional activities. For each of the group, organising activities in which members could engage in discussion and learn in the process appeared to be their main focus. On the contrary, social orientation relates more to the relationship between members of the group. It also concerns the building of norms and practices as the group developed over time.

Task Orientation (Education Group)

The Education Group was observed to have a clearly defined task orientation. The main objective of the group was to share information relating to educational use of virtual worlds. This was achieved through presentations by invited speakers and organising discussion forums. For the presentations, speakers were mainly academics who have published articles related to Second Life. The Education Group also invited people from Linden Labs and other virtual platforms to update its members on the latest policies and development. For the discussion forums, they were mainly held in alternate sequence from the presentations and provided

opportunities for members to gather and share experiences or exchange information on topics related to education in virtual world. The broad objectives and activities of the group were found to be consistent and focused. This conclusion was deduced from the following observations:

Firstly, from the point of inception, the Education Group had been consistent and unequivocal about its vision. It sought to form an online group for people who were interested in the progress and development of virtual worlds for education, and made that clear in the group's objectives and aims. By doing so, the Education group indirectly defined its membership boundary, albeit in an implicit manner. However, it was because of this that the group was able to attract like-minded people and saw its membership grow over the years. With a consistent objective, most of the members in the Education Group were also able to share a similar vision and goals.

Secondly, events held by the Education Group were focussed on subjects related to education in virtual worlds. Examples of such topics included i) the tools that could be used for teaching in virtual worlds, ii) how does one learn better in immersive environment, and iii) sharing best practices for teaching in Second Life. Furthermore, the formats of the events were fixed, either in the form of presentations or discussion. By demonstrating consistency in the subjects to be discussed and the format of delivery, members became familiar with what to expect from the Education Group and could better align themselves to these activities so that they could fully benefit from it. For example, members could prepare questions prior to a presentation or identify problems they would like to bring up before a discussion.

Task Orientation (Science Group)

The Science Group first started as a meeting place where people of similar interests could gather and collaborate. However, this objective was expanded to include a new vision of providing free science education globally. In addition, the activities organised by the Science Group were more varied, including field trips, discussion forums, seminars, small group collaborative projects, formal classes and administrative meetings. The subject matter behind each of the events was also

broad and included a wide range of STEM subjects, ranging from astronomy, genetics, archaeology, particle physics, computing, agriculture, climate change and statistics. The objectives and activities of the group were found to be transitory and broad-based. This conclusion was deduced from the following observations:

Firstly, the initial objective of the Science Group was straightforward. When the Science Group was first founded in 2008, the main aim was to bring together a group of STEM professionals so that they could gather to discuss and share topics of interest or to engage in collaborative projects. Members, who joined the group at that time, did so primarily for this reason. However, as the group developed, it was observed that less emphasis was being placed on collaborative projects, and more efforts were being channelled into developing free structured STEM classes for science enthusiasts in Second Life. This new vision had cultivated another group of members within the Science Group. The transition in mission and vision of the group's was observed to have caused conflicts and dissonances between members and amongst the leadership.

Secondly, the subjects covered by the Science Group were diverse and covered broad themes. This was the original intention of the group because Janice (the group founder) thought that such cross-fertilization of ideas would give rise to synergies. However, a potential drawback was that such an approach might make it difficult for some of the members to sustain their interests, especially if the topics discussed were difficult to understand. To compensate for this, the Science Group had a myriad of activities, including field trips of archaeology sites and small group collaborative projects. Nonetheless, because of a wider spectrum of subjects covered in the activities of the Science Group, members might not be able to delve as deep into the subject matter as those in the Education Group.

Task Orientation (Philosophy Group)

Finally, the Philosophy Group covered a broad array of topics under the overarching theme of philosophy, which made it similar to the Science Group. However, like the Education Group, it had kept a consistent vision of serving as a platform for

discussing topics related to philosophy. Moreover, the Philosophy Group only had one main format for its activity, which was an informal class comprising 15 minutes of lecture, followed by 30 minutes of discussion. The objectives and activities of the group were found to be consistent but broad-based. On one hand, the consistent vision of the Philosophy Group had help built up a core group of regular members. These members were dedicated to participating in the group's activity and shared the same vision and interest in discussing philosophy. On the other hand, the topics that were discussed covered vastly different areas of philosophical concepts like consciousness, ethics, science and the supernatural and teachings of different philosophers. The same problems faced by the Science group, in terms of sustaining interest and understanding the discussion that transpired, were also apparent in the Philosophy Group. From the chat logs, some of the members confessed that they had problems understanding the content of the discussion.

Socio-emotional Orientation (Education Group)

As observed from the findings, members in the Education Group had strong bonds and shared common values. The bonds were even stronger for the core group of regular members, which numbered about 12 people. They had even arranged to meet in real life, especially during academic conferences – an apt opportunity since most of them were academics or were in the education related industries.

The Education Group was also active in building up a group identity. It had commissioned a group logo and changed its name to better differentiate itself from other groups in Second Life. Finally, the Education Group was observed to have successfully established group norms and practices. For example, the group made it a practice for members to disclose their identity. Though this was not enforced, members were seen volunteering to make their real life identity known to others. This was surprising because it was counter to the fundamental characteristic of the virtual world, which was the element of anonymity.

Socio-emotional Orientation (Science Group)

The Science Group also tried to nurture a collegial spirit amongst its members, especially those that were new to the group. Janice understood the importance of having a casual, close knit working relationship between members and had made the effort to reduce the formality of meetings. This is apparent if one compares the style of language used by Janice when the group first started, to that a year or two later. In terms of interaction beyond Second Life, Janice and a few core members had met outside Second Life, but that was in order to prepare for the group's effort in securing external funding from a research foundation in the US. Finally, Janice had tried to institute group norms and practices for managing members' behaviour during meetings. However, these were not strictly enforced. An exception was the need to disclose one's identity before joining the group. Unlike the Education Group, some of the members had reservations with full disclosure of their real life identity. This could be due to two reasons. The first was a lower level of trust and friendship between the members – it was observed that members in the Education Group had a stronger bond than those in the Science Group. The second was the way the norm was enforced. While the Education Group made disclosure entirely voluntary, the Science Group supervised the members' identity through Janice, the group leader. Enforcement affects freedom of expression, which may sometimes not be the best way to achieve a desired outcome, especially in knowledge driven groups.

Socio-emotional Orientation (Philosophy Group)

The Philosophy Group had also placed much emphasis on building good relationships amongst members. This was somewhat easier because the size of the group was much smaller. The founder of the group, Malcolm, initiated most of the efforts. He welcomed new members and made efforts to find out whether they were able to follow the discussions. One interesting aspect of the Philosophy Group was that they preferred to remain anonymous, staying under the guise of their avatar and refrained to communicate using voice, let alone meeting outside of Second Life. The bonds amongst members therefore appeared difficult to progress beyond the level of acquaintance. The Philosophy Group was also strict to enforce norms and

practices. Malcolm was the group's whip who would remind those who had transgressed the rules of the group. This was effective in ensuring compliance but the relationship between Malcolm and the group members appeared to be like that of instructor / student, rather than colleagues, or members of equal standing.

7.1.3. GROUP GOVERNANCE

The three groups had shown different styles of leadership and this was thought to have influenced the group at different stages of its development. During the initial stage of group development, the role of leader is most differentiated and important. Once the initial structures are in place, the group can then begin to define its structure even further. A major way that a group does this is by redefining the leader's role and reducing, to some extent, the responsibilities and commitment associated with the role. Redistribution of roles is essential to facilitate group structural development and productivity (Hollander & Offermann, 1990; Offermann & Scuderi, 2006). This redistribution of roles clears the way for other structures and roles to emerge. This is reflected most in the Education Groups and to a lesser extent, the Science Group.

For the Education Group, Zack took on the leadership when the group first started. Once the group had overcome its initial challenges of formation and become stabilised, Zack decided to relinquish his post and pass the leadership responsibilities to other members. As such, even if he could not attend any of the meetings, the group could still function normally. Furthermore, the Education Group tried to maintain a style of governance that was open and democratic, giving members a stake in all major decisions the group made and thus increasing their sense of belonging to the group.

For the Science Group, much of the decision making power of the Science Group resided initially in Janice and a few other members in the core group. It remained like this even after the group had reached its next stage of development to become a non-profit organisation that provided free STEM classes. At that point, Janice still wielded significant power and had used this power to expel members from the

group. The concentration of power had caused unease in several of the core members who thought that the group had reached a stage where there was a need to have better accountability in the leadership. From Janice's perspective, she felt that her authority was challenged by a few core members and was uncomfortable about this change in the group that she had founded. In my interview with her in the later part of 2011, Janice decided that forming a non-profit organisation was not the direction the group should take. However, she failed to convince the core group members of this decision and finally decided to purge them from the group. The disagreement in leadership structure and direction which the group should progress eventually caused the Science Group to splinter into two. The first was still headed by Janice and ran like the previous Science Group before it attained the status of a non-profit organisation. The second group functioned with the same objectives as the first, but ran like a not-for-profit organisation, and was led by a core group of members.

For the Philosophy Group, most of the power also lay with Malcolm. However, the difference between him and Janice was that besides decision-making, coordination, Malcolm also led the discussion sessions and was the provider of information. This had increased their dependency on Malcolm. Janice, on the contrary, was involved only in the coordination of the group's activities and was not a STEM expert. Members who had differences with Malcolm left the group after a few sessions. Those who stayed behind were satisfied to have him leading the group. The Philosophy Group remained stable, with no significant increase in size or change in objectives, throughout the course of my study.

Leadership and the five bases of power

French and Raven (1959) outlined five bases for power: 1) reward power – the ability to deliver positive rewards or negative punishments to others; 2) coercive power – the capacity to punish individuals or the group for non-compliance; 3) legitimate power – when others believe that one has the right to expect compliance, i.e. the main authority lies with certain individual(s); 4) referent power – when members identify with, feel attracted to, and respect the leader, he or she is said to have

referent power, otherwise known as charisma; and 5) expert power – if members feel that a person has superior abilities or skills, the individual is said to have expert power. As reflected in the findings, the founder of the Philosophy Group appeared to have the first three types of power, given that he could reward, punish and expect members to comply. Some members I interviewed felt that he was a charismatic and dedicated leader, but others begged to differ, claiming that they found it difficult to challenge his ideas. He was also the most knowledgeable person in the group, thus giving him expert power.

The founder of the Education Group seemed to have legitimate power, referent power and expert power. It was frequently observed in the group discussions and meetings that members of the groups looked up to him (referent power), and found him to be a knowledgeable leader (expert power). He was also the founder of the group, thus giving legitimacy in leadership (legitimate power).

As for the founder of the Science Group, Janice was not a domain expert in STEM-related subjects. Her ability, as the members observed, lay in her leadership, management and organisation skills. Like the founder of the Education Group, members of the Science Group also found her to be a charismatic and charming leader. She had the power to coerce, reward. In short, she had all the bases of power except expert power. This finding is interesting because even though Zack (Education Group) had the least number of bases of power, he was able to lead the group well and in many respects, better than the Science and Philosophy Group. Thus, having more, if not all of the bases of power may not necessarily indicate successful development of the group.

Leadership and Group Interaction

Duemer *et al.* (2002) observe that mentors who acted as authority figures were detrimental to interactive behaviours such as exchanging and debating ideas, or sharing interpersonal information (p. 6). It was observed that the Philosophy Group in particular, was characterized by the presence of Malcolm as the authority figure. The founder of the group acted as the instructor as well as the moderator, i.e. he

was the only authority figure in the group who posed questions, made judgments about the responses, and moderated the discussions. At times, Malcolm did not summarise or integrate the points that were brought up by the members or do a closure for the discussion. As such, it may be likely that the members did not leave the session with a clear understanding of whether the objective of the discussion had been met. Furthermore, members of the Philosophy Group were observed to have difficulty challenging Malcolm's authority, or develop their thoughts and ideas during the discussion. There were times when some members tried to do so, but ran into disagreement with Malcolm (although they were not expelled from the sessions or the group).

It was observed that the permissive and democratic or non-permissive and authoritarian type of governance could bring about a different group climate. As the findings suggest, centralised leadership appears to, on one hand, facilitate organisational development in groups, but inhibit the group from addressing group issues and arriving at a consensus. Centralised leadership may be helpful when a group is first formed, but as the group matures or reaches a point of development in which more autonomy can be distributed to its members, it may actually impede group development. This was evident in the Science Group (which splintered) and Philosophy Group (which remained stagnant). Decentralised leadership is less time efficient and slows organisational development. However, it aids in addressing and resolving group differences and other related issues, increasing member satisfaction and increasing group cohesion, just like what was observed in the Education Group.

In summary, groups' sustainability counts heavily on the continuous participation of their members (Wasko, Faraj & Teigland, 2004). However, as the findings suggested, a group's development was also heavily reliant on leadership and governance. As suggested in the literature and is evident in the findings, leaders play a key role in enabling group's effectiveness (see, for example, Hollander & Offermann, 1990; Lakomski, 2001). The findings also support literature that suggests different forms of leadership styles and governance are needed for different stages of the group's development (Forsyth, 2010). When the group first started, it may be better to

adopt a more centralised way of governance. However, as the group matured, a more decentralised leadership may promote interaction and resolve differences. Furthermore, it was also observed from the literature that if a group is successful in meeting its objectives (Michener & Burt, 1975), the members feel a sense of belonging to the group, and the leader is trusted (Mayer, Davis & Schoorman, 1995), the group is more likely to tolerate the centralised management system. This was observed in the Philosophy Group which had remained small but stable and functional, for the group had generally trusted in Malcolm's ability and knowledge in delivering the lectures and moderating the discussions. For the case of the Science Group, the core group members had major leadership differences with Janice, which eventually resulted in the splintering of the group. It was thought that members of the Science Group probably had not had the same level of trust in Janice, as members of the Philosophy Group had on Malcolm, because she was not an STEM expert.

7.1.4. USE OF TECHNOLOGY AND RELATIONSHIP WITH EXTERNAL ORGANISATION

The Education Group readily embraced technology as it developed. It made use of social networking technologies like Flickr, Twitter and Facebook to keep members in contact with the group's events; gave presentations and engaged in discussion using both voice and/or text for more effective communication; experimented with other virtual platforms like Kitley and OpenSimulator so that members could compare them with Second Life; used online applications like Google Moderator to better manage discussions and presentations. It was also active in engaging external parties within and outside of Second Life. For example, it had organised meetings with representatives from Linden Lab to discuss the impending withdrawal of educational discount granted to the Education Group. This had enabled members to understand the policy changes and respond quickly and cohesively, by making an organised migration to another virtual platform. More importantly, having external links would help make the Education Group more versatile and accessible to external resources.

Like the Education Group, the Science Group was also a keen user of technology. It attempted to improve interaction amongst members using social networking sites like Facebook and Twitter. However, it was observed that not all members of the group were subscribed to these social network sites. Email, the group website and instant messages sent in Second Life still remained the main modes of communication for the group members. The Science Group also made full use of the immersive characteristics of Second Life by holding virtual field trips that took members to a virtual Stonehenge or a virtual Ethiopian archaeology sites. The meeting rooms were also specially customised for different purposes like presentation, small group discussion, casual meetings etc. Realistic settings gave members the sense of immersion and were visually stimulating. Voice and text were also used during these activities to enhance communication. Janice understood the importance of engaging external parties and mentioned during one of the discussions that “Sciences need to stick together”, referring the to various science groups in Second Life. However, in practice, it was observed that the Science Group was not as active in engaging with external parties within or outside Second Life as the Education Group. When faced with the same issue of discount withdrawal, the Science Group responded by having internal meetings and decided to maintain status quo. This was in contrast to the Education’s Group more proactive approach of engaging the people from Linden Lab. The Science Group did, however, try to extend its reach by applying for an external grant and sought the status of a not-for-profit organisation.

Finally, the Philosophy Group was found to be unenthusiastic about using technology for its events. It had a simple venue for its informal online classes and used mainly notecards, and later the group’s blog, to relay information. Moreover, only text was used in its activity. There was also no interaction between the Philosophy Group and external groups. In fact, it reacted with apathy when education discount was removed. The Philosophy Group was satisfied with the status quo and had remained so at the end of the study.

7.1.5. SUMMARY

The findings suggest that out of the three groups, the Education Group seemed to be the strongest and was developing into a community resembling that of a community of practice. Wenger (1998) maintains that in order for practice to generate coherence within a CoP, the essential characteristics of mutual engagement, shared repertoire, and joint enterprise must be present as reflected in the findings. All of these three characteristics had been observed in the Education Group. In terms of its task orientation, it had a consistent vision and focussed objectives (shared repertoire and joint enterprise). Members were also observed to have good working relationship and strong bonds (mutual engagement). Furthermore, the group had expanded healthily and comprised a diverse demography. The style of governance also had appropriately changed as the group developed and matured. Finally, the group was able to make use of technology and was active in engaging external groups and organisations.

On the contrary, the Science Group had modified its visions, as it developed, to include provision of free STEM courses. Some of the members in the Science Group might not have shared the same vision and this had caused some of them to leave the group. Furthermore, the topics that were discussed in the group were broad, which might result in limited engagement amongst members, especially those whose domain areas were vastly different. Bonds between members of the Science Group were observed to be not as strong as the Education Group. More importantly, the centre of governance resided with Janice and this was one of the main reasons for the dissonances within the Science Group. Some of the core members felt that for the group to develop further, the governance structure had to change.

Finally, for the Philosophy Group, although the vision of the group had not changed, it was difficult to achieve mutual engagement amongst members because of its wide repertoire of topics. Moreover, the relationship with the group was predominantly between Malcolm and the members. Interaction amongst members appeared to be secondary. In terms of size, diversity, and trust amongst the members, the Philosophy group also appeared the weakest. The governance structure of the

Philosophy Group remained unchanged and this was not a problem for the group because it had not actively sought to develop further. The Philosophy Group was also not keen to engage external parties or explore the use of technology.

7.2. LEARNING IN INDIVIDUALS

I have previously proposed that one can use Rogoff's three planes of learning to analyse the different types whereby learning takes place as the groups developed. In this section, I will expound on each plane of analysis, starting with the individual. Under this framework, individual learning may be summarised into three aspects: 1) Individual learning through developing one's practice; 2) Individual learning through engaging in shared practices; and 3) Individual learning through becoming and belonging to the group.

7.2.1. INDIVIDUAL LEARNING THROUGH DEVELOPING ONE'S PRACTICE

Learning through development of one's practice involves having the opportunities to do, internalise and receive feedback from the practices. By providing opportunities for members to perform specific roles in the groups, members can "learn by doing" (Wenger, 1998). For example, members of the Science Group learned by fulfilling the role of student or instructor; members of the Education Group were trained to become moderator, transcribers and facilitator of meetings. Similar forms of learning by members of the Philosophy were rarer because most of the activities were organised solely by Malcolm, the group's founder. In addition, certain individuals in the group could benefit more than others if they had special roles to play or were doing special projects for the group. For example, Malcolm took it upon himself to be the teacher and moderator of every group meeting, while Alvin took the effort to compile an e-book for the group. Janice and Benjamin were core members of the Science Group who ran the day to day administration. Stan built the archaeological site and Helena and Levy built a virtual Stonehenge for the Science Group's field trips. Zack was the founder Education Group who started the group from scratch, but later relinquished the leadership role. Gina designed the logo of the Education Group by herself.

Finally, both the Education and Science Group were able to actively make use of technology in their activities. However to do that, the members would need to learn how to use the various technologies, which included social networking sites, communicate in voice, and navigating in other virtual worlds. Under Wenger's social theory of learning, this is related to action-oriented and experience-oriented learning processes, i.e. Wenger's concept of "learning as doing" and "learning as experiencing" appear to be the two predominant learning traits.

7.2.2. INDIVIDUAL LEARNING THROUGH ENGAGING IN SHARED PRACTICES

As we saw in the findings chapters, people joined groups in Second Life for various reasons. These include finding and connecting with people who share the same interests or work practices, socialising, sharing and exchanging information, etc. Such groups are often self-organising and fundamentally voluntary social aggregates, often revolving around certain topics of interest. They include at least some level of social interaction between a variety of communicators who can have both weak and strong ties with one another. Members of these groups should experience feelings of similarity and communality at least on some basic level. The group revolves around a shared symbolic reality, which emerges through the social interaction within the group and influences it in a reciprocal manner. As Balkin and Noveck (2006) observe, other than a sense of belonging in members, a shared purpose among members is what binds the group together. In this section, I'll discuss learning that is derived from having shared practices with other members. As opposed to individual practices, learning deriving from shared practices concerns the knowledge one gains from interaction with other members.

By expanding the various types of activities for group members such as field trips, small group discussions, presentations and formal STEM class, the Science Group helped create learning opportunities to engage members and catered to their different needs. For members who were seeking collaborative projects with others, the Science Group helped provided networking opportunities and resources that they might require. In creating structural classes related to the various areas of STEM,

the Science Group provided instructors, who were keen to share their expertise and knowledge, with a venue to do so. It also facilitated the running of classes that were free and accessible to Second Life users who were interested in attending STEM-related classes. The Education Group had a less varied repertoire of events. However it made up for the lack of quantity by having more focused presentations and discussions. Speakers in their events were mainly academics, practitioners of education or representatives from industries (e.g. Linden Labs). They were invited to participate in group discussions or give presentations. The topics discussed were usually focused on the use of virtual world for education. The group even had events outside of Second Life to let members experience what other virtual platforms were like. All these events helped members maintained interest, exchanged knowledge and made them want to participate in the group activities. Learning ensues as they share practices and experiences. Unlike the Science and Education Group, where members could externalise their internal cognitive processes through working on collaborative projects within or outside Second Life, the members of the Philosophy Group got to know each other mainly through their text chat. The group was also small and self-contained. These had limited the opportunities for them to engage in shared practices. Moreover, the activity of the Philosophy Group was in the form of an informal class, which was focused on the instructor – student interaction and less so on interaction amongst members. Shared practices were therefore observed between Malcolm and the members, but not as much between members themselves.

In many cases, engaging in shared practices (for example, working on building and designing projects and teaching or moderating the various sessions) allowed the externalisation of an individual's internal cognitive processes so that they could be made available to the other group members (Perry and Thomas, 1995). Besides contributing to the projects, members were also thus able to received feedback from other members that have seen or benefited from their efforts. Recognitions, comments or even dissatisfactions were observed to have been raised by members. Through interaction with others, they received feedback, exchanged expertise, skills and experiences. Indeed, in the Education Group, it was common to observe that

some of its members would build on ideas and suggestions that were discussed in the meetings and try them out on their individual projects, both in Second Life and in real life classrooms where they worked as practitioners. They were later seen to showcase their results to the group. Such learning is often iterative; learners may try out one idea, refine their design, and build upon what they have learned (Kolodner (Kolodner *et al.*, 1998). However, such extension of activities and practices beyond the Second Life environment was not so evident in the other two groups, probably because of the groups' more generic topics of interest and a lack of relevance to their real life activities.

Learning through shared practices can therefore be seen as acquisition of knowledge and experience when an individual engages in activities with other people. Through these engagements, he / she externalises his thoughts, receives feedbacks and internalises them. Generally, the more shared practices a group can offer to its members, the more prevalent learning through shared practices will be.

7.2.3. INDIVIDUAL LEARNING THROUGH BECOMING AND BELONGING TO THE GROUP

There are two main ways people can develop commitment to the groups — by becoming attached to the group as a whole or by becoming attached to individual members. The process by which new and old members can become attached to or detached from the group is complex. It appears from the literature that common identity theory and common bond theory could help explain how groups in online settings and social virtual worlds can recruit new members, retain old members, and successfully solicit contributions from them (Sassenberg, 2002; Ren, Kraut & Kiesler, 2007). Keeping to the focus of this chapter which is to examine learning in groups, these theories would not be discussed here. Instead I will illustrate the importance of becoming a group member and give examples of how that could allow learning to take place.

When a new member joins a group, he/she will bring with him/her new knowledge and experience that may result in changes to the group itself. Newcomers learn to become part of the group by picking up the norms and practices that characterised

the group. Old members in turn form new links with the new members and realign themselves with the group's identity that has been modified by the influx of new members. For example, in receiving a subgroup consisting of students and non-STEM practitioners, the more senior members of Science Group had to realign themselves with the group's new identity of providing classes to STEM novices. The main benefit of having new members is the interaction amongst an enlarged group of people. This would likely lead to more frequent exchanges of ideas and a wider spectrum of knowledge base to tap from. Stoerger (2010) observes that in the Second Life context, anyone can take up the role as a teacher or a learner. In such a context, it is possible that "everyone knows something, nobody knows everything, and what any one person knows can be tapped by the group as a whole" (Lévy, 2000, p. 39).

As the new member continues to participate in the groups' activity, he/she may eventually become a core member of the group. The movement from newcomer to a core member usually involves gaining multiple levels or degrees of knowledge and craft expertise (Lagache, 1993). It may take a few years to move from the periphery to the centre. A good example for this can be seen in the Education Group where leadership renewal was an active process and new leaders (e.g. moderators, event organisers and transcribers) were constantly being groomed to replace old ones. For the Science Group, the leadership transition was observed to be slower. Benjamin only took over the leadership when Janice was away and had to relinquish the responsibilities when Janice returned. In contrast, the Philosophy Group had shown no signs of leadership renewal at all. This point yielded some insights into the connection between learning and identity development. According to Wenger (1998) "Building an identity consists of negotiating the meanings of our experience of membership in social communities" (p. 145). A social trajectory of an individual member progressing from a newbie to a recognised member of the group, can be seen as a form of learning (Lagache, 1993; Courtenay, Merriam & Baumgartner, 2003). In this sense, learning and identity development are interrelated and interdependent.

Real and Second Life identity had been an interesting issue that is peculiar to virtual worlds. In the online world and particularly in social virtual worlds like Second Life, one's real identity is embodied in that of an avatar which may or may not be an extension of the real life identity. Conflict in disclosure is a case in point of how differences between individuals and the group can lead to strengthening or weakening of group's belonging. Groups strive to establish norms for members to follow (e.g. the norm of giving one's real life identity). Members in agreement to those changes stayed behind, while those who do not may choose to leave the group. Some would negotiate the terms and try to change the situation. It is through such interactions that one could strengthen (or weaken) one's group identity and interpersonal relationship with others. If they are successful, they become a more committed member of the group and develop a sense of belonging to the group.

7.3. MANIFESTATIONS OF LEARNING IN INTERPERSONAL RELATIONS

Rogoff (1995) observes that interpersonal learning is related to the mutual interaction of individuals and their counterparts. Understanding how learning occurs through such mutual interaction will require examination of how individuals manage their interactions and communication, and how they adjust such arrangements so that they align better with their activities. Interpersonal learning thus appeared to have been classified into two main aspects. The first is the cultivation of interpersonal skills like negotiation, conflict resolution and people management (i.e. adjustment of arrangement for each other and their own activities). Clearly, these are skills that require sustained interpersonal interactions and cannot be acquired via internal cognition. The second is the synergy deriving from collaboration and cooperative actions (i.e. activities which are managed collaboratively by individuals and their social partners). It is based on the principle that the whole is greater than the sum of its parts. In this section, I will give examples from the three groups that highlight the two areas of interpersonal learning.

It is prudent at this point to differentiate interpersonal learning from individual learning via shared practise. Interpersonal learning describes the synergistic aspects

of learning through sustained interpersonal interactions. From the findings, it appeared that learning could occur at two levels of emotional connections. To effectively negotiate, manage or achieve synergy, emotional connections amongst members need to be strong and sustained. On the contrary, learning via information exchange and normal social interaction need not be conditioned on the establishment of emotional bonds. The former is more difficult to achieve and is seen as interpersonal learning.

7.3.1. INTERPERSONAL LEARNING THROUGH MANAGING MEMBERS, NEGOTIATING AND RESOLVING CONFLICTS

Interpersonal learning is closely associated with forming connections between people and their environment. From the findings, I propose that interpersonal learning takes shape as members manage, negotiate and resolve tensions that arise out of the reciprocal relation between individuals or individuals with the group.

Management of the group requires the group leader and / or a few core members to form connections with the rest of the members. For the Science Group, Janice was the main person setting the direction and running the day to day operations. She was aided by a few core members. For the Education Group, Zack was initially active in managing the group, but gave up the leadership and running of the group to other members. He had also decentralised decision making by democratising the process. Malcolm of the Philosophy Group ran the events all by himself, with little help from the rest of the members. All the three leaders were charismatic and had gained the trust of their members. This could be seen by the numerous occasions of accolades given to them for their effort in building up the group. The leaders were also observed to have matured and improved in the ways they managed the group. From a formal way of conducting meetings, Janice had relaxed her style and improved her relationship with others. She had also delegated some of the leadership tasks to other members as her level of trust in them increased. For the Education Group, Zack saw a need to hand over his leadership because he was worried about the Education group being *“crushed by ... its own bureaucratic weight”*. He did this in a measured way, ensuring continuity and minimal disruption. Malcolm was also

seemed to have shown patience to the Philosophy Group members when they broke the “class rule” and made had effort to accommodate alternative views. All these are evidence of learning amongst the leaders as they managed their respective groups. In all the three groups, demands on interpersonal skills were most pressing from the leaders but they were also the ones who were seen to have learned the most.

There are also opportunities for other members to learn at an interpersonal level. Members learn as they encounter tension or difficulties, which may arise from changes within the group. During these processes, they form networks and relationships with each other and coordinate efforts towards a collective goal. If they are successful, stronger bonds are fostered and their sense of belonging in the group may increase. When conflicts cannot be easily resolved, the process of adaptation begins. Core and peripheral members of the group attempt to alter one another in ways that will restore their compatibility. Successful adaption helps to preserve group homogeneity, but if it fails, then peripheral members may leave the group. A good example to this was the decision by the Science Group to expand its members to include students. This had caused dissatisfaction amongst the older members. They felt that the decision contravened the original spirit of the group. Levy, who was one of the unsatisfied core members, subsequently left the group. Another more acute case also happened in the Science Group. Janice had a difference in opinion with the other core members on the style of her leadership. Eventually, the dissidents were expelled and the group splintered into two. Finally, members who were dissatisfied with Malcolm’s style of leadership also left the Philosophy Group after only a few sessions.

Negotiation and resolution of tension thus require understanding the parties, their values and interests. Members have to learn to articulate their position and try to convince others. If a favourable decision or compromise is reached, shared beliefs and values may be cultivated and their sense of belonging to the group increased. If not, they will attempt to adapt to the new circumstances or leave the group. Based on this model, having tension could be seen as conducive for interpersonal learning. Barab, Barnet and Squire (2002) have also suggested that examining the ways in

which tensions and discordances are being managed is a useful way of identifying and examining the factors that fuel change and innovation in the group. However, conflict management would have to be done carefully. Otherwise, it would be detrimental to the group, as seen in the case of the Science Group.

Along the same lines, having a dominant leadership may discourage negotiation and thus interpersonal learning. In this respect the Philosophy Group was observed to be a case in point. Malcolm had a strong leadership style. This was thought to be the reason why there were few examples of negotiation happening between him and the group members, or amongst the group members themselves. On the contrary, the Education Group, through its democratic ways of decision-making, had appeared better in encouraging interpersonal learning.

7.3.2. INTERPERSONAL LEARNING THROUGH COLLABORATION

Another aspect of interpersonal learning is the collective knowledge generated from collaboration. Ideas and opinions from one person can spark off new ideas from another. With a cascading effect, the final outcome from a group's collaboration could often be better than the effort of the isolated individuals. Everyone in the group will then be able to learn from the ideas and knowledge generated. There are many examples in all three groups that highlight such synergy. The virtual Stonehenge was a collaborative effort between Levy and Helena, which they admitted would not have been possible if they were to do it individually. The provision of free STEM classes by the Science Group was a collective effort by the volunteer instructors and the organisers. The new logo for the Education Group was Gina's effort but based on the discourses from the members. The new name of the Education Group was also a collective effort. Finally, the e-book compiled by Alvin of the Philosophy Group would not have been realised if not for the collective effort of all its members. Knowledge generation from deep interpersonal interaction can lead to interpersonal learning. However, it may also be stymied by the presence of a dominant voice, which can potentially dictate the discussion. The Philosophy Group appeared to have such a problem. There was more than one occasion of members complaining of Malcolm's poor reception of alternative views. Incidentally, the

Philosophy group is the smallest in size and its knowledge output observed to be lowest (based on the qualitative assessment of the information content of the discussion).

7.4. MANIFESTATIONS OF LEARNING IN GROUPS

Following Huber (1991), I argue that any change in the group's range of potential behaviour, whether or not it is manifested in externally observable ways, constitutes evidence of group learning. Sessa and London (2006) suggest that at the group level, learning is evident in the ways it transforms and restructures itself in response to changing conditions and the ways communication and interaction between its members is changing. In other words, a group can be regarded as an active entity that is able to accumulate knowledge and have shown changes in its practices. Restructuring of norms, adopting new technologies, gaining in experiences and establishment of links with external agents can also be seen as forms of group learning. From the analysis of the findings, group learning can be classified into several forms: 1) modification of norms and shared values; 2) creation of new links, knowledge and adoption of new technologies, 3) increase in responsiveness to conflicts and adaptability to changes, and 4) increase in cohesiveness.

7.4.1. GROUP LEARNING THROUGH MODIFICATION OF NORMS AND SHARED VALUES

Forsyth (2010) observes that "roles, norms, and other structural aspects of groups, although unseen and often unnoticed, lie at the heart of their most dynamic process" (p. 9). Changes in norms and shared values are therefore proxies of a group's development and perhaps clues of the how group learning occurred. Changes occur for a reason. It is reasonable to assume that changes occur to either aid group expansion or enhance group's processes. In establishing and refining its norms, the group defines the way which its members should behave, thus smoothening internal processes. This, in turn, also contributes to the evolution of the group's identity. In modifying the shared beliefs and values, the group changes its focus and objectives to better align itself for further expansion and development.

As previously discussed, all the three groups tried to establish norms but had differed in their approach. The Education Group was able to create a culture of trust and integrity. For example, disclosure of identity was entirely voluntary yet most members were able to comply. On the other end of the spectrum, the Philosophy Group created an atmosphere of supervision, with the moderator doing the policing and making sure that the norms were being adhered to. This allowed an efficient but controlled way of running the group's activity. The Science Group did not enforce its norms rigidly, except for the disclosure of identity. Disclosure was necessary to ensure credibility of information. However, the culture of trust was thought to be weaker than the Education Group. Some members still harboured dissatisfaction about needing to disclose their real life identity. Furthermore, even with the scrutiny, there had been a case where a presenter provided severely erroneous information during one of the group's presentation. The three groups used three different trajectories to implement their norms. Each of these trajectories can be viewed as a learning process. As the group developed, it learned by receiving feedback and fine-tuning its process. The final outcome is a set of norms and practices that defined the character of the group.

Both the Education Group and Philosophy had their respective set of shared beliefs and visions that had not changed since their inception. The Education Group wanted to be a platform for education practitioners to interact and exchange information. The Philosophy Group wanted to be an informal class for members to discuss topics in philosophy. In comparison, the Science Group made a change in its objectives. It wanted to position itself as an STEM information provider on top of its original role as a facilitator for collaboration. The change was not an easy one because it created tension and conflicts amongst its members. There was also an influx of new members who were non STEM practitioners. As the group adjusted itself to resolve the tension and managed the new influx of members, it developed new experiences and processes. This may be viewed as a part of group learning.

7.4.2. GROUP LEARNING THROUGH CREATION OF NEW CONNECTIONS, KNOWLEDGE AND ADOPTION OF NEW TECHNOLOGIES

The Science and Education Group embraced technology and had developed a bank of IT tools for different purposes. For example, the Science Group deliberately designed different virtual spaces to suit different types of functions. Discussion room was created informally to encourage interaction, while the presentation hall was designed to replicate a real life setting to give the audience a better sense of immersion. Field trips to virtual replica of monuments and historical sites were also arranged. It is apparent that the Science Group had used technology to exploit the immersive nature of Second Life. The Education Group used technology in another way. It held meetings in other virtual platforms and used IT tools like Google Moderator or expanding round table to improve the quality of its meetings. Both groups also established links and relationships with external parties. The Education group, in particular, made contacts with representatives from Linden Labs and other virtual worlds to allow members access to the latest directions and policies of the different virtual worlds. It also had contacts with other Education Groups in SL. The Science Group was keen to transform itself into a non-profit organisation and had contacted an external funding agency to support this endeavours. In contrast, the Philosophy Group was not active in engaging new technologies and had appeared self-contained, with no attempts to establish links with external groups. It was also apathetic to Linden Lab's decision to remove subsidies from educational groups in Second Life.

All these improvements and contacts did not appear overnight. They were added incrementally and tested for their effectiveness. If a technology was not effective, or a link to an external agency not useful, it would probably be dropped. Cumulation of technological know-how and strengthening of relationship with external agencies were part of the groups' attempts to enhance members' experience and connectivity. The groups experimented and determined the effective of these facilities, which can be seen as another aspect of group learning.

Finally, all the three groups had had their chat logs archived for reference. These were useful information and had been regularly used by members. Dexter of the Education Group made the comment that “.... it’s worth its weight in gold 😊”. Members of the Philosophy had referred to the chat logs when they could not follow the pace of the discussion. Gina from the Education Group had used the discourse to inspire her design of the Education Group’s logo. Members of the Science and Philosophy Groups were also able to revise, make comments to or go through some of the discussion chat logs after they were posted onto the groups’ websites. The archived resources were knowledge and information that the groups had generated and accumulated. If a group is an active entity, then these forms of information could be seen as the knowledge it had learnt.

7.4.3. GROUP LEARNING THROUGH INCREASE IN RESPONSIVENESS TO CONFLICT AND ADAPTABILITY TO CHANGES

In the findings chapter of the Science Group (Chapter 4), we saw that structural changes were taking place in the group as the group broadened its aims to develop from a discussion group to one that offered STEM classes and seminars. When the group was first established, the group was kept small and membership was closed. The majority of members were domain experts in the areas of STEM and the discussion meetings revolved around issues related to their research and topics that interest them. Yet, as the group began its plans to establish itself as a learning organisation, offering free STEM-related classes in Second Life, the decision created tensions within the group, and these tensions gave rise to further structural changes. As the group managed these changes, it had to realign itself with the new direction. Its membership increased and the group’s demography took a different inclination. In that instance, the Science Group was able to contain the conflict and adapt to changes that came with it, albeit dissatisfaction still lingered amongst some of the older members. Group learning was observed to have occurred as members worked together to address, negotiate and manage the tension. This is different from the learning at the interpersonal level. While interpersonal learning talks about how individual learns through managing tensions and relationships with other members of the group, group learning focuses on the overall resilience of the group in

resolving conflicts. Such resilience is an accumulation of experiences gained by the group, as an entity, in resolving many episodes of conflicts. Two other disruptive episodes were also documented in the Science Group. The first was when the host of the group's island decided to withdraw their operations from Second Life in September 2009. The second was when Linden Lab announced in October 2010 that they were going to remove all subsidies for the educational institutions for land ownership from January 2011. The Science Group was able to handle both conflicts well and was seen to have emerged stronger and matured from those experiences. However, when the Science Group decided to apply for a grant to become a non-profit organisation, disagreement started to appear in the leadership. The incident escalated and finally resulted in the expulsion of a group of core members. This eventually led to the splintering of the group into two. The example demonstrated that even though conflicts are essential for groups to learn and grow, they must be within the capacity of the group to adapt. This example illustrates the danger that if the group is unable to manage the change, it may be detrimental to the progression of the group.

The Education Group also had its share of conflicts and challenges. When Zack decided to retire from his role as the group leader, and the core committee dissolved, most members were taken aback. The group was however able to adapt to the change and evolved a more fluid leadership, with volunteers stepping up to take over the vacated leadership. Furthermore, Zack and the other core members stayed behind to train and mentor the people who volunteered to take over the reins. Decision-making was also decentralised and the onus placed on the members in a democratic way. Another episode of conflict occurred when Linden Lab decided to withdraw the subsidy. In response to that, the Education Group took a bold move to migrate to another virtual platform. This was challenging given the difficulty in getting group consensus and the amount of logistic and training involved in the process. The move was nonetheless successful and most members followed through. Both these episodes showed the effective way of the Education Group in responding to conflicts and adapting to changes. The disruptions forced the members to rally together and they learned how to overcome them. More importantly, the

accumulation of knowledge and experience of the group would put it in a better stead to overcome future challenges that may come its way. Unlike the Science Group, which splintered somewhat because of a change in direction or focus, the Education Group expanded because it was able to manage the conflict and adapt to the changes.

On the contrary, the Philosophy Group did not have major conflicts to contend with. Most were disagreements between Malcolm with unsatisfied members. These members were quick to leave the group. The capacity of the group to handle conflicts was not tested and the opportunities for it to learn from the challenges not present.

7.4.4. GROUP LEARNING THROUGH INCREASE IN COHESIVENESS

Frank (1957) defines cohesion as “the members’ sense of belonging to a group or the attraction of a group for its members” (p. 54). Group cohesiveness was formally defined by Festinger, Schachter and Back (1950) as “the total field of forces which act upon a member to remain in the group” (p. 164). Forces include the attractiveness of the group and its members, and the extent which the group mediates goals that are important to its members. Carron (1982) defines group cohesion as “a dynamic process which is reflected in its tendency to form a group to stick together and remain united in its pursuit of its goals and objectives” (p. 124).

Lott and Lott (1965) observe that although there exist many factors contributing to group cohesiveness, scholars and researchers tend to focus only on inter-members attraction. Goodman, Ravlin and Schminke (1987) define group cohesion in terms of task commitment. However defining cohesion in such a way neglects members’ commitment to the group. Uni-dimensional definitions of group cohesion like these are thought to be insufficient and excluded other important parameters affecting group cohesiveness (see, for example, Chang & Bordia, 2001)). As such, multi-dimensional models are proposed instead. Carron (1982), for instance, proposed a framework for studying group cohesion based on two dimensions: the task-social

dimension and the individual-group dimension. In this section, I will attempt to expand on them vis-à-vis group learning.

At the most basic level, all groups serve two main needs for members: to attain the defining goal or central task of the group (i.e., the purpose the group was formed to achieve), and the fulfilment of social needs for the members. Both of these needs are observed to be important for the continued maintenance of the group. If the purpose for the group ceases to exist, so too will the group, unless or until another goal can be established. Meeting social needs is also important for the group to remain intact, for if social needs are not being met, members will not be motivated to remain in the group (Sloep, 2009). These two needs are thus the motivation for one to ensure task cohesion and social cohesion within the group. Task cohesion and social cohesion are in turn related to the task orientation and socio-emotional orientation of the groups. I have already explained these points in the earlier section. The Education Group appeared to have achieved strong cohesion in both respects. Trust among its members was high and its objectives focussed and consistent. On the contrary, both the Science Group and Philosophy Group were observed to be less cohesive. For the Philosophy Group, trust was primarily between Malcolm (the founder) and the members. He was the key person that held the group together. The small size also helped maintain stability of the group. The Science Group was in a more precarious situation because of its relative large size and dissatisfaction, amongst some members, with Janice's leadership and her decision to change the group's focus. Moreover, Janice did not have core competence in STEM, and this had made it difficult for her to gain the full trust of the members.

To achieve social and task cohesion, it is necessary to balance both the socio-emotional and task needs of the groups as originally established in traditional or face-to-face groups (Bales, 1950). As McKenna and Green (2002) observe, "If group salience is weak and the group fails to meet the task and social needs of the majority of its members, it will dissolve. "When it is successful at meeting those needs, it will thrive" (p. 125). This is to say that for a group to develop and function well, it has to pay attention to maintaining a suitable balance between task-based and socio-

emotional needs. The weightage of either the task-based or socio-emotional needs may change according to the developmental stage that the group is in. Thus, a group that is able to fine-tune and maintain the task and social needs of its members with accordance to its objectives, external influences, and the other attributes at play at that point of time can be said to be an adaptive and resilient group.

If the level of task and social cohesion is a measure of the resilience of the group, then the Education Group could be regarded as the most resilient. Like knowledge and experience, level of resilience cannot be built up overnight. It is a cumulative process that had to be practiced, reviewed and learnt. This is much like an individual learning to better himself, except now that the entity is a group instead of individuals. As such, I suggest that the process of building task and social cohesion can be regarded as a form of group learning.

7.5. JUXTAPOSING GROUP DEVELOPMENT, LEARNING, AND SECOND LIFE

As a group develops, its salient attributes change. From the study, I have identified five attributes that are related to learning, as observed in groups that reside in Second Life. They are:

1. Membership – This refers changes in the membership policy, the membership size, the demography and their association with real life identity.
2. Social and Task Orientation of the Group – This refers to the objectives of the group as well as the level of trust and interaction amongst the members.
3. Group Governance – This refers to the type of leadership that oversees the group.
4. Technology – This refers to the employment and receptivity of the group towards technology
5. External Relationships – This refers to the extent in which the group forms links with external groups.

By tracking the development of the group using these five attributes, it is possible to elicit evidence of learning. To understand the abstract concept of learning, I have chosen to use Rogoff's (1995; 1998) three planes of learning. They are:

1. Individual learning – This refers to knowledge obtained through one's action, through interacting with others and through belonging to a group.
2. Interpersonal learning – This refers to knowledge obtained through managing members, negotiating and resolving conflicts and collaborative actions.
3. Group learning – This type of learning is manifested as group reaching a state or acquiring ability. For example, it may refer to the process of arriving at a set of shared values, norms or level of cohesiveness, the group's ability to use technology, the group's connections with external parties and the group's ability to resolve tension and respond to conflicts.

To understand the relationship between learning and group development, I propose a framework highlighting their structural relationship. At the basic level, a group serves as a scaffold for all its activities to occur. It provides like-minded individuals with the infrastructure to congregate, to practice, to interact, to seek feedback and to immerse oneself as an active member of the group. When members engage in these activities, they begin to learn as individuals. The next level of learning becomes dominant once members become assimilated into the group and form strong emotional connections with each other. They would either collaborate in knowledge construction (encouraging consonance) or resolve conflicts through negotiating tension (mitigating dissonance). These are defining traits of interpersonal learning. When individuals are able to achieve both personal and interpersonal learning, the group is able to grow; knowledge can be accumulated; links with external agencies forged; and group norms and cohesion become stronger. As these happen, the group can be seen to have progressed and learned as an entity. Learning on different planes can simultaneously affect the attributes of the group and result in its development. Group development in turns defines a new set of conditions that support learning at different planes. This forms a tightly coupled feedback

relationship relating learning to group development. Figure 7.1 gives a graphical representation of this model.

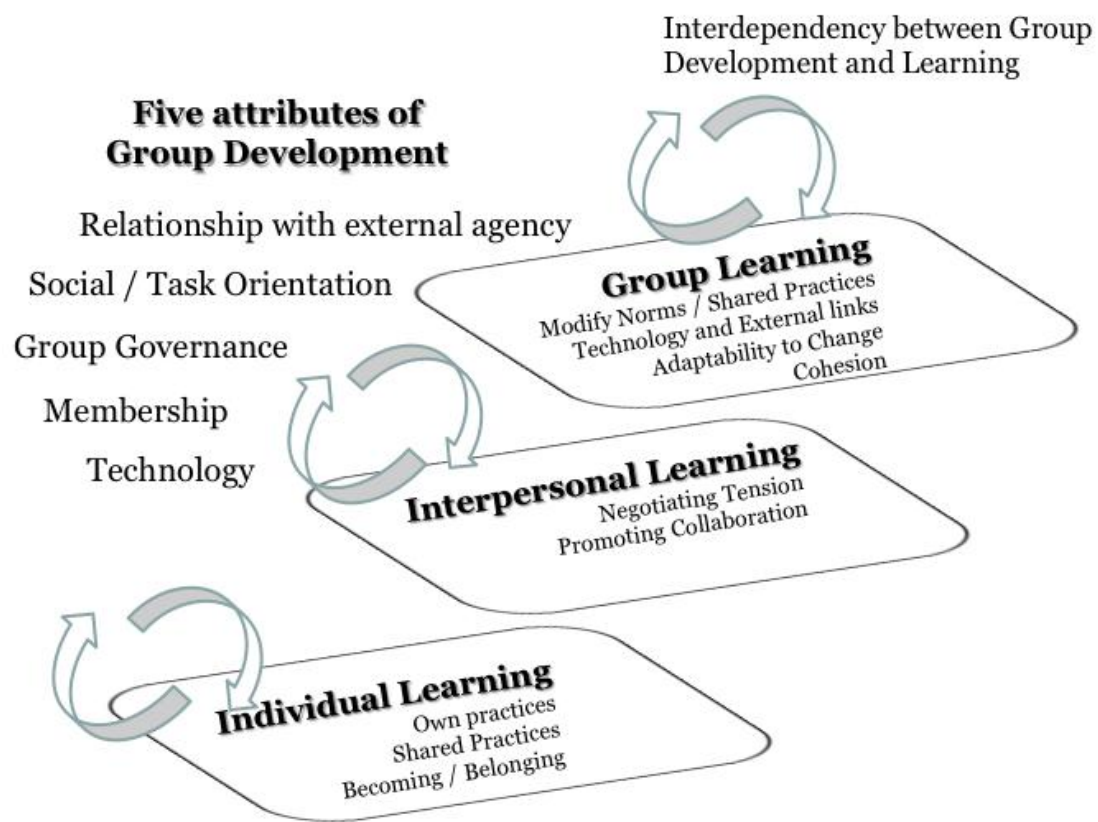


FIGURE 7-1 - PROPOSED MODEL RELATING GROUP DEVELOPMENT TO LEARNING

As depicted in Figure 7.1, group development is observed by changes in five main group attributes. Learning can be described as occurring along three planes of analysis. Each plane of learning influences group development, which in turn, feeds back to change the conditions for learning. This, however, does not imply a linear or chronological order of occurrence across the three planes of learning. Furthermore, although shown as discrete planes, it must be clarified that the transition from one plane of learning to another is not well demarcated. In this study, there were instances where similar types of learning were observed to occur simultaneously. For example, learning how to form relationships with others may be observed at the individual level, as well as the interpersonal and group levels. However, the degree

of such learning and the conditions for the learning to occur may not be the same across the planes. At the individual level, one may have to learn how to form relationships and build bonds with other members. At the same time, one also learns how to manage such relationships and resolve any conflict that may arise. Such learning may be more visible on the interpersonal plane. Group learning can also happen when new norms are formed as a result of the interactions. Therefore, the diversity and complexities of learning mean that learning at individual, interpersonal and group planes may overlap and they are not mutually exclusive. Rather, they are interrelated. It will thus be incorrect to draw distinctive or clear boundaries that mark the start of one or end of another.

Another significant finding is that learning occurs most effectively when tensions can be resolved or barriers that discourage collaboration break down. I refer them as constructive tension and destructive production. Tension can be constructive when parties come together, articulate their positions and find creative solutions. Production can be synergistic when parties can come together to work on a common goal. This however requires factors that prevent such production to first be broken down (e.g. physical barriers; differing expectations; dominant leadership etc.). There are many examples in the findings chapters showing the occurrence of learning in the presence of conflict and collaboration, or a lack-of when there are none.

CHAPTER 8 – CONCLUSION

In this study, I set out to examine how learning occurs in virtual groups that are informally structured, self-organising and based on voluntary participation. I embarked on an ethnographic investigation, studying what went on in these worlds, why people gathered themselves into groups or joined groups, how the groups developed, what types of activities the groups have, and how learning took place in such processes. In attempting to describe how learning occurred through the participation of individual members, three unique groups in Second Life were studied. Based on the findings from these three groups, I developed a framework relating learning and group development in the social virtual world context. In this concluding chapter, I discuss the applicability and implication of this framework, as well as the scope and limitations of this study.

8.1. CONTRIBUTION OF THE STUDY

This thesis contributes to the emerging literature on virtual worlds by developing a theoretical and conceptual understanding of how we think about learning in social virtual worlds like Second Life. One framework that is widely applied in the literature in examining groups is the Community of Practice (CoP) model (Lave & Wenger, 1991; Wenger, 1998). While the CoP model offers important insights, I argued in section 2.3.4 that it is not applicable to all groups in social virtual worlds because not all groups possess the defining characteristics of, or will necessarily develop into CoPs. For example, the Philosophy Group, and to a lesser extent the Science Group, had developed into a class-like environment with a primary objective of providing information to the learners instead of forming common practices. Moreover CoP looks mainly at individual learning and does not explicitly address the relationship between group development and learning. It does, however, seem to be appropriate in explaining the development of the Education Group. In this thesis, I suggest that learning be examined using three planes of analysis (individual, interpersonal and group). As the findings indicate, such a framework can help in teasing out the observable indicators of learning, which would otherwise be difficult to trace and even make sense of, particularly for learning that is unintended and

incidental, yet are outcomes of individuals' participation in groups in the social virtual world.

The findings that emerged from the study can inform us of how virtual groups develop and how learning occurs within the groups. I contend that development of virtual groups can be analysed by changes in five key attributes. They are membership, group governance, the group's task and social orientation, use of technology and the group's relationship with external organisations. Changes to these attributes provide evidences of group development. From a learning perspective, the framework draws together three planes of learning (individual, interpersonal and group learning), and stresses that they are progressively related and can be explained by the group's development. Knowing how group development can be measured and its inter-dependency with the three planes of learning is pertinent to advancing our understanding of learning in the social virtual world context.

8.2. SCOPE AND LIMITATIONS OF STUDY

This study subscribes to the view of learning as an outcome that can be intended or unintended. An implication of this view is that learning can be explicit (i.e., the individual knows what he/she has constructed) or implicit (sometimes he/she may not be aware of his/her constructions). Though it is not possible to observe construction of knowledge when it is internal or implicit, it may be possible to find indicators that demonstrate and document its occurrence. Such indicators manifest as development/trajectories of individuals or the group itself. The study thus aims to elicit evidence of learning by observing group development and group dynamics. In other words, these changes are the observable indicators of learning. In adopting this framework, I was able to produce detailed and rich descriptions of the learning that occurred. Furthermore, while I perceived an individual's mental constructs to be an important resource for studying learning, the main purpose of my study is not only to understand individuals' learning processes in the virtual world, but also how learning occurs when individuals organise themselves together and interact as a group.

The focus of the study is placed on exploring and examining the social and cognitive aspects of learning. It did not, however, seek to emphasise the affective domain such as autonomy and self-efficacy. These conditions are important as they are variables that affect the cognitive aspects of learning. It may be possible to incorporate these conditions into the proposed framework, in future studies.

Furthermore, this study is limited only to groups that operate in Second Life and may not be similarly observable in other virtual worlds. Though different social virtual worlds share many similar characteristics, there are also significant differences that may affect the outcome of the study. For example, the demographics of the residents, the size and reputation of the virtual world, or the complexities and technological capabilities of virtual worlds, can all affect the way groups develop and its residents learn. Furthermore, it has been observed that internal changes within Second Life itself are also important. Studying Second Life is like studying a river that is constantly in flux. As described in Chapter 1, Second Life is subject to changes to the software, changes in the terms of use, and shifts in organisation's objectives. Developers, users and researchers alike have to make sense of these changes and adjust accordingly. Thus, research based in and on Second Life must have some level of flexibility in terms of its design so that it can react to these changes as they come along. This was a challenge I faced while doing my research. To overcome it, I found it useful to connect with the Second Life community, i.e. its users as well as the developers of Linden Lab. In doing so, I was able to secure information of such changes not long after they were made or announced. As my study involved studying how individuals and groups reacted and adapted to these changes, and how in doing so, learning occurred, and it became necessary for me to spend more time (beyond what was required for the fieldwork) in Second Life and be diligent in following the news about the virtual world's development.

A number of findings thus emerged during the course of the present study could not be followed up within the confines of the research design. As described above, they include 1) what can be observed of the affective ways in which learning occurs in individuals in the context of the virtual world, particularly but not constrained to, motivation, attitude, autonomy and self-efficacy, in the context of the virtual world,

2) how, in comparison to the other online-based environments, do groups in the Second Life environment differ? These are all suitable and valuable topics for future study.

8.3. CLOSING COMMENTS

The proposed model provides a framework for examining and conceptualising learning that occurs in individuals and groups in social virtual worlds. Underpinning this framework are concepts of individual and group cognition, as well as social-environmental constructs. This framework allows one to track the changes in the group attributes and determine the development of the group. It also allows one to understand how the group members have learned as the group develops. This is the main finding and contribution of the thesis. A secondary observation is that for learning to be effective, activities that promote consonance and reduce dissonance must occur. Consonance breaks down barriers for collaboration and dissonance creates conflicts that need negotiation and management. I term these two factors destructive production and constructive tension respectively.

Starting from a blank sheet of paper, I started my ethnography research hoping to elicit patterns and trends that would allow one to understand learning in groups within Second Life. As the study progressed, I found that learning tied in closely with group development and could be explained using Rogoff's (1995; 1998) three planes of analysis. This is an interpretation that best described the data that I have obtained. There has been much speculation about virtual worlds and their potential for education. Yet, it is only when we attend to the processes by which occur at close hand, identify structures of collaboration and tension as they emerge over time, and within various faces of group dynamics, that learning in virtual worlds, can be gauged.

BIBLIOGRAPHY

- Ackermann, E. K. (2001). Piaget's Constructivism, Papert's Constructionism: What's the difference? *Constructivism: uses and perspectives in education*, 2001 Geneva, Research Center in Education. 85-94.
- Ackermann, E. K. (2004). Constructing knowledge and transforming the world. *In*: Tokoro, M. & Steels, L. (eds.) *A learning zone of one's own: Sharing representations and flow in collaborative learning environments*. Amsterdam, Berlin, Oxford, Tokyo, Washington, DC: IOS Press.
- Agresti, W. W. (2003). Tailoring IT support to communities of practice. *IT Professional*, 5, 24-28.
- Ala-Mutka, K., Punie, Y. & Ferrari, A. (2009). Review of Learning in Online Networks and Communities. EC-TEL 2009, LNCS 5794, 2009. 350-364.
- Anderson, J. A., Reder, L. M. & Simon, H. A. (1996). Situative versus cognitive perspectives: Form versus substance. *Educational Researcher*, 26, 18-21.
- Antonacci, D. M. & Modress, N. (2008). Envisioning the educational possibilities of user-created virtual worlds. *AACE Journal*, 16, 115-126.
- Argote, L., Gruenfeld, D. H. & Naquin, C. (2001). Group Learning in Organizations. *In*: Turner, M. E. (ed.) *Groups at work: Advances in theory and research*. New York: Lawrence Erlbaum.
- Argote, L. & Ophir., R. (2002). Intraorganizational learning. *In*: Baum, J. A. C. (ed.) *The Blackwell Companion to Organizations*. Oxford, UK: Blackwell Business.
- Argyris, C. & Schön, D. (1996). *Organizational learning II: Theory, method and practice*. Reading, Mass: Addison Wesley.
- Asch, S. E. (1952). *Social psychology*. Englewood Cliffs, NJ: Prentice Hall.
- Au, W. J. (2008). *The Making of Second Life: Notes from the New World*. HarperBusiness.
- Aurilio, S. (2010). Learning in the Wild of a Virtual World.

- Bainbridge, W. S. (2007). The Scientific Research Potential of Virtual Worlds. *Science*, 317, 472 - 476.
- Bales, R. F. (1950). A Set of Categories for the Analysis of Small Group Interaction. *American Sociological Review*, 15, 257-263.
- Barab, S., Barnett, M. & Squire, K. (2002). Developing an Empirical Account of a Community of Practice: Characterizing the Essential Tensions. *Journal of the Learning Sciences*, 11, 489-542.
- Barab, S. A. (2003). An Introduction to the Special Issue: Designing for Virtual Communities in the Service of Learning. *Phi Delta Kappan*, 197-201.
- Bardzell, S. & Odom, W. (2008). The Experience of Embodied Space in Virtual Worlds: An Ethnography of a Second Life Community. *Space and Culture*, 11, 239-259.
- Bares, W. H., Zettlemoyer, L. S. & Lester, J. C. (1998). Habitable 3D learning environments for situated learning. In: Goettl, B. P., Halff, H. M., Redfield, C. L. & Shute, V. J. (eds.) *Proceedings of the Fourth International Conference on intelligent tutoring systems: Vol. 1452 Lecture notes in computer science*. Berlin: Springer-Verlag.
- Barkand, J. & Kush, J. (2009). GEARS a 3D Virtual Learning Environment and Virtual Social and Educational World Used in Online Secondary Schools. *Electronic Journal of e-Learning*, 7, 215 - 224.
- Barker, T., Haik, E. & Bennett, S. (2009). Factors that hinder and assist learning in virtual environments: a case study. . Available: <https://uhra.herts.ac.uk/dspace/bitstream/2299/4482/1/903979.pdf>.
- Bartle, R. A. (2004). *Designing virtual worlds*. Indianapolis, IN: New Riders Publishing.
- Bartle, R. A. (2010). From MUDs to MMORPGs: The History of Virtual Worlds. In: Hunsinger, J., Allen, M. & Klastrup, L. (eds.) *International Handbook of Internet Research*. Dordrecht, the Netherlands.
- Baym, N. K. (2000). *Tune In, Log On: Soaps, Fandom, and Online Community*. Thousand Oaks, CA: Sage.

- Bell, D. (2009). Learning from Second Life. *British Journal of Educational Technology*, 40, 515-525.
- Benford, S., Greenhalgh, C., Rodden, T. & Pycock, J. (2001). To what extent is cyberspace really a space?: Collaborative Virtual Environments. *Communications of the ACM*, 44, 79-85.
- Bentley, C., Browman, G. & Poole, B. (2010). Conceptual and practical challenges for implementing the communities of practice model on a national scale - a Canadian cancer control initiative. *BMC Health Services Research*, 10, 101–108.
- Berger, P. L. & Luckmann, T. (1966). *The Social Construction of Reality: A Treatise in the Sociology of Knowledge*. New York: Irvington Publishers Inc.
- Biocca, F. (1997). The cyborg's dilemma: Progressive embodiment in virtual environments. *Journal of Computer-Mediated Communication*, 3.
- Biocca, F., Harms, C. & Burgoon, J. K. (2003). Toward a more robust theory and measure of social presence: Review and suggested criteria. *Presence: Journal of Teleoperators and Virtual Environments*, 12, 456-480.
- Blascovich, J. (2001). Social influences within immersive virtual environments. In: Schroeder, R. (ed.) *The Social Life of Avatars: Presence and Interaction in Shared Virtual Environments*. New York: Springer-Verlag.
- Blomberg, J., Giacomi, J., Mosher, A. & Swenton-Hall, P. (1993). Ethnographic Field Methods and Their Relation to Design. In: Schuler, D. & Namioka, A. (eds.) *Participatory Design: Principles and Practices*. Hillsdale, New Jersey: Lawrence Erlbaum Associates.
- Boellstorff, T. (2008). *Coming of Age in Second Life: An Anthropologist Explores the Virtually Human*. New Jersey: Princeton University Press.
- Boellstorff, T. (2010). A Typology of Ethnographic Scales for Virtual Worlds. In: Bainbridge, W. S. (ed.) *Online Worlds: Convergence of the Real and the Virtual*. London: Springer-Verlag.
- Book, B. (2004). Beyond the Game: Social Virtual Worlds. Paper presented at the State of Play 2 Conference, 2004 New York Law School, New York.

- Boulos, M., Hetherington, L. & Wheeler, S. (2007). Second Life: An overview of the potential of 3-D virtual worlds in medical and health education. *Health Information and Libraries Journal*, 24, 233-245.
- Brandon, D. P. & Hollingshead, A. B. (2007). Categorizing online groups. In: A. Joinson, K., McKenna, Y. A., Postmes, T. & Reis, U. (eds.) *Oxford Handbook of Internet Psychology*. Oxford, UK: Oxford University Press.
- Bresler, L. (1996). Ethical Issues in the Conduct and Communication of Ethnographic Classroom Research. *Studies in Art Education, A Journal of Issues and Research*, 37, 133-144.
- Bresman, H., Birkinshaw, J. & Nobel, R. (1999). Knowledge Transfer In International Acquisitions. *Journal of International Business Studies*, 30, 439-462.
- British Educational Research Association (2004). Revised ethical guidelines for educational research. Southwell, Nottingham.
- Brown, J. S. & Adler, R. P. (2008). Minds on Fire: Open Education, the Long Tail, and Learning 2.0. *Educause Review*, 43, 16-32.
- Brown, J. S., Collins, A. & Duguid, P. (1989). Situated cognition and the culture of learning. *Educational Researcher*, 18, 32-42.
- Bryman, A. (2004). *Social Research Methods*. Second edi ed. Hampshire, England: Oxford University Press Inc.
- Burgess, R. G. (1982). Elements of Sampling in Field Research. In: Burgess, R. G. (ed.) *Field research: a sourcebook and field manual*. New York: Routledge.
- Burgoon, J. K. & Newton, D. A. (1991). Applying a Social Meaning Model to Relational Message Interpretations of Conversational Involvement: Comparing Observer and Participant Perspectives. *Southern Communication Journal*, 56, 96-113.
- Butler, B. S. (2001). Membership Size, Communication Activity, and Sustainability: A Resource- Based Model of Online Social Structures. *Information Systems Research*, 12, 346-362.

- Butler, B. S., Sproull, L., Kiesler, S. & Kraut, R. (2008). Community effort in online groups: who does the work and why. In: Weisband, S. (ed.) *Leadership at a distance: research in technologically-supported work*. New York, NY: Lawrence Erlbaum Associates.
- Carr, D., Oliver, M. & Burn, A. (2010). Learning, Teaching and Ambiguity in Virtual Worlds. In: Peachey, A., Julia, G., Livingstone, D. & Sarah, S.-R. (eds.) *Researching Learning in Virtual Worlds*. London, England: Springer London.
- Carron, A. V. (1982). Cohesiveness in Sport Groups: Interpretations and Considerations. *Journal of Sport Psychology*, 4, 123-138.
- Castells, M. (1996). *The Rise of the Network Society, The Information Age: Economy, Society and Culture*. Cambridge, Massachusetts: Blackwell Publishers, Inc.
- Chang, A. & Bordia, P. (2001). A multidimensional approach to the group cohesion - Group performance relationship. *Small Group Research*, 32, 379-405.
- Chidambaram, L. & Tung, L. L. (2005). Is out of sight, out of mind? An empirical study of social loafing in technology-supported groups. *Information Systems Research*, 16, 149-168.
- Choi, H.-S. & Thompson, L. (2005). Old wine in a new bottle: Impact of membership change on group creativity. *Organizational Behavior and Human Decision Processes*, 98, 121-132.
- Choi, J. N. (2002). External activities and team effectiveness: Review and theoretical development. *Small Group Research*, 33, 181-202.
- Cohen, L., Manion, L. & Morrison, K. (2007). *Research Methods in Education*. Sixth edit ed. Abingdon, England: Routledge.
- Conceição-Runlee, S. & Daley, B. J. (Year) Published. Constructivist learning theory to web-based course design: an instructional design approach. the 17th annual midwest research-to-practice conference in adult, continuing and community education, 1998 Muncie, Indiana.
- Cook, S. D. N. & Yanow, D. (1993). Culture and Organizational Learning. *Journal of Management Inquiry*, 2, 373-390.

- Courtenay, B., Merriam, S. & Baumgartner, L. (2003). Witches ways of knowing: integrative learning in joining a marginalized group. *International Journal of Lifelong Education*, 22, 111-131.
- Creswell, J. W. (2007). *Qualitative inquiry and research design: choosing among five approaches*. Second Edition. Thousand Oaks, CA: Sage Publications, Inc.
- Creswell, J. W. (2009). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. Thousand Oaks, California: Sage Publications, Inc.
- Curtis, S., Gesler, W., Smith, G. & Washburn, S. (2000). Approaches to sampling and case selection in qualitative research: examples in the geography of health. *Social Science & Medicine*, 50, 1001–1014.
- Cuthbert, A., Clark, D. B. & Linn, M. (2002). WISE learning communities: Design considerations. In: Renninger, K. A. & Shumar, W. (eds.) *Building virtual communities: Learning and change in cyberspace*. New York: Cambridge University Press.
- Dalgarno, B. & Lee, M. J. W. (2010). What are the learning affordances of 3-D virtual environments? *British Journal of Educational Technology*, 41, 10-32.
- Davis, A., Khazanchi, D., Murphy, J., Ziguers, I. & Owens, D. (2009). Avatars, People, and Virtual Worlds: Foundations for Research in Metaverses. *Journal of the Association for Information Systems*, 10, 90-117.
- Dawley, L. (2009). Social network knowledge construction: Emerging virtual world pedagogy. *On the Horizon*, 17, 109-121.
- de Freitas, S. (2008). Serious Virtual Worlds: A scoping study. Online.
- Dede, C. (1995). The evolution of community support for constructionist learning: Immersion in distributed virtual worlds. *Educational Technology*, 35, 46-52.
- Derry, S. (1996). Cognitive schema theory in the constructivist debate. *Educational Psychologist*, 31, 163-174.
- Devadas, R. & Argote, L. (1995). Collective learning and forgetting: The effects of turnover and group structure. Paper presented at Midwestern Academy of Management Meetings, May 1995 Chicago.

- Dewalt, K. M. & Dewalt, B. R. (2002). *Participant observation: a guide for fieldworkers*. Walnut Creek, CA: Altamira Press.
- Dickey, M. D. (1999). *3D Virtual Worlds and Learning: An Analysis of the Impact of Design Affordances and Limitations in Active Worlds, blaxxun interactive, and OnLive! Traveler; and a Study of the Implementation of Active Worlds for Formal and Information Education*. Doctor of Philosophy Published thesis Thesis, The Ohio State University.
- Dickey, M. D. (2003). Teaching in 3D: Pedagogical Affordances and Constraints of 3D Virtual Worlds for Synchronous Distance Learning. *Distance Education*, 24, 105-121.
- Dickey, M. D. (2005). Three-dimensional virtual worlds and distance learning: two case studies of Active Worlds as a medium for distance education. *British Journal of Educational Technology*, 36, 439-461.
- Dicks, B., Soyinka, B. & Coffey, A. (2006). Multimodal ethnography. *Qualitative Research*, 6, 77-96.
- Diehl, W. C. & Prins, E. (2008). Unintended outcomes in Second Life: Intercultural literacy and cultural identity in a virtual world. *Language and Intercultural Communication*, 8, 101-118.
- Dodge, M. (Year) Published. Explorations in AlphaWorld: The Geography of 3-D Virtual Worlds on the Internet. RGS-IBG Conference on Virtual Reality in Geography, 1999 Leicester, 4th-7th January 1999.
- Dodge, M. & Kitchin, R. (2001). *Mapping Cyberspace*. New York: Routledge.
- Ducheneaut, N., Wen, M.-H. D., Yee, N. & Wadley, G. (Year) Published. Body and Mind: A Study of Avatar Personalization in Three Virtual Worlds. CHI 2009, April 4th - 7th, 2009, 2009 Boston, MA, USA.
- Duemer, L., Fontenot, D., Gumfory, K., Kallus, M., Larsen, J., Schafer, S. & Benny C. Shaw, J. (2002). The use of online synchronous discussion groups to enhance community formation and professional identity development. *The Journal of Interactive Online Learning*, 1.

- Duncan, H. E. & Young, S. (2009). Online pedagogy and practice: Challenges and strategies. *The Researcher*, 22, 17--32.
- Duncan, R. E., Drew, S. E., Hodgson, J. & Sawyer, S. M. (2009). Is my mum going to hear this? Methodological and ethical challenges in qualitative health research with young people. *Social Science & Medicine*, 69, 1691-1699.
- Easterby-Smith, M., Thorpe, R. & Lowe, A. (1991). *Management Research: an introduction*. London: Sage Publications.
- Edmondson, A. (1999). Psychological safety and learning behavior in work teams. *Administrative Science Quarterly*, 44, 350-383.
- Eisenhardt, K. M. (1989). Building theories from case study research. *Academy of Management Review*, 14, 532--550.
- Eisenhardt, K. M. (1991). Better stories and better constructs: The case for rigor and comparative logic. *Academy of Management Review*, 16, 620-627.
- Eisenhardt, K. M. & Graebner, M. E. (2007). Theory building from cases: Opportunities and challenges. *Academy of Management Journal*, 50, 25-32.
- Emerson, R. M., Fretz, R. I. & Shaw, L. L. (1995). *Writing Ethnographic Fieldnotes*. Chicago, IL: University of Chicago Press.
- Ertmer, P. A. & Newby, T. J. (1993). Behaviorism, Cognitivism, Constructivism: Comparing Critical Features from an Instructional Design Perspective. *Performance Improvement Quarterly*, 6, 50-72.
- Ess, C. & committee, t. A. e. w. (2002). AoIR ethics working committee - a preliminary report. Chicago.
- Eynon, R., Fry, J. & Schroeder, R. (2008). The Ethics of Internet Research. In: Fielding, N., Lee, R. M. & Blank, G. (eds.) *The SAGE handbook of online research methods*. London: Sage.
- Eynon, R., Schroeder, R. & Fry, J. (2009). New techniques in online research: Challenges for research ethics. *Twenty-First Century Society*, 4, 187-199.

- Fahy, P. J. (2006). Online and face-to-face group interaction processes compared using Bales' Interaction Process Analysis (IPA). *Journal of Open, Distance, and E-learning* [Online]. Available: http://www.eurodl.org/materials/contrib/2006/Patrick_J_Fahy.htm.
- Fang, Y.-S. & Lee, L.-S. (2009). A review and synthesis of recent research in Second Life. *Interactive Technology and Smart Education*, 6, 261-267.
- Feld, S. (1982). Structural determinants of similarity among associates. *American Sociological Review*, 47, 797-801.
- Feldman, M. S., Bell, J. & Berger, M. T. (2003). *Gaining Access: A Practical and Theoretical Guide for Qualitative Researchers*. Walnut Creek, CA: Altamira Press.
- Felix, U. (2005). E-learning pedagogy in the third millennium: The need for combining social and cognitive constructivist approaches. *RECALL*, 17, 85-100.
- Fernback, J. (1999). There is a there there: Notes toward a definition of cybercommunity. *Doing Internet research : Critical issues and methods for examining the Net*. Thousand Oaks, CA: Sage Publications.
- Festinger, L., Schachter, S. & Back, K. (1950). The Spatial Ecology of Group Formation. In: Festinger, L., Schachter, S. & Back, K. (eds.) *Social Pressure in Informal Groups*. Palo Alto, CA: Stanford University Press.
- Forsyth, D. R. (2010). *Group Dynamics*. Belmont, CA: Wadsworth, Cengage Learning.
- Frank, J. D. (1957). Some determinants, manifestations, and effects of cohesiveness in therapy groups. *International Journal of Group Psychotherapy*, 7, 53-63.
- French, J. & Raven, B. H. (1959). The bases of social power. In: Cartwright, D. (ed.) *Studies in Social Power*. Ann Arbor, MI: Institute for Social Research.
- Garavan, T. N. & McCarthy, A. (2008). Collective learning processes and human resource development. *Advances in Developing Human Resources*, 10, 451-471.
- Gee, J. P. (1999). *An introduction to discourse analysis: theory and method*. London: Routledge.

- Gerald, S. & Antonacci, D. M. (2009). Virtual World Learning Spaces: Developing a Second Life Operating Room Simulation. *Educause Quarterly Magazine*, 32.
- Gibson, J. J. (1977). The theory of affordances. In: Shaw, R. & Bransford, J. (eds.) *Perceiving, acting, and knowing: Toward an ecological psychology*. Hillsdale, NJ: Erlbaum.
- Gibson, J. J. (1986). *The ecological approach to visual perception*. Hillsdale N.J.: Lawrence Erlbaum Associates.
- Goffman, E. (1989). On fieldwork. *Journal of Contemporary Ethnography*, 18, 123-132.
- Golafshani, N. (2003). Understanding Reliability and Validity in Qualitative Research. *The Qualitative Report*, 8, 597-607.
- Goodman, P. S. & Dabbish, L. A. (2011). Methodological Issues in Measuring Group Learning. *Small Group Research*, 1046496410385471-.
- Goodman, P. S., Ravlin, E. & Schminke, M. (1987). Understanding groups in organizations. In: Cummings, L. L. & Staw, B. M. (eds.) *Research in organizational behavior*. Greenwich, CT: JAI Press.
- Gray, B. (1989). *Collaborating*. San Francisco, CA: Jossey-Bass.
- Greeno, J. G., Collins, A. M. & Resnick, L. B. (1996). Cognition and learning. In: Berliner, D. & Calfee, R. (eds.) *Handbook of Educational Psychology*. New York: Macmillan Education Ltd.
- Guba, E. G. & Lincoln, Y. S. (2005). Paradigmatic controversies, contradictions, and emerging confluences. In: Denzin, N. K. & Lincoln, Y. S. (eds.) *The Sage Handbook of Qualitative Research*. 3rd ed. Thousand Oaks, CA: Sage.
- Gunawardena, C., Lowe, C. & Anderson, T. (1997). Analysis of a global on-line debate and the development of an interaction analysis model for examining social construction of knowledge in computer conferencing. *Journal of Educational Computing Research*, 17, 395-429.

- Gunawardena, C. N. (1999). The challenge of designing and evaluating "interaction" in web-based distance education. WebNet 99, World Conference on the WWW and Internet, 1999. 451 - 456.
- Hagel, J. & Armstrong, A. G. (1997). *Expanding Markets through Virtual Communities*. Boston, MA: Harvard Business School Press.
- Halloran, J. (2009). It's Talk, But Not as We Know It: Using VoIP to Communicate in War Games 2009 Conference in Games and Virtual Worlds for Serious Application, 2009. 133-140.
- Hammersley, M. & Atkinson, P. (2007). *Ethnography: Principles in Practice*. Third Edit ed. Trowbridge, Wiltshire: The Cromwell Press.
- Hare, A. P. (1962). *Handbook of Small Groups Research*. New York: The Free Press of Glenoe.
- Harris, S. & Sutton, R. (1986). Functions of parting ceremonies in dying organizations. *Academy of Management Journal*, 29, 5-30.
- Hathaway, R. S. (1995). Assumptions underlying quantitative and qualitative research: Implications for Institutional Research. *Research in Higher Education*, 36, 535-562.
- Haythornthwaite, C. (2002). Strong, weak, and latent ties and the impact of new media. *Information Society*, 18, 385-401.
- Healy, D. (1997). Cyberspace and Place: The Internet as Middle Landscape on the Electronic Frontier. In: Porter, D. (ed.) *Internet Culture*. New York: Routledge.
- Heft, H. (2003). Affordances, Dynamic Experience, and the Challenge of Reification. *Ecological Psychology*, 15, 149-180.
- Henri, F. & Pudelko, B. (2003). Understanding and analysing activity and learning in virtual communities. *Journal of Computer Assisted Learning*, 19, 474-487.
- Heo, G. M. (2008). *Learning in an informal web-based community of practice: A study of community, interpersonal, and individual planes*. PhD Thesis, McGill University.

- Heo, G. M. & Breuleux, A. (2008). Three Planes of Learning in Communities of Practice: Exploring an Online Community of Chefs at the Community Plane. AERA 2008 Annual Meeting, 2008 New York.
- Hercheui, M. D. (2011). A literature review of virtual communities: The relevance of understanding the influence of institutions on online collectives. *Information, Communication & Society*, 14, 1 - 23.
- Herring, C. & Nix, C., G. (1997). Is "serious chat" an oxymoron? Pedagogical vs. social uses of Internet Relay Chat. the American Association of Applied Linguistics, April 1997 Orlando, Florida.
- Hine, C. (2000). *Virtual ethnography*. London: Sage.
- Hoepfl, M. C. (1997). Choosing qualitative research: A primer for technology education researchers. *Journal of Technology Education*, 9, 47-63.
- Hollander, E. P. & Offermann, L. R. (1990). Relational features of leadership and followership. In: Clark, K. E. & Clark, M. B. (eds.) *Measures of leadership*. West Orange, NJ: Leadership Library of America.
- Huber, G. P. (1991). Organisational Learning: The Contributing Processes And The Literatures. *Organization Science*, 2, 88-115.
- Ingram, A. L., Hathorn, L. G. & Evans, A. (2000). Beyond chat on the internet. *Computers and Education*, 35, 21-35.
- Inman, C., Wright, V. H. & Hartman, J. A. (2010). Use of Second Life in K-12 and Higher Education : A Review of Research. *Journal of Interactive Online Learning*, 9, 44-63.
- Jacob, E. (1987). Qualitative Research Traditions: A Review. *Review of Educational Research*, 57, 1-50.
- Jacob, E. (1988). Clarifying qualitative research: A focus on traditions. *Educational Researcher*, 17, 16-24.

- Jarmon, L., Traphagan, T. & Mayrath, M. (2008). Understanding project-based learning in Second Life with a pedagogy, training, and assessment trio. *Educational Media International*, 45, 157-176.
- Jennings, N. & Collins, C. (2007). Virtual or Virtually U: Educational Institutions in Second Life. *International Journal of Social Sciences*, 2, 180-186.
- Johnson, D. W. & Johnson, F. (2009). *Joining together: Group theory and group skills*. 10th edition ed. Boston: Allyn & Bacon.
- Johnston, W. J., Leach, M. P. & Liu, A. H. (1999). Theory Testing Using Case Studies in Business-to-Business Research. *Industrial Marketing Management*, 28, 201-213.
- Jonassen, D. (1999). Designing constructivist learning environments. In: Reigeluth, C. M. (ed.) *Instructional design theories and models: A new paradigm of instructional theory (Vol. II)*. Mahwah, NJ: Lawrence Erlbaum Associates.
- Jung, Y. (2011). Understanding the Role of Sense of Presence and Perceived Autonomy in Users' Continued Use of Social Virtual Worlds. *Journal of Computer-Mediated Communication*, 16, 492-510.
- Kane, A. A., Argote, L. & Levine, J. M. (2005). Knowledge transfer between groups via personnel rotation: Effects of social identity and knowledge quality. *Organizational Behavior and Human Decision Processes*, 96, 56-71.
- Kanuka, H. & Anderson, T. (1998). On-line social interchange, discord and knowledge construction. *Journal of Distance Education*, 13, 57-74.
- Karp, D., Stone, G. P. & Yoels, W. C. (1991). *Being urban : a sociology of city life*. 2. ed. ed. New York: Praeger Publishers.
- Kelly, G. G. & Bostrom, R. P. (1995). *Facilitating the socio-emotional dimension in group support systems environments*. New York, New York, USA: ACM Press.
- Kendall, L. (2002). *Hanging out in the virtual pub: Masculinities and relationships online*. London, England: University of California Press.
- Kim, D. H. (1993). The link between individual and organizational learning. *Sloan Management Review*, 35, 37-50.

- Klang, M. (2004). Avatar: From Deity to Corporate Property. *Information, Communication & Society*, 7, 389 - 402.
- Kling, R. & Courtright, C. (2003). Group Behavior and Learning in Electronic Forums : A Sociotechnical Approach. *The Information Society*, 19, 221-235.
- Kolff, D. H. A. (2002). *Naukar, Rajput, and Sepoy: The Ethnohistory of the Military Labour Market of Hindustan, 1450-1850*. Cambridge, UK: Cambridge University Press.
- Kolodner, J. L., Crismond, D., Gray, J., Holbrook, J. & Puntambekar, S. (1998). Learning by design from theory to practice. *In*: Bruckman, A. S., Guzdial, M. & Kolodner, J. L., eds. *Proceedings of the International Conference of the Learning Sciences*, 1998 Atlanta, GA. 16-22.
- Laferrière, T., Breuleux, A. & Erickson, G. (2004). Telecollaborative communities of practice in education within and beyond Canada. *In*: Brown, A. & Davis, N. (eds.) *World yearbook of education 2004: Digital technology, communities & education*. New York: Routledge Falmer.
- Lagache, E. (1993). "Diving" into communities of practice: Examining learning as legitimate peripheral participation in an everyday setting. Paper presented at the annual meeting of the American Educational Research Association, April 1993 Atlanta, GA.
- Lai, K. W., Pratt, K., Anderson, M. & Stigter, J. (2006). Literature Review and Synthesis : Online Communities of Practice. *Education*.
- Lakomski, G. (2001). Organizational change, leadership and learning: culture as cognitive process. *International Journal of Educational Management*, 15, 68-77.
- Latané, B., Williams, K. & Harkins, S. (1979). Many hands make light the work: The causes and consequences of social loafing. *Journal of Personality and Social Psychology*, 37, 822-832.
- Lave, J. (1988). *Cognition in practice: Mind, mathematics, and culture in everyday life*. Cambridge, UK: Cambridge University Press.

- Lave, J. & Wenger, E. (1991). *Situated learning : legitimate peripheral participation*. Cambridge ; New York: Cambridge University Press.
- Lawrence, T. B. (1995). Power and resources in an organizational community. *Academy of Management Best Papers*, 1995. 251-255.
- Lazar, J. & Preece, J. (1998). Classification Schema for Online Communities. The 1998 Association for Information Systems, Americas Conference, 1998. 84-86.
- Leigh, M., Elwell, M. G. & Cook, S. (2010). *Recreating Ancient Egyptian Culture in Second Life*. IEEE.
- Levine, J. M. & Moreland, R. L. (1990). Progress in small group research. *Annual Review of Psychology*, 41, 585--634.
- Levitt, B. & March, J. G. (1988). Organizational Learning. *Annual Review of Sociology*, 14, 319-340.
- Lévy, P. (2000). *Collective intelligence: Man's emerging world in cyberspace*. New York: Perseus.
- Lewin, K. (1952). Group decision and social change. *In*: Newcomb, T. M. & Hartley, E. L. (eds.) *Readings in social psychology*. Holt.
- Lewis, K., Belliveau, M., Herndon, B. & Keller, J. (2007). Group cognition, membership change, and performance: Investigating the benefits and detriments of collective knowledge. *Organizational Behavior and Human Decision Processes*, 103, 159-178.
- Lincoln, Y. S. & Guba, E. G. (1985). *Naturalistic inquiry*. Beverly Hills, CA: Sage Publications, Inc.
- Linehan, C. & McCarthy, J. (2000). Positioning in practice: Understanding participation in the social world. *The Journal for the Theory of Social Behaviour*, 30, 435-453.
- Linehan, C. & McCarthy, J. (2001). Re-viewing the 'Community of Practice' Metaphor: An analysis of control relations in a primary school classroom. *Mind, Culture and Activity*, 8, 129-147.

- Lockard, J. S. (1997). Distal versus proximal mechanisms of “real” self-deception. *Behavioral and Brain Sciences*, 20, 120-121.
- Lombard, M. & Ditton, T. (1997). At the heart of it all: The concept of presence. *Journal of Computer-Mediated Communication*, 3.
- Lott, A. J. & Lott, B. E. (1965). Group cohesiveness as interpersonal attraction: a review of relationships with antecedent and consequent variables. *Psychology Bulletin*, 64, 259–309.
- Lowry, P. B., Roberts, T. L., Nicholas C. Romano, J., Cheney, P. D. & Hightower, R. T. (2006). The Impact of Group Size and Social Presence on Small-Group Communication: Does Computer-Mediated Communication Make a Difference? *Small Group Research*, 37, 631-661.
- Lucia, A. D., Francese, R., Passero, I. & Tortora, G. (2009). Development and evaluation of a system enhancing Second Life to support synchronous role-based collaborative learning. *Software - Practice and Experience* 39, 1025–1054.
- Ludlow, P. & Wallace, M. (2007). *The Second Life Herald—the virtual tabloid that witnessed the dawn of the metaverse*. Cambridge, Massachusetts: MIT Press.
- Luo, L. & Kemp, J. (2008). Second Life: Exploring the immersive instructional venue for Library and Information Science education. *Journal of Education for Library and Information Science*, 49, 147-166.
- Markus, M. L. (1990). Toward a "Critical Mass" theory of interactive media. In: Fulk, J. & Steinfield, G. (eds.) *Organizations and Communication Technology*. Newbury Park, CA: Sage Publications.
- Mayer, R. C., Davis, J. H. & Schoorman, F. D. (1995). An integrative model of organizational trust. *Academy of Management Review*, 20, 709-734.
- McGrath, J. E. & Argote, L. (2008). Group Processes in Organizational Contexts. *Blackwell Handbook of Social Psychology: Group Processes*. Blackwell Publishers Ltd.

- McKee, H. A. & Porter, J. E. (2009). Playing a Good Game: Ethical Issues in Researching MMOGs and Virtual Worlds. *International Journal of Internet Research Ethics*, 2, ONLINE.
- McKenna, K. Y. A. (2008). Influences on the Nature and Functioning of Online Groups. In: Barak, A. (ed.) *Psychological aspects of cyberspace: theory, research, applications*. New York: Cambridge University Press.
- McKenna, K. Y. A. & Green, A. S. (2002). Virtual Group Dynamics. *Group Dynamics: Theory, Research, and Practice*, 6, 116-127.
- Memmi, D. (2006). The nature of virtual communities. *Ai & Society*, 20, 288-300.
- 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, 524-572.
- Michener, H. A. & Burt, M. R. (1975). Use of social influence under varying conditions of legitimacy. *Journal of Personality and Social Psychology*, 32, 216-223.
- Miles, M. B. & Huberman, A. M. (1994). *An Expanded Sourcebook: Qualitative Data Analysis*. Second edi ed. Thousand Oaks, CA.
- Minocha, S. & Reeves, A. J. (2010). Interaction Design and Usability of Learning Spaces in 3D Multi-user Virtual Worlds. In: Katre, D., Orngreen, R., Yammiyavar, P. & Clemmensen, T. (eds.) *Human Work Interaction Design: Usability in Social, Cultural and Organizational Contexts. IFIP Advances in Information and Communication Technology*. Berlin, Heidelberg: Springer Berlin Heidelberg.
- Mousavidin, E. & Goel, L. (2009). A Life Cycle Model of Virtual Communities. 42nd Hawaii International Conference on System Sciences, 2009 Waikoloa, Big Island, Hawaii, January 05-January 08. IEEE Computer Society, 1-8.
- Nardi, B. A. (2010). *My Life As a Night Elf Priest: An Anthropological Account of World of Warcraft*. Michigan: The University of Michigan Press
- Nehme, Z. (2008). The social arena of the online synchronous environment. *Turkish Online Journal of Distance Education*, 9, 238-249.

- Nilsson, A., Heldel, I., Axelsson, A.-S. & Schroeder, R. (2002). The long-term uses of shared virtual environments: an exploratory study. 112-126.
- Nowak, K. L. & Rauh, C. (2005). The influence of the avatar on online perceptions of anthropomorphism, androgyny, credibility, homophily, and attraction. *Journal of Computer-Mediated Communication*, 11.
- O'Reilly, K. (2005). *Ethnographic Methods*. Abingdon, England: Routledge.
- Offermann, L. R. & Scuderi, N. F. (2006). Sharing leadership: Who, what, when, and why. In: Shamir, B., Uhl-Bien, M. & Pillai, R. (eds.) *Follower-centric perspectives on leadership*. Information Age Publishing.
- Oh, H., Chung, M.-H. & Labianca, G. (2004). Group Social Capital and Group Effectiveness: The Role of Informal Socializing Ties. *Academy of Management Journal*, 47, 860.
- Oldenburg, R. (1999). *The Great Good Place: Cafes, Coffee Shops, Bookstores, Bars, Hair Salons, and Other Hangouts at the Heart of a Community*. New York: Marlowe and Company.
- Oliver, M. (2005). The Problem with Affordance. *E-Learning*, 2, 402-413.
- Ondrejka, C. (2006). Escaping the gilded cage: user-created content and building the metaverse. In: Balkin, J. M. & Noveck, B. S. (eds.) *The State of Play: Law, Games, and Virtual Worlds*. New York: New York University Press.
- Ondrejka, C. & Salen, K. (2008). Education Unleashed: Participatory Culture, Education, and Innovation in Second Life. *The ecology of games Connecting youth games and learning*. MIT Press.
- Orvis, K. L., Wisher, R. A., Bonk, C. J. & Olson, T. M. (2000). Communication patterns during synchronous Web-based military training in problem solving. *Computers in Human Behavior*, 18, 783-795.
- Palloff, R. M. & Pratt, K. (1999). *Building Learning Communities in Cyberspace: Effective Strategies for the Online Classroom*. San Francisco, CA: Jossey-Bass.

- Palloff, R. M. & Pratt, K. (2007). Online learning communities in perspective. *Online learning communities*. Charlotte, North Carolina: Information Age Publishing Inc.
- Panzarasa, P., Opsahl, T. & Carley, K. M. (2009). Patterns and dynamics of users' behavior and interaction: Network analysis of an online community. *Journal of the American Society for Information Science and Technology*, 60, 911-932.
- Papert, S. (1980). *Mindstorms: Children, computers and powerful ideas*. New York: Basic Books.
- Papert, S. & Harel, I. (1991). *Constructionism*. Norwood, New Jersey: Ablex Publishing Corporation.
- Patton, M. Q. (2002). *Qualitative evaluation and research methods*. Third edit ed. Thousand Oaks, CA: Sage Publications, Inc.
- Paulus, T. (2007). CMC modes for learning tasks at a distance. *Journal of Computer-Mediated Communication*, 12.
- Pearce, C. (2009). *Communities of Play: Emergent Cultures in Multiplayer Games and Virtual Worlds*. Cambridge Press, Massachusetts: The MIT Press.
- Pemberton, J., Mavin, S. & Stalker, B. (2007). Scratching beneath the surface of communities of (mal)practice. *The Learning Organisation*, 14, 62-73.
- Peña, J. & Hancock, J. T. (2006). An Analysis of Socioemotional and Task Communication in Online Multiplayer Video Games. *Communication Research*, 33, 92-109.
- Perry, M. & Sanderson, D. (1998). Coordinating Joint Design Work: The Role of Communication and Artefacts. *Design Studies*, 19, 273-288.
- Perry, M. & Thomas, P. (1995). Externalising the internal: Collaborative design through dynamic problem visualisation. In Adjunct Proceedings of Human-Computer Interaction (HCI) Conference '95, 1995. 149-154.
- Petty, R. E., Harkins, S. G., Williams, K. D. & Latan, B. (1977). The effects of group size on cognitive effort and evaluation. *Personality and Social Psychology Bulletin Psych. B*, 3, 579-582.

- Piaget, J. (1983). Piaget's theory. In: Mussen, P. (ed.) *Handbook of Child Psychology*. 4th editio ed. New York: Wiley.
- Plant, R. (2004). Online Communities. *Technology in Society*, 26, 51-65.
- Porter, C. E. (2004). A Typology of Virtual Communities: A Multi-Disciplinary Foundation for Future Research. *Journal of Computer-Mediated Communication*, 10, Article 3.
- Reid, E. (1996). Informed Consent in the Study of On-Line Communities: A Reflection on the Effects of Computer-Mediated Social Research. *The Information Society*, 12, 169-174.
- Ren, Y., Kraut, R. & Kiesler, S. (2007). Applying Common Identity and Bond Theory to Design of Online Communities. *Organizational Studies*, 28, 377-408.
- Rheingold, H. (1993). *The Virtual Community: Homesteading on the Electronic Frontier*. New York: Harper Collins.
- Riel, M. & Polin, L. (2004). Online Learning Communities: Common Ground and Critical Differences in Designing Technical Support. In: Barab, S. A., Kling, R. & Gray, J. (eds.) *Designing for Virtual Communities in the Service of Learning*. New York: Cambridge University Press.
- Riverin, S. & Stacey, E. (2008). Sustaining an Online Community of Practice: A Case Study. *Journal of Distance Education*, 22, 43-58.
- Rogoff, B. (1995). Observing sociocultural activity on three planes: Participatory appropriation, guided participation, and apprenticeship. In: Wertsch, J. V., del Rio, P. & Alvarez, A. (eds.) *Sociocultural studies of mind*. New York: Cambridge University Press.
- Rogoff, B. (1998). Cognition as collaborative process. In: Damon, W., Kuhn, D. & Siegler, R. S. (eds.) *Handbook of Child Psychology: Cognition, Perception, and Language*. Cambridge, UK: Cambridge University Press.
- Rovai, A. P. (2002). Building Sense of Community at a Distance. *The international Review of Research in Open and Distance Learning*, 3.

- Salmon, G. (2009). The future for (second) life and learning. *British Journal of Educational Technology*, 40, 526-538.
- Salmon, G., Nie, M. & Edirisingha, P. (2010). Developing a five-stage model of learning in Second Life. *Educational Research*, 52, 169-182.
- Salomon, G. & Perkins, D. N. (1998). Individual and Social Aspects of Learning. *Review of Research in Education*, 23, 1-24.
- Salt, B., Atkins, C. & Blackal, B. (2008). Engaging with Second Life: Real Education in a Virtual World.
- Sassenberg, K. (2002). Common bond and common identity groups on the Internet: Attachment and normative behavior in on-topic and off-topic chats. *Group Dynamics: Theory, Research, and Practice*, 6, 27-37.
- Schein, E. H. (1996). Three Cultures of Management: The Key to Organizational Learning. *Sloan Management Review*1, 38, 9-20.
- Scherer, J. (1972). *Contemporary Community: Sociological Illusion or Reality?* London, England: Tavistock.
- Schlager, M. & Fusco, J. (2004). Teacher professional development, technology, and communities of practice: Are we putting the cart before the horse? In: Barab, S. A., Kling, R. & Gray, J. (eds.) *Designing for Virtual Communities in the Service of Learning*. New York: Cambridge University Press.
- Schrage, M. (1990). *Shared Minds: The New Technologies of Collaboration*. New York: Random House.
- Schroeder, R. (2001). Social interaction in virtual environments: Key issues, common themes, and a framework for research. In: Schroeder, R. (ed.) *The Social Life of Avatars: Presence and Interaction in Shared Virtual Environments*. London: Springer-Verlag.
- Schroeder, R. (2006). Being There and the Future of Connected Presence. *Presence: Journal of Teleoperators and Virtual Environments*, 15, 438-454.
- Schroeder, R. (2008). Defining Virtual Worlds and Virtual Environments. *Journal of Virtual Worlds Research*, 1.

- Schroeder, R. (2011). *Being there together : social interaction in virtual environments*. New York: Oxford University Press.
- Selwyn, N. (2010). Looking beyond learning: notes towards the critical study of educational technology. *Journal of Computer Assisted Learning*, 26, 65-73.
- Sessa, V. I. & London, M. (2006). *Continuous learning in organizations: Individual, group, and organizational perspectives*. Lawrence Erlbaum Associates.
- Sfard, A. (1998). On two metaphors for learning and the dangers of choosing just one. *Educational Researcher*, 27, 4-13.
- Sierk Ybema, F. K. (2009). Making the familiar strange: A case for disengaged organizational ethnography. In: Sierk Ybema, D. Y., Harry Wels, Frans Kamsteeg (ed.) *Organizational Ethnography: Studying the Complexities of Everyday Life*. London: SAGE Publications Ltd.
- Simon, H. A. (1991). Bounded rationality and organizational learning. *Special Issue: Organization Science: Papers in honour of (and by) James G. March 2*, 125-134.
- Sivunen, A. & Hakonen, M. (2011). Review of Virtual Environment Studies on Social and Group Phenomena. *Small Group Research*, 1046496410388946-.
- Slater, M. & Steed, A. (2002). Meeting People Virtually: Experiments in Shared Virtual Environments. In: Schroeder, R. (ed.) *The Social Life of Avatars*. London: Springer.
- Sloep, P. B. (2009). Fostering Sociability in Learning Networks Through Ad-Hoc Transient Communities. In: Purvis, M. & Savarimuthu, B. T. R., eds. Computer-Mediated Social Networking. First International Conference, ICCMSN 2008, LNAI 5322. June 11-13, 2008, Dunedin, New Zealand., 2009 Heidelberg, Germany. Springer Verlag, 62-75.
- St-Amour, W. F. (2006). Organizational Learning and Social Identity in a Context of Transformational Change: Towards an Enlarged Perspective of Situated Learning Theory. OLKC 2006 Conference, 2006 University of Warwick, Coventry, 20th- 22nd March 2006.

- Stahl, G. (2005). Group cognition in computer-assisted collaborative learning. *Journal of Computer Assisted Learning*, 21, 79-90.
- Stahl, G. (2011). Group-cognition theory and knowledge-building analysis. The International Conference on Computer-Supported Collaborative Learning (CSCL 2011), 2011 Hong Kong, China.
- Steinkuehler, C. & Williams, D. (2006). Where everybody knows your (screen) name: Online games as "third places". *Journal of Computer-Mediated Communication*, 11.
- Stoerger, S. M. (2010). *Pedagogical practices in a virtual world: An ethnographic and discourse analysis approach*. Doctor of Philosophy Thesis, Indiana University.
- Stoll, L., Bolam, R., McMahon, A., Wallace, M. & Thomas, S. (2006). Professional learning communities: A review of the literature. *Journal of Educational Change*, 7, 221-258.
- Strauss, A. & Corbin, J. (1990). *Basics of qualitative research: Grounded theory procedures and techniques*. Newbury Park, CA: Sage Publications, Inc.
- Sveningsson, M. (2004). Ethics in Internet Ethnography. In: Buchanan, E. A. (ed.) *Readings in Virtual Research Ethics: Issues and Controversies*. Hershey: Information Science Publishing.
- Swan, K. (2005). A constructivist model for thinking about learning online. In: Bourne, J. & Moor, J. C. (eds.) *Elements of quality online education: Engaging communities*. Needham, MA: Sloan-C.
- Tanis, M. (2007). Online Social Support Groups. In: Joinson, A., McKenna, K., Postmes, T. & Reips, U.-D. (eds.) *The Oxford Handbook of Internet Psychology*. Oxford, UK: Oxford University Press.
- Thomas, D. & Brown, J. S. (2007). The Play of Imagination: Extending the Literary Mind. *Games and Culture*, 2, 149-172.
- Thomas, D. & Brown, J. S. (2009). Why Virtual Worlds Can Matter. *Intenational Journal of Learning and Media*, 1, 37-49.

- Tracy, S. J. (2010). Qualitative Quality: Eight "Big-Tent" Criteria for Excellent Qualitative Research. *Qualitative Inquiry*, 16, 837–851.
- Tuan, Y.-F. (1977). *Space and Place: The Perspective of Experience*. London, England: Edward Arnold.
- Tyler, T. R. & Blader, S. L. (2001). Identity and cooperative behavior in groups. *Group Processes & Intergroup Relations*, 4, 207-226.
- Tyson, T. (1998). *Working with groups*. 2nd ed. Chapel Street, South Yarra: Macmillan Education Australia Pty Ltd.
- Vygotsky, L. S. (1978). *Mind in society: The development of higher psychological processes*. Cambridge, Massachusetts: Harvard University Press.
- Wadley, G. & Ducheneaut, N. (2009). The 'out-of-avatar experience': object focused collaboration in Second Life. In: Wagner, I., Tellioglu, H., Balka, E., Simone, C. & Cioffi, L., eds. European Conference on Computer-Supported Cooperative Work (ECSCW '09), September 7-11, 2009 Vienna, Austria. ONLINE, 323-342.
- Wadley, G., Gibbs, M. & Ducheneaut, N. (2009). You can be too rich: Mediated communication in a virtual world. Proceedings of the 21st Annual Computer-Human Interaction Special Interest Group (CHISIG) of the Human Factors and Ergonomics Society of Australia (OzChi 2009), 2009 New York. ACM Press.
- Wagner, J. A. (1995). Studies of individualism-collectivism: Effects on cooperation in groups. *Academy of Management Journal*, 38, 152-172.
- Walford, G. (2008). The Nature of Educational Ethnography. In: Walford, G. (ed.) *How to do Educational Ethnography*. London: The Tufnell Press.
- Wang, S.-K. (2008). The Effects of a Synchronous Communication Tool (Yahoo Messenger) on Online Learners' Sense of Community and their Multimedia Authoring Skills *Journal of Interactive Online Learning*, 7, 59-74.
- Warburton, S. (2009). Second Life in higher education: Assessing the potential for and the barriers to deploying virtual worlds in learning and teaching. *British Journal of Educational Technology*, 40, 414-426.

- Wasko, M. M., Faraj, S. & Teigland, R. (2004). Collective Action and Knowledge Contribution in Electronic Networks of Practice. *Journal of the Association for Information Systems*, 5, 493-513.
- Waskul, D. & Douglass, M. (1996). Considering the electronic participant: Some polemical observations on the ethics of on-line research. *The Information Society*, 12, 129-139.
- Wass, V. J. & Wells, P. E. (1994). *Principles and Practice in Business and Management Research*. Dartmouth: Aldershot.
- Wenger, E. (1998). *Communities of practice : learning, meaning, and identity*. Cambridge U.K. ;New York N.Y.: Cambridge University Press.
- Wenger, E., McDermott, R. & Snyder, W. M. (2002). *Cultivating Communities of Practice*. Cambridge, Massachusetts: Harvard Business School Press.
- Weusijana, B. K. A., Svihla, D. J., Gawel, V. & Bransford, J. D. (2007). Learning about Adaptive Expertise in a Multi-User Virtual Environment. Second Life Community Convention, Education Track, August 25 2007 Chicago, IL.
- Wheelan, S. A. (2004). *Group processes : a developmental perspective*. 2nd ed. Needham Heights, MA: Allyn & Bacon.
- Wheelan, S. A. (2009). Group Size, Group Development, and Group Productivity. *Small Group Research*, 40, 247-262.
- Wheelan, S. A. & McKeage, R. L. (1993). Developmental patterns in small and large groups. *Small Group Research*, 24, 60-83.
- Whyte, W. F. (1943). *Street corner society: The social structure of an Italian slum*. Chicago: Chicago University Press.
- Wiecha, J., Heyden, R., Sternthal, E. & Merialdi, M. (2010). Learning in a Virtual World: Experience With Using Second Life for Medical Education. *Journal of Medical Internet Research*, 12, e1.
- Williams, D., Caplan, S. & Xiong, L. (2007). Can You Hear Me Now? The Impact of Voice in an Online Gaming Community. *Human Communication Research*, 33, 427-449.

- Williams, M. (2007). Avatar watching: participant observation in graphical online environments. *Qualitative Inquiry*, SAGE Publi, 1.
- Wilson, B. (2006). Ethnography, the Internet, and Youth Culture: Strategies for Examining Social Resistance and "Online-Offline" Relationships. *Canadian Journal of Education*, 29, 307-328.
- Wolcott, H. F. (1975). Criteria for an ethnographic approach to reserach in schools. *Human Organizations*, 34, 111-127.
- Woods, P. (1986). *Inside School: Ethnography in Educational Research*. London: Routledge.
- Yee, N. & Bailenson, J. (2007). The Proteus Effect: The Effect of Transformed Self-Representation on Behavior. *Human Communication Research*, 33, 271-290.
- Yee, N., Ducheneaut, J. N. & Bailenson, N. (2009). The Proteus Effect: Implications of Transformed Digital Self-Representation on Online and Offline Behavior. *Communication Research*, 36, 285-312.
- Young, M. F., Barab, S. & Garrett, S. (2000). Agent as detector: An ecological psychology perspective on learning by perceiving-acting systems. *In: Jonassen, D. H. & Land, S. M. (eds.) Theoretical foundations of learning environments*. Mahwah, NJ: Erlbaum.
- Zacharek, S. (1999). *Addicted to eBay* [Online]. Available: http://archive.salon.com/21st/feature/1999/01/cov_25feature.html.

APPENDIX A – SAMPLE OF NOTECARD DISTRIBUTED TO PARTICIPANTS

Title of study: Examining the extent to which people in social groups learn through information sharing in the virtual world, Second Life.

Hi. I am Wan-Ying Tay. I am conducting a study to examine how members of social groups in Second Life (SL) share information and how they learn from the information shared. I would like to seek your participation in this study as you've been actively participating in the group events. If it is possible, I will also like to interview you. Any opinions or comments that you share are valuable and will help inform the study. I would like to keep transcripts and video recordings of the group events and interviews so that I can go through them again at a later time. These, together with my notes, will be kept securely into a password-protected database of my computer.

Please kindly go to this link <http://users.ox.ac.uk/~kell0700/informedconsent.html> and indicate your consent to participate in this study. You may withdraw from this study at any time without penalty by contacting me in SL or emailing me. No information that personally identifies you will ever be disclosed. Your SL name will be anonymised in all publications resulting from this study.

Your participation is very much appreciated and I look forward to hearing your views. I would be most happy to send you a copy of the report after the study has been completed. In the meantime, if you have any questions regarding the study, please do not hesitate to message me in SL or drop me an email at wan-ying.tay@education.ox.ac.uk. If you have any comments or questions regarding the conduct of this research or your rights as a research participant, you may contact the Chair of our Department's Ethics Committee, Dr Lars-Erik Malmberg, at lars-erik.malmberg@education.ox.ac.uk.

Thank you. ☺

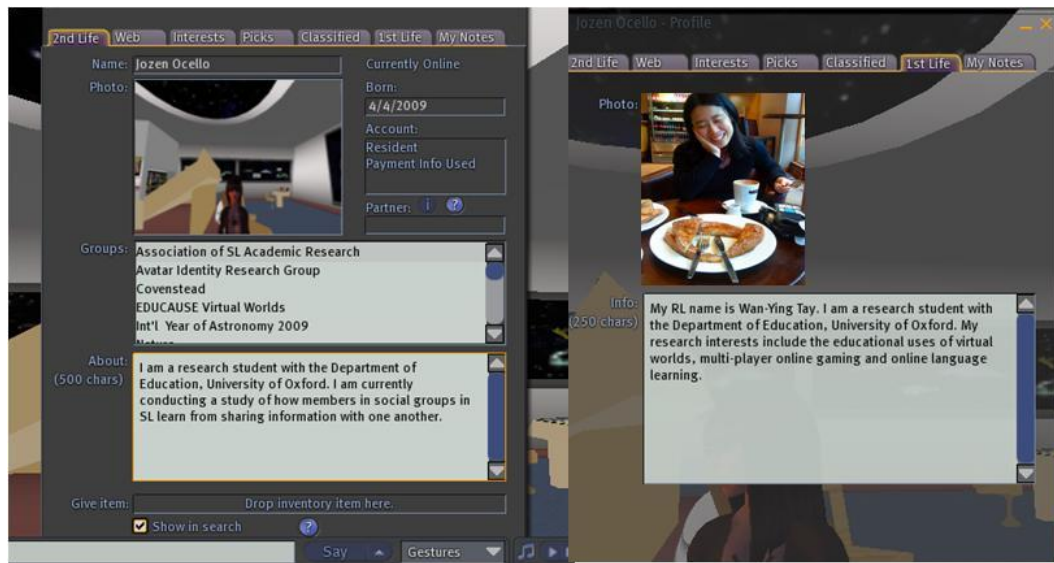
Wan-Ying Tay (RL name); JozenOcello (SL name)

Research Student

Department of Education

University of Oxford

APPENDIX B – PROFILE PAGE ON SECOND LIFE



APPENDIX C – ELECTRONIC INFORMATION SHEET

https://spreadsheets.google.com/spreadsheet/viewform?hl=en_GB&formkey=dE5ZmBwT1mUjS1d1fRD1WS1YWhc6MQ#gid=0



Examining the extent to which people in social groups learn through information sharing in the virtual world, Second Life.

Hi! I am conducting a study to examine how members of social groups in Second Life (SL) share information and how they learn from the information shared. I would like to seek your participation in this study as you've been actively participating in the group events. If it is possible, I will also like to interview you. Any opinions or comments that you share are valuable and will help inform the study. I would like to keep transcripts and video recordings of the group events and interviews so that I can go through them again at a later time. These, together with my notes, will be kept securely into a password-protected database of my computer.

Please kindly go to this link <http://users.ox.ac.uk/~kel0200/consentform.html> and indicate your consent to participate in this study. You may withdraw from this study at any time without penalty by contacting me in SL or emailing me. No information that personally identifies you will ever be disclosed. Your SL name will be anonymised in all publications resulting from this study.

Your participation is very much appreciated and I look forward to hearing your views. I would be most happy to send you a copy of the report after the study has been completed. In the meantime, if you have any questions regarding the study, please do not hesitate to message me in SL or drop me an email at wan.ying.tay@education.ox.ac.uk. If you have any comments or questions regarding the conduct of this research or your rights as a research participant, you may contact the Chair of our Department's Ethics Committee, Dr Lars-Erik Malmberg, at lars.malmberg@education.ox.ac.uk.

Thank you.

Wan-Ying Tay (RL name); Jozen Ocello (SL name)
Research Student
Department of Education
University of Oxford

Thank you for your interest in the study.

☐ I would like to participate in the study.

☐ I would like to find out more about the study.

[Continue >](#)

Powered by [Google Docs](#)

[Report Abuse](#) - [Terms of Service](#) - [Additional Terms](#)

APPENDIX D – ELECTRONIC INFORMED CONSENT FORM

https://spreadsheets0.google.com/spreadsheet/viewform?hl=en_GB&hl=en_GB&formkey=dGjPal2M2V1c0tWbJVMNEp3NjY1dmc6MQ#gid=0

Participation Consent Form

Title of study: Examining the extent to which people in social groups learn through information sharing in the virtual world, Second Life.

- 1) I have read the notecard issued to me in Second Life and understood the aims, methods, anticipated benefits, risks and other relevant information about this study.
- 2) I understand that I can withdraw my consent at any time during the study by informing the researcher of my decision, in which event my participation in the study will immediately cease.
- 3) I am aware that the information collected will be treated in a confidential manner and stored safely and that the data collected will be used for research purposes only.
- 4) I am aware that video/audio recordings may be made during the group sessions and interviews and that these recordings will be stored safely in the researcher's private computer which is password-protected and that the data collected will be used for research purposes only.
- 5) I am aware of who to contact should I have questions following my participation in the study.
- 6) I understand that this project has been reviewed by and received ethical clearance through the University of Oxford Central University Research Ethics Committee.

My SL Name

My RL name (optional)

I consent to the above-stated terms and give my consent to participate in the study.

☐ Yes
☐ No

For further queries or information on the study, please feel free to contact:

Wan-Ying Tay (RL): Jozen Ocello (SL)
Research Student
Department of Education
15 Norham Gardens
Oxford OX2 6PY
wan-ying.tay@education.ox.ac.uk

Powered by Google Docs
[Report Abuse](#) - [Terms of Service](#) - [Additional Terms](#)