INVESTIGATING FACE-TO-FACE AND COMPUTER-MEDIATED
OUT-OF-CLASS COLLABORATION IN AN ENGLISH FOR
TECHNICAL WRITING COURSE IN MALAYSIA

BY

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Abstract

With the recent shift of emphasis to social learning and the proliferation of new technologies, collaborative writing and computer-mediated collaborative writing are gaining prominence in the second language learning context. Research has shown that collaborative writing leads to improved written outcomes as well as opportunities for language learning. However, few studies have investigated how learners collaborate and what the factors that foster effective collaboration are. These aspects of collaboration are especially important for longer-term tasks carried out in out-of-class contexts, where the instructor's supervision is minimal. Similarly, research on the process of, and factors affecting, computer-mediated collaborative writing is still scarce.

Using a qualitative approach, this study closely examines the process of face-to-face and computer-mediated out-of-class collaboration to identify both the features present in different modes of collaboration and the factors that affect the learners' collaboration. Over the course of a 14-week semester, in the context of an English for technical writing course, two groups of learners collaborated in the face-to-face mode while another two groups of learners collaborated in the computer-mediated mode to complete an out-of-class writing task. Data were collected from multiple sources, including for the face-to-face groups: the groups' self-recorded meetings, their numerous drafts of the task, and multiple interviews with individual group members; for the computer-mediated groups: the groups' detailed 'revision history' of Google Docs, the chat histories of their synchronous interactions' applications, Google Hangout and WhatsApp, as well as individual interviews with the group members about their experiences.

The findings provide comprehensive insights into the intricate process of collaboration among the learners in both modes, specifically the interplay of different features and factors in shaping the collaboration of each group in each mode. In particular, although the groups in both modes of collaboration shared a number of common collaborative features, such as co-construction of task and peer assistance, a side-by-side examination revealed subtle but significant differences in the details and depth of the features of both modes. This leads to a clearer distillation of the affordances and constraints of each mode on out-of-class collaboration. The immediacy and physical presence of the face-to-face mode were found to encourage greater depth in discussion and peer support.

On the other hand, the computer-mediated mode promoted peer editing and cultivated a stronger sense of joint ownership among the learners. Further, the findings also show the varying influences of other factors, such as the learners' attitudes, their proficiency, and the role played by each group member in influencing the collaboration process.

This study provides further understanding of the underexplored area of out-of-class collaboration, and the emerging area of computer-mediated collaborative writing. In addition, the findings of the study have many pedagogical implications for educators, especially in terms of preparation for learners, and consideration of other factors such as context and assessment, if they are looking to implement the collaboration approach beyond the confines of the classroom or in a computer-mediated mode.

Dedication

*To my father, who showed by example
how hard work and determination breed success
and
To my mother, who taught me my first words of English
and is the reason I am where I am today*

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Chapter 1. Introduction

1.1 Background of the study

Collaborative work, especially collaborative writing is increasingly common in higher education institutions (Storch, 2011; Wigglesworth & Storch, 2012). Several reasons contribute to this. One of the reasons is the discovery that workplace writing is invariably collaborative (e.g. Ede & Lunsford, 1990). As such, institutions of higher learning are expected to help learners develop collaborative skills, which had become highly sought-after in the workplace (Nepal, 2012; Thomas, 2014). Another reason is the shift of perspective from cognitive to social learning in the educational context (Block, 2003), where researchers and educators are increasingly becoming aware of the benefits of learners working together and learning from each other. Moreover, collaborative work encourages learner-centred learning and learner autonomy (McDonough, 2004), essential skills, especially for learners in the higher educational context.

My interest in collaborative writing started when I taught a technical writing course to engineering students in a public university in Malaysia. The main purposes of the course were to teach learners different technical genres and research skills which may be useful in their future workplace and at the same time, improve their English proficiency. It is a high-stakes course, being a compulsory course and a requisite for graduation for every engineering student. The main assignment of the course, which carries a third of the total mark for the final grade, is a semester-long, out-of-class collaborative writing task. Over the few years of my teaching, I observed and heard from the students themselves, many issues that occurred in the students' collaborative experiences, which sometimes led to an aversion for collaborative work. This sparked my interest to learn more about collaborative writing, the potential and benefits of which have been discussed in the literature, especially in terms of what can be done to improve the implementation of the approach. In 2013, I was fortunate to be selected to attend the Brunei-U.S. English Language Enrichment Project for ASEAN programme. The highlight of the programme was an 11-week course for educators of English from various ASEAN countries. During the course, I learnt about the use of technology to assist and enhance teaching and learning, and particularly the emergence of computer-mediated

collaborative writing. It was an eye-opening experience for me as my prior experience of using technology for educational purposes was limited to the use of PowerPoint slides and emails for communication with students. Thus, this inspired me to also explore the possibilities of computer-mediated tools in enhancing the collaborative writing experiences for my students.

1.2 Statement of the problem

In second language learning (L2) contexts, research on collaborative writing is still scant (Shehadeh, 2011; Storch, 2011). Moreover, most of the studies focus on the language learning potential of collaboration, which was made prominent by Swain's seminal work (1998, 2002, 2006) about language-related episodes (LREs), or on the attitude of learners (Storch, 2005). As Storch (2005) points out, there is a lack of studies that have investigated the nature of collaboration and the activity of collaborative writing itself (p. 153). Yang (2014) concurs, calling attention to the lack of studies on the processes of collaborative work (p. 74). The dearth of research is even more evident in out-of-class collaboration, with most of the existing studies focusing on short in-class tasks, where teacher monitoring is present. It is known that teacher presence is a significant altering factor on how students behave and present themselves, due to their authority and power relationship with the students. Therefore, it is interesting and important to find out how the learners really collaborate with each other in a context that is out-of-class and with little presence of teacher monitoring. With collaborative writing an essential feature of workplace writing, it is imperative that learners get exposed and learn to collaborate in tasks similar to the workplace context, which is usually extended in nature.

At the same time, the proliferation of technology, especially web 2.0 tools that were created for collaborative purposes, mean that computer-mediated collaborative writing is coming to the fore (Kessler, Bikowski, & Boggs, 2012; Liou & Lee, 2011). Computer-mediated (CMC) tools open up a myriad of new possibilities for the implementation of collaborative writing. For one, they remove the confine of conventional classroom time and space (Ortega, 2009), and provide the flexibility for learners to do the work in the time and space of their convenience. Also, their text-based nature and the additional processing time they afford are believed to promote more conscious attention and reflection about language among learners (Kern, Ware, & Warschauer, 2004). In

addition, they not only allow learners access to tasks at any time, but also as Meyer (2003) claims, promote equal opportunities to communicate and contribute, including for inarticulate or shy learners. Finally, some CMC tools, such as Wikis and Google Docs, also possess a tracking and history feature that record all contributions made by each individual learner, which make it possible for instructors to observe and monitor the collaboration process of learners (Liou & Lee, 2011). Thus, it seems that computer-mediated collaborative writing could address some of the shortcomings of conventional collaborative writing, such as unequal contribution and disjointed writing. This is especially relevant for out-of-class collaboration. However, research on computer-mediated collaborative writing is scarce (Storch, 2013), possibly because the development of CMC tools has been fairly recent, and partly because of the reluctance or ignorance, such as in my case initially, of researchers and instructors to explore the unknown potential of computer-mediated collaborative writing in language teaching and learning. Further, only few studies have investigated both face-to-face and computer-mediated collaborative writing together, and there is a dearth of studies, especially in the tertiary Malaysian ESL context.

1.3 Research context

Malaysia is a country with a unique language history and development. Due to its diverse population of many ethnic groups, many languages are spoken by different people, and learners have different language background and experiences, depending on their ethnic groups, their schooling experiences, and where they come from. Many Malaysians are also multilingual, due to their exposure to different languages growing up. In general, there are three main ethnic groups in Malaysia, namely the Malays, the Chinese and the Indians. This is followed by other minority groups like Indians of Sikh religious affiliation, indigenous people and others. The Malay language is the official language of the country, but people from other ethnic groups also speak their own languages and there are vernacular Chinese and Tamil schools where the medium of instruction is Mandarin and Tamil respectively.

The status of English language is also unique in Malaysia, having undergone many transformations in status throughout the past few decades due to numerous socio-political and geographical factors. As a former colony of the British empire, officially English has the status of a second language in Malaysia, and is still widely used in many

governmental and private organisations in the present day. Befitting its status, the teaching of English is emphasized in schools, with considerable hours afforded to the teaching of the language, second only to the teaching of the national language, the Malay language. There are also many English TV programmes, English radio stations, English TV news as well as English newspapers available every day. However, due to the issues of language nationalism as well as the rural urban divide (David & Govindasamy, 2005), the use and exposure to the English language can differ tremendously in different places in the country. In big cities, many people, including students, can speak English fluently, with some even using English as the medium of interaction at home. However, in small towns and less developed places in the country, English is probably a foreign language to the people and students there, and exposure to and use of the language is confined only to school. As English is only one of the subjects in the national exams, with other subjects mostly taught and assessed in the Malay language, the students can still score very good results that secure them a place in a tertiary institution without having good English proficiency.

However, in tertiary education, the importance of English is suddenly emphasized. English is the medium of instruction for many courses, especially science and technical courses. Furthermore, all the reference books in the library and online resources are in English. Due to this, many students, especially from the rural areas, face many struggles in transitioning to their tertiary studies. Similarly, the instructors also face the challenge of having to accommodate learners from a diverse range of proficiency levels in the same class, especially in terms of pace and depth of instruction in English, to make sure that everyone can keep up.

The demand for English continues after the learners graduate, with English proficiency one of the top requisites in workplaces, especially in the private sector. Numerous newspapers have reported that one of the main reasons many university graduates in Malaysia are not able to procure employment is because of their inferior English language skills (Sheith Khidhir & Nurul Azwa, 2018). As such, there is a strong awareness among the instructors and learners in tertiary education about the importance of having good proficiency in English, and a motivation for some learners to strive for better command of English.

Being aware of the issue of learners' weak command of English, the Malaysian government has tried to implement numerous measures to improve the situation. One of the measures is the Ministry of Education's advocacy for use of technology in teaching and learning, especially in English (Kabilan, Ahmad, & Abidin, 2010). However, so far, while students have shown positive perceptions towards technology use and willingness to try using technology in learning (Thang, Lin, Mahmud, Ismail, & Zabidi, 2014), the teachers, although they might be aware of the potential benefits of technology (Melor, 2007), are wary about using technology in their classes, citing as reasons issues like inadequate training, lack of/slow Internet access and not being ready to learn new technologies (Samuel & Bakar, 2006).

1.4 Purpose of the study

The purpose of this study is two-fold. The first purpose is to provide a detailed understanding about out-of-class collaboration, in both face-to-face and computer-mediated mode. To do so, I will investigate the collaboration process of two face-to-face groups and two computer-mediated groups, to identify the salient features characterising each group's collaboration and the group members' attention to language.

The second purpose is to determine the factors that shape the learners' collaboration in a context where they have the power and freedom to decide what to do. By investigating both the face to face and computer mediated modes simultaneously and in the same research context, I hope to delineate the similarities and differences of collaborating in the two modes, and the extent of the influence of each mode on the collaboration as well as other factors that shape the learners' collaboration.

As Li and Storch (2017) made clear, computer-mediated collaborative writing creates a new way of writing and collaborating. As such, it is not comparable to face-to-face collaborative writing. Therefore, the purpose of this study is not to determine which approach is better. Rather, this study aims to elucidate in detail the process and features of both modes of collaboration so that further understanding can be gained regarding each approach. This will be especially informative for instructors who are considering collaborative work as they can weigh the affordances and constraints of each mode and decide which approach meets their and their learners' needs the most.

1.5 Organisation of the thesis

This thesis contains eight chapters. Following this chapter, Chapter 2 provides a review of the literature and illuminates the research gaps in existing literature. Chapter 3 explains the theoretical perspective governing this study and the methods employed for data collection and data analysis. In Chapter 4, I discuss the collaboration process findings of both face-to-face groups. In Chapter 5, I discuss the collaboration process findings for the computer-mediated groups. In Chapter 6, the participants' perspectives about their collaborative experiences, derived from their individual interviews, is presented. In Chapter 7, I put the findings of both modes side-by-side and attempt to distil the features exclusive to each mode of collaboration and its effects on learners' collaboration. I also discuss other contextual factors that affect learners' collaboration in each mode. Finally, in Chapter 8, I conclude the thesis by summarising the contribution of the study as a whole and providing implications and limitations of study, as well as suggestions for future research.

Chapter 2. Literature Review

2.1 Introduction

As mentioned in the previous chapter, collaborative writing is an emerging area of interest for both research and practice in second language learning (hereafter abbreviated as L2) contexts. However, existing literature has mostly focused on the aspect of peer feedback and the language learning potential of collaboration, utilising short, in-class tasks. Few studies have investigated the entire process of collaboration carried out by learners, especially in an out-of-class context. With the advent of computer-mediated collaborative writing, researchers are now able to gain access to learners' process of collaboration, and this may lead to better understanding of how learners collaborate, and of the factors that affect their collaboration.

In this review of literature, I will first conceptualise the collaboration approach and collaborative writing in particular, which remains a contentious issue among researchers. Then, I will elaborate on the theoretical perspectives governing this study before I review previous studies about collaborative writing in the L2 context, in first the conventional face-to-face (F2F) mode, and then the computer-mediated (CMC) mode. My focus is especially on the small number of studies that have explored various aspects of the collaboration process. Finally, I will discuss the few comparative studies that investigated both modes of collaboration simultaneously and elucidate the gaps in the literature that this study aims to fill.

2.2 Conceptualising collaboration and the collaborative writing approach

Collaborative writing is a difficult concept to define, with varying descriptions, features and practices applied among different authors and across different contexts (Lowry, Curtis, & Lowry, 2004; Yong, 2006). In the broadest sense, collaborative writing involves two or more people co-authoring a single piece of text (Roschelle & Teasley, 1995; Storch, 2013). Some writing scholars have argued that all forms of writing can be considered collaborative, as writing is a social process and writers often write with an intended audience in mind (Hirvela, 1999) or seek help from others during the writing process in the form of review or feedback (Storch, 2013). However, as Bremner (2010)

states, collaborative writing is more than just a group of people working together to produce a text. There are many complexities and variations in collaboration that need to be brought to students' attention.

Some of the complexity in defining collaborative writing arises from the often-interchangeable use and blurring of classifications between collaborative and cooperative learning (Lai, 2011), which are long standing approaches in education from which the collaborative writing concept emerged. Collaborative and cooperative learning are two different approaches but they share many overlapping features. As Inglehart, Narko and Zimmerman (2003) explain, "cooperative and collaborative learning are not completely distinct, but rather more like an arbor of vines growing in parallel, crossing, or intertwined" (p. 2). Researchers have tried to explicate the differences between the two approaches. Several researchers suggested that division of labour is the main difference (Dillenbourg, Baker, Blaye, & O'Malley, 1996; Lai, 2011; Roschelle & Teasley, 1995; Storch, 2013). In particular, cooperation involves dividing the task between individuals who work separately on different parts of the task, while collaboration requires all group members to work together to complete the task (Lai, 2011; Storch, 2013).

However, it can be acknowledged that the distinction is not clear-cut. For example, as Dillenbourg et al. (1996) point out, division of labour might also occur in collaboration and thus they suggest that a more fitting definition would be in terms of how the task is divided and carried out. The authors specify that in cooperation, the task is split into independent subtasks that are performed by individual group members and coordination is only required to assemble the different parts after they are completed. On the other hand, in collaboration, the task, despite being divided, is still intertwined, and attempts at coordination and shared conception are continuous throughout the process (p. 2). In other words, the features that differentiate collaboration and cooperation would be the joint effort and continuous engagement between the group members throughout the process. Roschelle and Teasley (1995) are of a similar view, as they also emphasize "mutual engagement" and "coordinated efforts" by the participants to solve problems or complete the task together in collaboration (p. 70).

In addition, Hirvela (1999), Inglehart et al. (2003) and Storch (2011, 2013) proposed the notions of joint ownership and joint responsibility for the task as also being significant

aspects in collaboration. Making the case against peer review tasks being collaborative as some have claimed, Hirvela (1999) argued that the focus of collaborative writing is the process, and that only when the learners are involved from the start to the end of the task, and are given the opportunities to discuss the task in-depth with each other, does it constitute a collaborative writing task, and become beneficial for L2 learners. Thus, peer review tasks, where discussion only occurs in one part of the writing process, and the ownership still belongs to the individual writer, are not considered collaborative writing. Storch (2013) concurred, and further elaborated that joint ownership should mean that it is not possible to distinguish between different contributions of individual group members in the written text.

As such, what differentiates collaboration from other approaches is the process of how learners work together to carry out the collaboration. It is the learners' continuous engagement and effort to contribute to the task, as well as their shared ownership and responsibility towards the task, that would be vital to the success of the collaboration. Curtis and Lawson (2001) agreed, suggesting that the distinguishing mark of collaboration from other approaches is the extent and quality of exchanges among the participants in the collaborative environment.

Donato (2004) who discussed in-depth the collaboration approach, particularly from the perspective of second language learning, mentioned two important aspects that were often overlooked by instructors and researchers in collaboration. The aspects are the social relations developed between the group members as they work together towards achieving a common goal, and the importance of time required to develop the social relations essential for collaboration (p. 287). Further, the author proposed that research on language learning should investigate the interactional dynamics between learners and argued for a focus on the bigger purpose of collaboration, that is for learners to not only learn new knowledge, but also learn how to collaborate with each other, and how to become contributing participants of a community of practice that they reciprocally help to forge (p. 289)

To summarise, what is important in collaboration is the process of how the learners collaborate with each other and whether they exhibit features that characterise what collaboration is, such as the features discussed above. What is also important is the relationship developed between the learners which requires time to develop. Thus, a

longitudinal study, carried out in an out-of-class context, that investigates in detail the collaboration process of learners, is called for.

2.3 Theoretical perspectives of collaborative writing in second language contexts

In general, studies on collaborative writing are governed by two major theoretical perspectives. Many studies of collaborative writing and computer-mediated collaborative writing employ the interactionist approach (Chapelle, 2006) which views the negotiation of meaning and form between learners when they encounter communication difficulties in collaboration with their peers, as leading to learning for the individual learner (Long, 1983). However, another theoretical perspective, which has been utilised in more recent studies, and the main framework governing this study, is Vygotsky's (1978) sociocultural theory. Sociocultural theory is a theory of mind, but emphasizes social learning. It posits that the development of higher order mental functions such as logical thinking, problem solving and language learning, will first happen during social interaction, between people (that is on the 'intermental' plane), before being internalized within the individual, (the 'intramental' plane), and absorbed to become personal knowledge that can be utilised repeatedly. This perspective supports collaboration as a suitable approach for learning, as learners are provided with opportunities to interact and learn from people around them.

One of the fundamental concepts of sociocultural theory is mediation. Sociocultural theory suggests that all forms of human mental function are mediated by tools or signs, which are physical and symbolic objects created by humans (Wertsch, 2007). Lantolf (2000) contends that, in the L2 learning context, one of the most important mediating signs is language. Further, researchers have also discussed the importance of human mediators (Kozulin, 2003; Williams & Burden, 2009), the individuals with whom the learners interact. Kozulin (2003) specifies that not all interactions will have the mediational effects conducive for learning, and it is the influence of the human mediators that will likely shape the learning experiences and subsequent development of the learners. In other words, the group members that the learners collaborate with play an important role in mediating their collaborative experiences and subsequently their cognition and learning. Additionally, the computer-mediated mode is another mediational tool which would have differing effects on the learners' interactions as

compared to their interaction in the conventional face-to-face mode (Gutiérrez, 2006). Therefore, the process and subsequently the outcome of each collaborative group and between different collaboration modes is expected to be unique.

Relating to the concept of mediation, Vygotsky (1978) further advances the concept of the Zone of Proximal Development (ZPD), which is “the distance between actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers” (Vygotsky, 1978, p. 86). Referring to learning, Vygotsky contends that learners are capable of achieving their potential development, a level which they would not be able to reach independently, when they interact and collaborate with more capable peers who can provide assistance or guidance to them. Extending from this concept of the ZPD, researchers (e.g. Donato, 1994; Van der Lier, 1996) used the concept of “scaffolding” (Wood, Bruner, & Ross, 1976) to refer to the assistance provided during the process of collaboration. Wood et al. (1976) define scaffolding as the “process that enables a child or novice to solve a problem, carry out a task or achieve a goal which would be beyond his unassisted effort” (p. 90).

The concepts of the ZPD and scaffolding are initially discussed in the context of a more capable expert helping a less capable novice to achieve learning and development. However, Donato's (1994) study, which was situated in the second language learning context, has shown that even peers of comparable abilities are capable of helping each other to perform at a higher level and learn from each other. Donato found that his participants were involved in collaborative interactions and as a result they were able to mutually construct and arrive at a shared, mostly correct, understanding. Moreover, most of the learners were also able to independently demonstrate the same understanding later. Thus, Donato proposed the term “collective scaffolding” and surmised that the learners are “individually novice but collectively expert” (p. 46). Donato's findings reinforce the notion of collaboration in sociocultural theory and support the possibility of learners of similar ability levels working together to produce better work and to learn better.

Contrary to prior theories that view learners as passive receivers of knowledge, sociocultural theory views learners as active participants who collaborate with others to co-construct their own understandings and shape their world according to their goals

(Kao, 2010; Lantolf & Appel, 1994). Hence, as Barnard and Campbell, (2005, p.76) state, learning is “not merely conveyed, but [is] mutually created by the participants in a structured dialogue.” Accordingly, the learners’ perspectives, as well as the social and cultural contexts are emphasized in sociocultural theory (Ozer, 2004). Sociocultural theory deduces that not only are social interactions critical for learning, but also that “human learning cannot be understood independently from the social and cultural forces that influence individuals” (Barnard & Campbell, 2005, p. 76). Therefore, one of the central methodological considerations of sociocultural theory is the importance of understanding the context and the genesis (history) of the individuals and the associated phenomena. As explained by Swain, Kinnear and Steinman (2015), a person’s life experiences will mediate their beliefs and perspectives, which in turn will mediate their actions and interactions with others. In view of that, sociocultural theory takes into consideration the surrounding contexts and the past experiences of individuals in contributing to their understanding of a phenomenon, which is one important strength of this framework.

In this study, sociocultural theory provided the framework for me to investigate in detail the collaboration process and the co-construction of learning experiences between learners working on an out-of-class collaborative writing task, within its naturally occurring context. With respect to computer-mediated collaborative writing, it is my interest to find out how computer-mediated communication tools - in this case, Google Docs - can mediate the process of collaboration between learners and how different the process would be from the conventional face-to-face mode. Additionally, this study also looks at the perspectives of the learners involved in both modes of collaborative writing so that a more complete understanding of the phenomenon can be achieved.

2.4 Studies of conventional collaborative writing in an L2 context

In general, the language learning potential of collaborative writing in an L2 context has been the focus of researchers, understandably so, as one of the main purposes of second language learning is the linguistic competence of learners. The findings have been largely positive. In the next sub-section, I summarise the general aspects and findings of collaborative writing studies in terms of potential for language learning.

2.4.1 Language learning potential

The considerable interest in the language learning potential of collaborative writing began with the seminal work of Swain and her colleagues (Swain & Lapkin, 1998, 2002; Swain, Brooks, & Tocalli-Beller, 2002; Swain, 2006; Swain & Watanabe, 2012). Inspired by Vygotsky's sociocultural theory, Swain proposed and discussed how collaborative language tasks, including writing tasks, provide opportunities for learners to think about language, discuss language and learn language by themselves or through others. Swain suggested that this process of thinking and talking about language, which she termed "languaging" and defined as "the process of making meaning and shaping knowledge and experience through language" (Swain, 2006, p. 89), are conducive to language learning. By languaging, learners are able to crystallise their ideas, reshape their thinking, reflect on their language and become aware of gaps in their knowledge. Moreover, through discussion with their peers, they are then able to form and test hypothesis, obtain understanding from their peers or pool their knowledge together to co-construct new knowledge (Swain, 2006; Swain & Lapkin, 2001). Swain proposed that collaborative dialogue, the dialogue or outcome from this "languaging" process, mediates L2 learning and is a source of L2 development (Swain, 2000, 2010; Swain & Watanabe, 2012).

To operationalise learners' processes of languaging and collaborative dialogue, Swain and Lapkin (1998, 2002) utilised the construct of "language-related episode" (LRE) to capture learners' discussion about language during their collaborative interactions. Their extended definition of LRE is: "Any part of the dialogue where learners talk about the language they are producing or have produced, reflect on their language, question their language use, or correct themselves or others" (Swain & Lapkin, 2002, p. 292).

Swain and Lapkin's (1998) study showed that learners were indeed able to discuss and learn about language from each other as they worked collaboratively in class. They analysed the interactions of two French L2 learners who worked together to complete a (written) language task in class, and found that the learners were engaged in collaborative dialogue that had many functions besides just communicative purposes. Via collaborative dialogue, the learners co-constructed knowledge about language, asked and received help from each other, as well as testing their hypotheses. The analysis of the collaborative dialogue indicated that the learners mostly focused on two

categories of LREs, lexis-based and form-based. Lexis-based LREs concern discussion about lexical items while form-based LREs involve discussion about grammar and syntax. More importantly, the pre- and post-tests which Swan and Lapkin (1998) carried out showed that the learners were able to individually apply what they had discussed earlier, which the researchers interpreted as an indication of their L2 learning in progress.

Other subsequent studies that have investigated the possible relationship between LREs and language learning during collaborative writing tasks, especially using tailor-made pre- and post-test methods, have also reported positive findings. The researchers found that most learners were successfully able not only to co-construct the written texts, but also to retain the knowledge acquired from their successfully resolved LRE discussion and apply it in the subsequent individual post-tests (Brooks & Swain, 2009; Eckerth, 2008; Kim, 2008; Watanabe & Swain, 2007). However, it should be noted that most of the collaborative writing tasks employed by these studies were short, in class, language tasks such as dictogloss (Kim, 2008) and text-reconstruction (Eckerth, 2008) that were meant for improving learners' language proficiency rather than their writing proficiency.

To find out whether learners would still focus their attention on language in actual collaborative writing tasks, Storch and Wigglesworth (Storch, 2005; Storch & Wigglesworth, 2007; Wigglesworth & Storch, 2009) carried out a number of studies comparing individual and paired learners collaborating on writing tasks such as argumentative essays and data commentary reports. While there was variation among the participants, the researchers reported that attention to language, operationalised in terms of LREs, was one of the most discussed aspects in learners' interaction, after the content of the task. In terms of types of LREs, lexical items such as adjectives and context-specific nouns, took up over half of learners' discussion of language, followed by form-based LREs relating to grammar, and a small number of mechanical LREs, i.e. spelling. The researchers observed that in attending to LREs, learners are able to pool their incomplete linguistic knowledge to collectively scaffold each other's performance (Storch & Wigglesworth, 2007) as they deliberated and sought confirmation for their ideas as well as provide feedback and assistance to each other (Wigglesworth & Storch, 2009). All these actions are conducive for language learning, and as Storch and

Wigglesworth contend, were possibly the reasons the collaborative learners were able to produce better written outputs than their individual counterparts.

After establishing the positive link between learners' attention to language and language learning, researchers began to seek further understanding of the ways and the factors that could enhance learners' attention to language during collaboration. According to Storch (2011), three factors- task types, proficiency levels of group members and the nature of interactions of learners - have received considerable attention from researchers. Thus far, studies investigating these factors have produced mixed findings. In terms of task types, studies that compared several language-based collaborative writing tasks reported that both meaning-focused tasks such as jigsaw tasks and form-focused tasks such as dictogloss and text-reconstruction tasks generated a comparably substantial amount of LREs, but with different focuses (Aldosari, 2008; de la Colina & Mayo, 2007; Swain & Lapkin, 2001). Meaning-focused tasks would be more likely to elicit more lexical-focused LREs while form-focused tasks would generate more form-focused LREs.

As for learners' proficiency level, Leaser (2004) reported that more proficient paired learners resolved significantly more LREs than their mixed and lower-proficiency counterparts. However, other studies (Edstrom, 2015; Storch, 2002; Watanabe & Swain, 2007) have found learners' patterns of interaction (Storch, 2002) (further discussion in section 2.4.2) to be more significant than their proficiency levels in terms of providing peer assistance as well as generating and resolving LREs. Watanabe and Swain (2007) also discovered that it was the pairs with collaborative patterns of interaction, rather than the pairs with highest proficiency level, who had the best scores during the post test. In addition, Aldosari (2008) who researched the effect of proficiency, task types and the relationships between learners on their attention to language when collaborating with peers, also concluded that the relationship that formed between the learners is more important than their proficiency level.

Besides these three factors, Fernández Dobao (2012b, 2014) investigated the effect of group size on the production and resolution of LREs during collaborative writing. Comparing between pairs and groups of four, she found that not only did the groups produce more LREs, but they also managed to successfully resolve more LREs as compared to the paired participants. She deduced that the groups were able to draw on

more resources from each other and as a result were able to pool their knowledge together to complete the task. Her findings support the notion of collective scaffolding as discussed by Donato (1994), and promote the consideration for a larger number of group members when carrying out collaboration.

Besides the possible factors affecting LREs, researchers have also investigated the different categories as well as depth of LREs found in learners' collaboration processes. Swain and Lapkin's (1998) initial categorisations of lexis and form-based LREs was sufficient for short, in-class writing tasks meant for language learning, which was the task utilised in the study. However, other studies that investigated longer, more extensive writing tasks have attempted to expand the scope and categorisation of LREs in order to accommodate their data. The most common addition of LRE categories is discourse LREs, which generally consist of discussion relating to the discourse level, such as organization of the text (Amirkhiz, Bakar, Samad, Baki, & Mahmoudi, 2013; Brooks & Swain, 2009), aspect of text cohesion (Fortune & Thorp, 2001; Loewen & Basturkmen, 2005), sentence structure and length, sentence and text connections and paragraphing (Niu, 2009), and features relating to the particular genre of the writing task (Loewen & Basturkmen, 2005). Some studies included discussion related to discourse as part of a form-focused category (Amirkhiz et al., 2013; Brooks & Swain, 2009), while other researchers explicitly added the additional category of discourse LREs to their analysis (Fortune & Thorp, 2001; Loewen & Basturkmen, 2005). In general, researchers have found that discourse LREs are an important presence in learners' discussion during the collaborative writing task. Brooks and Swain (2009) who included discourse LREs as part of the form-focused category, reported that the form-focused category formed the major part of LRE discussions of their participants. Similarly, Loewen and Basturkmen (2005) who investigated two groups of learners' discussion of language during a data commentary writing task in a genre-based EAP classroom, found that discourse LREs were the main focus, and constituted almost half of the total LREs produced by both groups of learners. Loewen and Basturkmen (2005) further divided their discourse LREs category into two sub-categories, namely genre-related and textlinguistics. Genre-related LREs involves discussion relating to the particular genre of the writing task, i.e. data commentary, and textlinguistics involved discussion relating to the written discourse, such as the aspect of cohesion. The

researchers found that genre-related LREs dominated the discussion of both groups, with over 70% of discourse LREs comprised of genre-related discussion.

Besides discourse-LREs, another additional category of LREs used by researchers is orthographic LREs, which deals with spellings of the words (Fortune & Thorp, 2001; Kowal & Swain, 1994; Loewen & Basturkmen, 2005).

Lastly, some researchers have also examined the depth of the LREs, which they suggest represented the level of engagement of the learners (Kowal & Swain, 1994). Storch (2008) analysed the metatalk of learners working in pairs on a text reconstruction task which she divided in two categories, elaborate and limited. The elaborate category is when learners are engaged and have in-depth discussion about the language item while the limited category is when one learner makes a suggestion and the other learner either responds conclusively, or does not reply to the suggestion. She found that almost half (44%) of the total LREs discussed were resolved with elaborate engagement and that there was a positive connection between elaborate engagement of LREs and the subsequent learning/consolidation of the language items by the learners when they carried out individual writing tasks. Likewise, Edstrom (2015) reported similar findings to Storch (2008) with her triads of participants who were involved in a collaborative script writing task. She found that the majority of the LREs (72%) were discussed and engaged with elaboratively by the participants and most of the LREs (65%) were successfully resolved. Thus, the findings of these studies suggest that collaborative writing tasks are able to promote elaborate discussion of LREs among learners, which is positively associated with learners' engagement levels and language learning.

Overall, the findings are affirmative for collaborative writing in promoting learners' attention to language, which is positively linked to language learning. However, as Fortune and Thorp (2001) observed, learners' interactions are a complex matter and require more detailed analysis than just the classification and quantification of language related episodes. To exemplify their point, the researchers discussed the importance of considering the value and nature of the LREs, in terms of the length and the weight of each episode, as well as metatalk, the discussion that occur alongside each episode of LRE. In other words, just knowing the quantity or types of LREs are not sufficient, as other factors also need to be taken into consideration in order to better understand the extent of learners' attention towards language during collaboration. Thus, the

researchers emphasized the need for qualitative analysis which would be a more suitable approach to capture the complexities and richness of learners' interaction data (p. 158).

On a similar note, learners' attention to language is only a small part of collaborative writing. More central to collaborative writing is the process of collaboration, how learners collaborated, and the factors that influenced their collaboration. In the next section, I will review studies that have investigated various aspects of the collaboration process of learners as they carry out collaborative writing in the L2 context.

2.4.2 Process of collaboration

Due to the longstanding perception of writing as a solitary activity, there seems to be hesitation from teachers in implementing collaborative writing in the classroom. Rather, collaboration is often planned either as pre-writing activity (e.g. Neumann & McDonough, 2015) or at the revision stage, where peer feedback was the focus (e.g. Hanjani & Li, 2014; Yu, 2015). In fact, Watanabe(2014) reported that peer feedback, which was only carried out in the revision stage, was the main scrutiny in many studies that researched learners' collaboration process. However, the focus of peer feedback is on the product rather than the process (Storch & Wigglesworth, 2007). This means that the main process of writing and ownership of the written text is still confined to the individual learner. As such, in this review of literature, these studies are excluded as the focus is on studies that have investigated the entire process of collaboration.

The few studies that have explored the whole process of learners' collaboration have focused on four aspects in particular: the general process of collaboration, learners' patterns of interaction, features of collaboration, and factors that influence collaboration. I discuss each of these in turn next.

General collaboration process

Thus far, research on the general process of learners' collaboration has examined the way learners collaborate, the occurrence of knowledge construction, as well as their interactional focus when collaborating. Mutwarasibo (2013) wanted to find out how university learners in Rwanda carried out self-directed collaborative writing and whether the way they collaborate would affect their perceived learning experiences. Sixteen participants were individually interviewed after they had worked in groups of 4

to complete a 5-week writing task. The researcher reported that the four groups collaborated in four different ways, indicating the variability that existed between learners in what they perceived as collaboration. Essentially, the group that chose to divide the work to do individually, and only met at the end to combine their work, scored the lowest mark and was also least enthusiastic in their opinion of collaborative work, preferring individual work instead. The other three groups were more collaborative, in that although they also divided the work, they either worked in pairs or had periodic meetings and received help from their peers throughout the process. As such, the three groups had more positive perceptions about their collaborative experiences. One group in particular, whose members contributed actively in their meetings, scored the highest mark in the writing task, and the group members also acknowledged the assistance and learning they received from their peers. The researcher concluded that collaboration is a challenging process and emphasized the important role of the teacher in ensuring that learners understand the value of collaboration. However, while Mutwarasibo's study claims that continuous engagement and peer support is important for learners' collaboration, the data collected was only from the learners' interviews. The researcher did not have access to the actual process of collaboration which might have turned out to be different from the learners' perceived experiences and may provide further insight into why the learners had different ways of collaborating.

Another study went into more detail about the collaboration process, specifically the construction of knowledge among learners as they collaborated with their peers. In Nykopp, Marttunen and Laurinen (2014), 21 Finnish university students worked in self-selected groups of 3-4 people to jointly write an essay. The learners first individually read and summarised different educational theories covered in the course syllabus, and then in class they were asked to collaborate with their peers, to read each other's summaries and jointly write about one theory as assigned by the instructor. The researchers analysed the learners' joint essays and their discussion to identify episodes of interaction that were later incorporated into the essays. These episodes of interaction were deemed to be construction of knowledge and were then further analysed to investigate the discourse features of learners' attempts at constructing knowledge. The findings showed that the learners relied on their peers the most when constructing knowledge, with *collaborative interactions*, constituting more than half of their

discussion, followed by *content processing*, and *monitoring and regulating*, as well as *off-task*. In their collaborative interactions, the most common strategies used by the learners were collaborative completion (32%), followed by quick agreement, asking questions and discussing edits. The researchers reasoned that disagreement is actually a form of knowledge construction, as it indicated the engagement levels of learners and obliged them to provide reasoning about or support for their ideas. However, they noted the very small amount of disagreement (8%) among the learners and speculated that this might be caused by the passive learning style of Finnish students, who tend to accept rather than argue with the opinions of others. As for *content processing*, the categories were conceptualising ideas, clarifying ideas, expressing an idea or thought, and others.

This study provided support for the value of collaborative work for learners, as well as interesting insights into the strategies learners used when collaborating with their peers. The high amount of collaborative completion, where students complete each other's sentences or ideas, suggested the importance of proximity and immediacy of face-to-face collaboration, which may be lacking in computer-mediated mode. However, the researchers also noted that interestingly, although many questions were asked by the learners, the amount of answers received were few. They surmised that it may be due to the nature of the questions which were posed as a thinking point rather than expecting an answer, or the learners were expecting other group members to answer the questions. Yet, I think that another possibility may be due to the instant and chaotic nature of interactions between multiple group members at one time as they discussed the task, which may cause messages to be lost in the interactions sometimes.

In a third set of studies, Storch (2005), Storch and Wigglesworth (2007), and Wigglesworth and Storch (2009), also investigated the process of learners' collaboration, particularly in terms of how they collaborated and what the focus of their interactions was. Their studies were based on comparison of individual and paired learners' written outcomes. The researchers arrived at similar findings in their studies. They reported that although there were variations in the amount of time spent and ways of collaborating among the learners and according to task, in general they spent the most time in the writing phase, as compared to the planning and revision phases. In their interactions, the learners spent the longest time generating ideas about the task, an activity that they valued greatly (Storch, 2005), followed by attention to language.

Additionally, the learners also discussed task structure and revisions as well as other aspects of the tasks. Overall, the researchers noted several benefits of the learners collaborating, such as the opportunity to pool knowledge and co-construct better ideas, the opportunity to provide assistance and assurance to each other, and as indicated by their written outcome, the ability to produce more linguistically complex and grammatically accurate texts. Not only that, working collaboratively also promoted joint responsibility and a sense of co-ownership among the learners, which encouraged their involvement and decision making in all parts of the task. As such, these studies affirmed the benefits of collaboration for learners, not only in written outcomes, but also during their process of constructing the task.

Overall, these studies informed the many ways learners collaborate with each other, and also the various factors that can influence how learners collaborate, such as task types, the learners' perceptions about collaborative work, and even the learners' learning styles. It is evident that collaborative work, if performed effectively, can lead to construction of knowledge and many other benefits to the learners.

Patterns of interaction

The second aspect of collaboration process, which has garnered interest from many researchers, is learners' pattern of interaction, which was first explored by Storch (2001, 2002). Storch's landmark research subsequently sparked further studies by other researchers, especially in terms of its connection with language learning (discussion in section 2.4.1), even expanding to the area of computer-mediated collaborative writing (discussion in section 2.6.2)

Patterns of interaction refers to the ways learners interact with each other while working collaboratively. In her work, Storch (2002) investigated paired learners working on collaborative writing tasks and she identified four distinct patterns of interaction which correlated with the features of equality and mutuality. Equality refers to the degree of contribution and control individual participants had over the task, while mutuality refers to the level of engagement between the participants. The four patterns identified are firstly, collaborative, where equality and mutuality are both high, with both learners contributing to the task, sharing resources and responsibility and both engaged equally in the task. The second pattern is dominant/dominant, where equality is high but mutuality is low. In this pattern, both learners contribute to the task but are

not willing to engage with each other's contributions. There is also a high tendency for conflicts to happen. The third pattern is dominant/passive. In this pattern, both equality and mutuality are low as one member dominates the discussion and the execution of the task while another member has a minimal role. The fourth pattern is expert/novice where equality is low but mutuality is high. In this pattern, one member becomes the expert but actively encourages his/her partner to join and contribute in the task. Storch (2001, 2002) concluded that the pattern of interactions has a significant impact on language learning of the learners. She observed that pairs who worked in the collaborative and expert/novice patterns experienced more instances of knowledge transfer as compared to the pairs in the dominant/dominant pattern and dominant/passive patterns. This was because they were actively involved in task negotiation as well as in collaborative dialogue, which provided them with opportunities for knowledge co-construction and language learning. In contrast, the pairs who were not collaborative had less discussion and less consensus; thus, there were fewer opportunities for language knowledge appropriation and language learning to take place.

As mentioned in the previous sub-section, researchers have found that the pattern of interaction is more important than other factors such as proficiency and task types (Storch & Aldosari, 2013; Watanabe, 2008) in determining the success of collaborative writing. In addition to these factors, Edstrom (2015) investigated the patterns of interaction of her participants, who worked in seven self-selected groups of 3, and their level of engagement, viewed in terms of production and resolution of LREs. The researcher found that Storch's four patterns of interaction were also applicable in triads. She further observed a positive correlation between the pattern of interactions and the extent/depth of learners' engagement level. The triads who were collaborative produced and resolved the highest number of elaborate LREs, with most group members engaged in elaborate discussion. This affirmed the significance of learners' patterns of interaction in determining the success of their collaboration. Additionally, this study contributed another important insight about collaboration. Edstrom found that a collaborative pattern of interaction does not necessarily mean equal contribution in discussion. The researcher employed word count and found that in some triads, there were leaders who managed or dominated the discussion, but that did not mean that other group members contributed less towards the task. Edstrom observed that the

group members were still engaged in the discussion, providing confirmations, making corrections, offering alternatives, and showing other characteristics that were deemed collaborative. Thus, this highlights the complexities of assessing collaboration and affirms the need for qualitative research that can consider all aspects of learners' contributions and interactions in order to understand the phenomenon of collaboration.

The many studies carried out have affirmed the existence and the importance of learners' patterns of interactions in shaping the process and outcome of collaboration. However, it is noted that most of the studies were focused on pairs or triads of learners, and short in-class tasks. The issue of whether the same patterns of interaction will manifest in larger groups and/or longer collaborative tasks, is still largely unexplored.

Features of collaboration

Besides patterns of interaction, some studies have focused on features present in collaborative writing. In her doctoral studies, Yong (2006) investigated the nature of collaboration of three groups of university students, each consisting of three members, who carried out three short collaborative writing tasks in three sessions. The sessions were audio and video recorded, and the learners were also asked to write in their journal after each session, as well as being interviewed after completing all three sessions. From her data, Yong (2010) identified a number of defining and facilitating features of collaboration. The defining features, by order of prominence, are mutual interaction, negotiation, cognitive conflict and sharing of expertise. The facilitating features are affective factors, repetition, use of the L1 and humour. Although the author does not make clear the differences between defining and facilitating features, she describes how these features were manifested, and how they affected the learners' collaboration process, either positively or negatively. She further suggests that learners' attitude is more important than their language ability in ensuring the success of collaborative work and that it is vital that the instructor provide adequate awareness of and preparation for collaboration to the learners.

Lee (2011) investigated the process of decision-making among two groups of female university learners in the Philippines who worked in groups of three to complete a collaborative writing task in class, over a number of 40-minute sessions. The researcher utilised Burnett's framework (1993, cited in Lee, 2011) of four decision making categories, namely: immediate agreement, elaboration, considering alternatives, and

voicing explicit disagreement. The findings showed that the writing process was recursive, but the learners spent most time in the drafting stage, and less time in pre-writing and revision stages. Interestingly, the highest category found in the drafting stage of the learners' collaboration was voicing explicit disagreement. This was in contrast with other studies (e.g Nykopp et al., 2014) that reported learners' tendency to agree rather than disagree with their peers in their collaboration. The researcher described the long negotiations between the learners as they worked through their differing opinions to come to a consensus. In their stimulated recall sessions, the participants explained that their differing ideas as well as preferences and knowledge about writing and in doing the task led to cognitive conflict among them. Although no further comment was made about the high occurrence of disagreements between the learners, the researcher mentioned the participants' use of their L1 during the discussion to explain their ideas to their peers. In my view, this could be the reason for the findings, which pointed to the positive influence of L1 use in affecting learners' collaboration

Thus far, the few studies that investigated features of collaboration have highlighted the negotiation process between the learners as vital. However, key to the negotiation process are aspects such as differing types of conflict and learners' use of L1, which will be discussed in the sub-section below.

Factors influencing collaboration

Finally, another aspect of collaboration that researchers have studied are the various factors that facilitated or hindered learners' collaborative experiences. Yang (2014) explored the means that mediated the collaborative writing process of three groups of ESL learners, each consisting of four or five members, as they completed a semester-long collaborative writing task in a non-language focused mainstream course. Using observation, recordings of group discussions and in-depth interviews with individual participants as well as interviews with the course instructor and teaching assistant, the researcher reported three mediational means that influenced and constrained, to varying degrees, the interactions of each group and their completion of the task. The mediational means were the learners' use of their L1, the learners' use of their L2, which was English, and group rules that were specific to each group. However, the researcher noted that although the groups shared similar mediational means, the facilitating and

constraining effects were different for each group. For example, the use of L1 was facilitating for one group, who used it for clarification purposes, enabling the collaboration to proceed smoothly. Conversely, in another group, the learners' shared L1 was used by the group members to provide criticism, which made other group members unhappy. Therefore, as the researcher explained, the extent of the effect of different mediational means on each group depends on the individual learners' background such as their proficiency level, their prior experiences as well as their personal initiatives. This showed that the contextual circumstances are as important as the differing factors that may influence learners' collaboration, and thus need to be taken into consideration by researchers who want to really understand how learners collaborate with each other.

The learners' use of L1 during collaboration is a factor that has received a lot of scrutiny. Although the prevailing pedagogical belief is that L1 should be reduced to the minimal in L2 classrooms (Cook, 2001), researchers are increasingly reporting on the positive role of the L1 in collaborative interactions among peers. Aside from Yang (2014) above, Raayati, Yaqubi, and Harsejsani, (2011) also found that the learners' L1 served various pivotal functions during their collaboration process. The researchers compared interaction of two classes of collaborative writing pairs working on text-editing tasks, with one class allowed to use their L1, while the other class was instructed to use only their L2. They found that the class of learners allowed to use their L1 produced and resolved more LREs than their L2-only peers. This was because the learners could use their L1 to perform many interactive functions such as expressing their agreement and disagreement, translating words or sentences to aid in completing the task and sharing ideas, resulting in superior work compared to their peers (p.119). Another study, DiCamilla and Antón (2012), investigated the use of the L1 among beginner and advanced L2 learners of Spanish in their collaborative interactions. They found that the beginners used more L1 than the advanced learners in their discussion. However, the main functions of the L1, problem solving and understanding content, were the same for both levels of learners. Based on their findings, the researchers suggested that the L1 has mediational functions for low proficiency learners, as it can assist learners in metalinguistic functions like solving grammatical and lexical problems, assessing L2 forms and understanding the meaning of L2 utterances. Edstrom (2015) shared similar sentiments. The researcher also observed extensive use of the L1 by her participants during their collaboration process, and she argued that use of the L1 reflects the messy

reality of classroom situations and that it was necessary for the participants who were still in the early stages of learning the L2 to use their L1 to communicate effectively to complete the task given (p. 35). Edstrom further elaborated that sociocultural perspective allowed for the view of the L1 as a tool that mediates learners' cognition and supports the learners' learning process rather than as a linguistic deficiency. Finally, Lee's (2011) findings of higher occurrences of disagreements and negotiations between the learners, can also be attributed to the learners' use of their L1. The ease of communication enabled the learners to express themselves freely, express disagreement and negotiate ideas with their peers; all of which promote knowledge construction as well as effective collaboration. Thus, all these studies provided support for allowing the learners the freedom to use their L1 when they are collaborating with their peers, especially for low-proficiency learners.

In addition, as part of her doctoral studies, Yong (2006) also identified several factors that influenced her participants' collaboration, and the researcher concluded that the most influential factor was affective factors. Among the affective factors, the learners' willingness to share knowledge and to cooperate with each other was fundamental. This was helped by their familiarity with each other as they self-selected their group members and also by the collectivist culture they came from. The learners were mindful of preserving 'face' and of maintaining group harmony by accommodating the views of others (p. 214). In terms of hindering factors, the researcher reported aspects such as domineering behaviour, poor time management and task complexity. This finding supported the notion of letting the group members choose their group members as opposed to being grouped by instructors.

Besides the use of L1 and affective factors, studies have also reported on other affecting factors. In particular, Storch (2004) discovered that learners' perceived goals, which were shaped by their attitudes, beliefs and previous learning experiences, played an important role in determining the extent of their collaborative experience. Furthermore, it is the learners' abilities to orient their goals with their peers' goals, which the researcher suggests may require time to develop, that will determine their pattern of interactions and subsequently the outcome of collaboration. Similarly, Fernández Dobao (2012a) deduced that learners' orientation and goals of the activity would have more impact on the nature of their collaboration and collaborative dialogue opportunities as compared to other factors, such as their proficiency level.

Finally, another factor that has received considerable attention from researchers is the role of conflict. Researchers have reported on different types of conflict, some of which can be beneficial, while others can be detrimental to the collaboration outcome. Tocalli-Beller (2003) provided a personal narrative of her experience in managing conflict during collaborative work. The researcher identified two types of conflict, cognitive and affective conflict. Cognitive conflict revolved around the task and is necessary to facilitate learning among the group members. If the group members are comfortable and open to differing viewpoints, this kind of conflict can lead to insightful discussion that is beneficial for the group. On the other hand, affective conflicts involve personal, individual issues that are irrelevant to the task and can be detrimental to the collaboration. Like Yong (2006), Tocalli-Beller found affective factors, such as trust, reliability and respect towards each other, to be instrumental in collaboration. However, the researcher pointed out that these issues are often overlooked or deemed easily achievable in the literature, which was not the case. The researcher concluded that effective collaboration is not easy to achieve and learners require training in managing different types of conflict as well as in participating in collaboration.

A subsequent study that looked at occurrence and resolution of conflict among learners in collaboration is Pathinathan and Yong (2012). The researchers discussed a case study of one group of four EFL learners, in an institute of higher education in Malaysia, who collaborated to write three argumentative essays. They observed a number of substantive conflicts, which are similar to cognitive conflict, and a higher number of affective conflicts between the learners. While substantive conflict did indeed provoke debate and elaborations about the task from the group members, the affective conflict that occurred led to dissatisfaction, passivity, and eventually reduced effort and commitment from the group members. The reasons for affective conflict were the domination of one group member, the lack of a sense of belonging, and the lack of trust between members. While the researchers did not mention the reasons why affective conflict was prominent in the learners' collaboration, I would suggest that the lack of familiarity, due to random selection of group members for the collaborative writing task, might be one of the contributing reasons.

Overall, the studies carried out have identified several factors that are significant to collaboration among learners in L2 contexts. In particular, the use of L1 has been elucidated as a crucial support or aid to the learners during collaboration. Cognitive

conflict, rather than affective conflict, and learners' goals were also found to be important factors in collaboration.

2.4.3 Teachers' and learners' perspectives

Besides understanding how learners collaborate, it is also important to know how the learners, as well as teachers, feel about implementing and participating in collaborative writing. Learners' perspectives is one of the most frequently researched aspects of collaborative writing, and the findings are generally positive. Storch (2005) who compared the written outcome of individual and collaborative paired writing also interviewed the paired participants about their thoughts on collaborative writing. She reported that 16 out of the 18 participants declared that their collaborative writing experience was positive, as they were able to pool their ideas together, learn from each other and improve their language. However, there were five participants who raised concerns about feeling unconfident about their own language proficiency as well as reluctant to correct their peers' mistakes.

Shehadeh (2011) who conducted a similar study comparing individual and paired collaborative writing, distributed an open-ended survey to the 18 learners who participated in the collaborative writing task, asking about their opinions. The researcher also reported positive findings, with most of the participants supportive of collaborative writing and finding it useful for their learning. They affirmed that collaborative writing allowed them to discuss and pool their ideas, provide and receive immediate feedback and produce better writing outcomes. They also stated that collaborative writing helped them to enhance their writing and speaking skills. However, two of the participants expressed hesitation when they were asked about future opportunities for collaboration, stating that they would prefer to be given the choice of writing individually or collaboratively.

While the studies above elicited the participants' perspectives after the implementation of a specific collaborative writing task designed by the researchers themselves, Farrah (2011) and Al Ajmi and Ali (2014) examined their learners' experiences on existing collaborative writing tasks that formed part of the courses undertaken by the learners. Both studies utilised questionnaires. Farrah (2011) who also investigated the EFL learners' experiences of collaborative writing in terms of three other factors- gender, proficiency level and learning style, found that overall the learners had positive

perspectives about collaborative writing, with female students indicating a higher preference than their male counterparts. Additionally, the researcher also found statistically significant correlations between proficiency level and learning style, where lower proficiency and extroverted learners were found to have greater preference for collaborative activities. Similarly, Al Ajmi and Ali (2014) also found that their participants generally had a positive perception of collaborative writing, as they found it motivating, able to promote mutual learning and allowed them to produce better written outcomes. However, in terms of the challenges of collaborative writing, the participants suggested the personality and background of individual group members as the main cause of conflict rather than level of proficiency.

As for the teachers, two studies have investigated the perceived readiness and the actual practice of teachers in implementing collaborative work in Malaysia. Koo (2008) surveyed 86 mathematics teachers from multiple secondary schools in Malaysia about their readiness to implement online collaborative learning in class and about the factors that affected their perceptions. The researcher found that the teachers were generally undecided about the approach. They had positive perceptions about the potential benefits of using technology for collaborative work, yet constraints of time as well as insufficient access to technology were cited as the impediments in implementing the approach. Additionally, this study, using statistical analysis and modelling, found the factor of 'new learning paradigm' to have the most significant positive correlation to the teachers' perceived readiness. In other words, they concluded that increasing the teachers' awareness and understanding about collaborative learning pedagogy as well as technology use in teaching, was the best way to encourage teachers to implement online collaborative learning in classrooms (p. 275).

Another study, Surina, Latisha Asmaak, Mahani, Anis, and Nazira (2010) carried out a survey on instructor's use of collaborative activities in class, but in a university context. Thirty lecturers from different faculties of one university in Malaysia answered a questionnaire consisting of both close-ended and open-ended questions about their preferences about collaborative learning, and the activities they carried out in class. The researchers reported that many of the instructors professed a preference for collaborative learning (80%) and acknowledged that they used collaborative activities in their classes (70%). However, when they were asked in detail about the actual teaching and learning activities implemented in their classes, it was found that most of

the activities carried out were whole class activities such as teacher/lecturer talk and individual activities such as individual assignments. Activities that were considered collaborative such as group presentations and group assignments, comprised only a small part of activities in class. The researcher speculated that the instructors were not clear about the concept of collaborative learning. In addition, I think that this indicated a mismatch in the awareness of the instructors about what collaborative work is and how much it is implemented in practice. This showed that perhaps collaborative work is still a fuzzy concept for instructors in Malaysia where teacher-oriented learning and individual work are still the norm.

Overall, the findings suggested that generally learners have positive views about collaborating with their peers, particularly low proficiency learners, as they were aware of the benefits that collaborative work could bring. However, there seemed to be hesitations from the instructors about implementing collaborative work which suggest that more awareness and understanding about collaboration needs to be developed, especially in the Malaysian educational context, so that instructors can make informed decisions regarding this issue.

2.5 The shift towards computer-mediated collaborative writing

The interest in technology and how it can be used to assist language learning has always been present in second language learning, but in recent years, the rapid development and advancement of various technological tools has made computer-assisted language learning (hereafter abbreviated as CALL) a point of attention for many researchers and practitioners (Fischer, 2013). Similarly, in the field of second language writing, the interest in exploring the usability of technology in the teaching and practice of writing has also increased (Hegelheimer & Lee, 2013). As Matsuda, Canagarajah, Harklau, Hyland and Warschauer (2003) have predicted, “the diffusion of computers and the Internet is likely to be as important for the development of writing as was the earlier advent of the printing press” (p. 165).

The interest in CALL, and particularly computer-mediated collaborative writing, began to prosper with the development of computer-mediated communication (hereafter abbreviated as CMC) tools, specifically Web 2.0 tools (Hegelheimer & Lee, 2013). CMC tools are computer and web applications designed initially for ease of communicating

and sharing information and later on for collaborative knowledge sharing and building (Lin, 2013; Warschauer & Grimes, 2007). Generally, CMC technologies are categorised into two groups according to functions. The first generation of CMC tools, such as email, chat room and discussion board, are designed and used for sharing and publication of information. On the other hand, Web 2.0 tools, such as blogs, Wikis and Google Docs, advocate participation, collaboration and sharing of knowledge (McLoughlin & Lee, 2007; Warschauer & Grimes, 2007) by providing a platform where different people can come together to create and share information using synchronous and asynchronous communication.

Educators and researchers are enthusiastic about the “revolutionary” potential of CMC technologies in language learning, especially Web 2.0 tools (Stevenson & Liu, 2010; Wang & Vásquez, 2012). Researchers have discussed the potential of CMC technologies in encouraging learner-centred learning (Blake, 2006), and extending learning beyond traditional classrooms (Ortega, 2009). Moreover, the written form of CMC tools and the additional processing time it affords are believed to heighten learners’ awareness of language (Blake, 2006), foster learner’s attention to language use and structure (Sykes, Oskoz, & Thorne, 2008), and promote learners’ reflection about language (Kern et al., 2004). Potentially, this gives learners more time to develop their thoughts, more opportunity to deliberate on their language use and the flexibility to do their work at the time of their convenience. In addition, the increased accessibility of Web 2.0 CMC tools allows learners to access and do their work at the time and place of their convenience, as long as there is Internet access. These tools are also capable of connecting learners to various learning resources available on the internet which transfer the power to them to collaboratively develop their own knowledge (Stevenson & Liu, 2010). However, as Lomicka and Lord (2009) and Wang and Vasquez (2012) have commented, studies exploring the potential of these tools for learning are still scarce in L2 contexts, especially from theoretical and empirical perspectives.

In computer-mediated collaborative writing, the most researched technological tool is Wikis (Storch, 2013; Wang & Vásquez, 2012). A Wiki is defined as “a freely expandable collection of interlinked web pages, a hypertext system for storing and modifying information, a database, where each page is editable by any user with a forms-capable Web browser” (Leuf & Cunningham, 2001, p. 14). In other words, a Wiki is a collaborative platform where people can come together to create documents to share

and produce information. A well-known example is Wikipedia, the public encyclopaedia that has been created and edited by millions of users around the world. In addition, there are also Wiki websites that provide platforms for private collaboration, where access is restricted to certain users by password. It is these platforms that can be used by educators to carry out computer-mediated collaborative writing for their learners.

Invented with collaboration in mind, Wiki is an extremely collaborative tool (Godwin-Jones, 2003). Wiki is easy to use and does not require any specialist or technical knowledge. Besides the web page, which can be accessed and edited by multiple users, Wiki has two other features that are essential for collaboration. The first is the discussion space where users can leave messages or comments for other users to reply or comment on. The second feature is the history log. The history log saves all the versions of writing and editing carried out and tracks the time and content of contribution of every user using different colours. Therefore, users have the option of undoing any editing and returning to previous versions of the document. Also, it is possible to track the contribution and actions of each user, which is helpful in determining the contribution and accountability of all users.

However, there is one shortcoming of Wiki, which is that it can only provide asynchronous communication. Although users can communicate with each other on the discussion space, it is not immediate and real-time like face-to-face interaction. Instead, the user leaves messages which can be seen and replied to later by other users. Additionally, while many users can access the Wiki page, only one user can edit the page at any one time. As such, this may hinder learners' experiences of collaborating as they could not interact synchronously and work on the task simultaneously on Wiki as they could in face-to-face collaboration.

This shortcoming can now be addressed with Google Docs, another Web 2.0 tool that has yet to receive much attention. Google Docs is a web-based word processing tool that offers extra functionalities such as simultaneous editing ability and automated updating (Kessler et al., 2012). The interface is similar to Microsoft Word. It has similar functions as Wiki, such as being able to set up private page for collaboration, and having the revision history feature which records and track every contribution or change made to the document. In addition, Google Docs can be accessed and edited by multiple users at one time, and it automatically saves the document every six seconds. As such, it allows

for real time collaboration where as Oxnevad (2012) suggests, students and teachers can have a virtual mini-conference about the work in front of them from any location. Google Docs also have the feature of synchronous communication through its chatting application, and it has been reported to be an easy tool to use without requiring much training or technical expertise (Suwantarathip & Wichadee, 2014). Oxnevad (2012) has claimed that Google Docs is the best tool for computer-mediated collaborative writing due to the convenience of access, the availability of spelling and grammar checker and the autosave and revision history function which means that every student's contribution can be assessed and commented on by the instructor.

In the next section, I will review the literature about computer-mediated collaborative writing in the L2 context, focussing on studies discussing learners' attention to language, the process of collaboration and learners' perspectives. Most of the studies utilised Wiki as the tool for collaboration, although some studies used Google Docs.

2.6 Studies about computer-mediated collaborative writing (CMCW) in L2 context

Most of the studies investigating computer-mediated collaborative writing (CMCW) employed longer-term tasks than in-class tasks, as the affordances of computer-mediated communication tools allowed learners to work out of the confines of the classroom. However, interestingly, similar to F2F collaborative writing studies, many CMCW studies have also tended to focus on peer feedback, which usually occurs in the revision stage. As Wiki and Google Docs keep a detailed record of each contribution and change made by each learner, researchers are able to identify the revision behaviours of learners and the types of revisions they make as they collaborate with their peers. Thus, many researchers are especially interested in the learners' language focus when revising their peer's work. In the next sub-section, I will discuss these studies briefly. However, my main focus is on studies that investigated the entire process of collaboration of computer-mediated collaborative writing, which will be discussed in section 2.6.2. After that, I will discuss another aspect of CMCW, which is learners' perspectives.

2.6.1 Learners' attention to language in CMCW

Unlike face-to-face collaboration, there are not many computer-mediated collaborative writing studies that explicitly examine its potential for language learning. One study,

Castañeda and Cho (2013), has tried to measure the learning gains of a specific grammar item for 53 Spanish as L2 learners using pre- and post-tests. The participants, who worked in groups of three or four, collaboratively wrote four stories over the course of 12 weeks on Wiki. While the findings showed significant improvement in the learners' grammatical knowledge, the researcher did acknowledge that the improvement could also be attributed to other factors such as course instruction, rather than just the mode of collaboration.

Most other studies are more interested in learners' attention to language, especially during the revision stage of the collaboration process. Researchers have investigated whether the learners revised their own work or other people's work more, whether in their revisions the learners focused on content, organization or language, and whether in terms of language, the learners paid more attention to meaning or to form. Thus far, the findings are mixed, which suggests the influences of other factors such as task types or learners' attitudes.

Kessler (2009) investigated a class of 40 Mexican ESL student teachers who worked collaboratively on a semester-long collaborative writing task, on Wiki. The researcher found that the students showed no hesitation in editing their peers' work. In fact, they were more willing to edit their peers' work than their own work. However, most of the peer editing carried out was on content, with the learners choosing to overlook many glaring grammatical mistakes that they were capable of solving, preferring instead to work on simplistic issues of formatting, font and other stylistic matters. When asked, the learners explained that they were satisfied with the level of accuracy presented as they found it comprehensible in the context of the writing task. However, I think that the large number of the students collaborating, made it easier for the learners to shirk responsibility and assumed that other group members would make the revision. Another possible reason is, as the researcher speculated, the informal nature of the task, which was meant to supplement the course the learners were taking and was not assessed. As such, the learners might have felt more relaxed about linguistic accuracy and not willing to put in too much effort, preferring easy, obvious types of editing over challenging ones.

Other studies have investigated smaller groups of collaboration. Arnold, Ducate, and Kost, (2009, 2012) investigated three classes of German as L2 learners who worked in

groups of 2, 3 and 4 for three weeks to create a Wiki page on a theme given by the instructor based on novels they had read. The Wiki page would later be presented by the group members and shared with the whole class. The main difference between the three classes was that the first class used an unstructured approach, where the learners were given a general instruction to read the novel and construct the Wiki page. In contrast, the second and third class had a structured approach, where they completed the assignment step by step, with teacher guidance and feedback at each part of the task. In the first study, the researchers compared the amount and type of revisions made by the learners from different classes and found that, regardless of the different approaches, all three groups made comparable amounts of revisions, with meaning- changing addition the most frequent, followed by formal revisions such as grammar, spelling and vocabulary (Arnold et al., 2009). However, class 2 and 3 were found to make significantly more formal revisions, and significantly more accurate revisions. While the researchers did not provide the reasons why, I think that doing the task part by part provided the opportunities for the learners to reflect on the task more and thus make more revisions, and receiving periodic feedback from the instructors allowed them to notice more errors and make more accurate revisions as compared to their peers who did not receive instructors' feedback.

In the later study, the researchers examined the revision behaviours of the learners and they found that the learners preferred to revise their own parts rather than their peers' work, especially in terms of meaning-related revisions (Arnold et al., 2012). However, a similar amount of formal revisions was made for both themselves and their peers. This finding differed from Kessler (2009) who found that learners' prioritised meaning over form. Regardless, the researchers deemed the learners' collaboration as more cooperative than collaborative and suggested that this indicated a lack of a sense of joint ownership. A possible reason for this, as the researchers suggested, can be traced to the longstanding educational practices that prioritised individual work over collaborative work. As such, I think that one possible way to overcome this would be to have a longer-term task so that the learners could have time to adjust their mind-set and develop collaborative practice. However, the researchers advocated for a broader focus than just the task, stating that "Only long-term changes in instructional practices which advocate collective processes over individual, sometimes competitive, learning can cause a transformation of these deeply engrained patterns and lead to more collaborative

behaviour" (Arnold et al, 2012., p. 440). Thus, in order to change instructional practice, creating awareness first among the learners and the instructors about the best ways to implement collaboration and its potential benefits will be especially important.

Another study (Kessler et al., 2012) also investigated learners' revision activities during collaboration, but on Google Docs. The study involved three groups of high achieving ESL learners in a US university, each working in groups of three and four to complete a semester-long academic writing task that was part of their course work. The researchers randomly selected 10% of the revision history of each group's Google Docs for analysis of the nature of learners' contributions to their peers' work. To analyse the data, the researchers developed the categories of Language- related contribution (LRC) and Non-language-related contribution (NLRC). LRC consisted of the learners' attention to meaning, attention to form, and others changes about language, while NLRC consisted of changes relating to format, planning and non-project communication. The findings showed that language-related contributions formed the majority of the changes made by the learners (82%), with attention to meaning the most common, and attention to form the least, which means the learners focused more on content and less on grammar. This echoed the findings of Kessler (2009), but differed from Arnold et al. (2009) and Kost (2011), who also found that learners focused on both meaning and form in their revisions. In addition, the researchers highlighted the presence of collaborative scaffolding among the learners as they discussed and planned the task, which they attributed to the synchronous and real-time updating features of Google Docs that was not available in Wiki. Finally, the researchers also elaborated on the advantages of having the revision history page, which empowers the learners to take charge of their writing, as can be seen in the case where one sentence that was deleted by a group member was reinstated by another using the revision history feature (p. 103). At the same time, this also afforded researchers and instructors the opportunities to observe how learners build on each other as a resource to learn and produce better work.

Lee (2010) looked at the revision behaviours of Spanish as L2 learners collaboratively writing different types of essay on Wiki over the course of a semester. The researcher reported that the learners were engaged in a high rate of revisions, especially towards the end of the semester. This suggested that time was an important component for learners to develop familiarity with each other before they could revise each other's work. Moreover, the availability of the revision page in the Wiki was found to promote

more participation and a sense of responsibility from the learners who were able to see the evolving form of the writing as well as the amount of revisions made by each individual member, prompting them to do the same. Like Kessler et al. (2012), the researcher also reported instances of scaffolding as well as collaborative dialogue between the learners who were able to discuss and provide feedback on the discussion page.

Finally, Strobl (2014) asked 48 German as L2 speakers to work individually and in randomly selected groups of three to complete two writing synthesis tasks over the period of 4 weeks. The researcher analysed the peer comments of the collaborating groups and found that different groups exhibited differences in the number of comments and in engagement level. The most interactive group discussed almost half of the comments given (15 discussions in response to 34 comments), while the least interactive group mostly directly edited the work without discussing the edits, or neglected the comments, with only one discussion observed. Most of the comments were language-related, with morphology, style and content the top topics covered.

The researcher also analysed the peer comments in terms of the peer review framework of higher-order concerns (HoC) and lower-order concerns (LoC). Higher-order concerns refer to changes in content and organization while lower-order concerns refer to meaning-preserving, surface level changes. She found that 67% of the total comments were on lower-order concerns. However, for the group that contained high-achieving learners, including the group that produced the best written outcome, there was a high number of higher-order concerns found in the learners' comments on their peers' work. This suggested a possible link between peer revision and learners' proficiency level. Ultimately, Strobl concluded that collaborative writing could lead to pooling of knowledge about language by the learners, as made evident by the peer comments as well as the better written outcome produced by the learners when working collaboratively.

Overall, the studies discussed above suggested that computer-mediated collaborative writing is conducive for learners to pay attention to language, although the findings still differed on whether learners focused more on content or form. Nevertheless, the written form of interactions and the shared access of the computer-mediated mode seem to encourage learners to provide feedback to each other's work, although periodic

feedback and time should be given to the learners to familiarise them with the task and each other.

2.6.2 Process of collaboration in CMCW

Studies that investigated the entire process of collaborative writing in the computer-mediated mode, have focused on several aspects, such as the nature of learners' collaboration, learners' contribution levels and roles, factors that influenced collaboration and learners' patterns of interactions.

Nature of collaboration

Elola and Oskoz (2010) and Strobl (2014) compared individual and collaborative paired writing on Wiki and Google Docs respectively, and part of their studies considered how learners collaborated with each other compared to when writing individually. Strobl (2014) reported that when her advanced German as L2 learners were collaborating, their writing process was recursive, with the writing and revising process intertwined. In addition, they were engaged in 'intense reviewing' activities by leaving comments on their peers' work (p. 12). The researcher noted that this allowed the learners to pool their knowledge, to reflect on their work, and even to practise their L2, which was the predominant language they used in the collaboration. This led to a better written outcome in terms of content selection and organization for the learners' collaboratively produced work compared to their individual work. Thus, the researcher suggested that collaborative writing is a good approach for learners to develop their academic writing which emphasizes recursivity.

Similarly, Elola and Oskoz (2010), who also investigated advanced learners, in this case Spanish as L2 learners, reported high amounts of interaction and reviewing between the learners throughout the collaboration process. This was in contrast with their individual writing, where they left the revision until the end of the task. The learners also planned the task earlier with their peers before they started writing. Additionally, as the Wiki that the learners worked on did not have the capability for synchronous interaction, the researchers set up a text and voice chat application for them to use. They found the learners interacted most about the content of task, followed by task structure, sources of documents and grammar in their synchronous chat. Mostly, they were negotiating about the task by showing agreement or disagreement, which comprised almost half of their

interaction. Besides that, they were also involved in task planning, providing opinions, providing feedback, and dividing the task. Lastly, the researchers concluded that collaboration allowed learners to challenge each other's ideas, which led to stronger arguments in their task, as well as to reflect on and engage with the task, including fostering their awareness about language. However, the researchers also cautioned that the learners themselves were still reluctant to embrace collaborative work, preferring to maintain the control and freedom that they had when doing individual work. Thus, it is up to the instructor to introduce the potential benefits of collaborative work to learners, especially in terms of relevance to their learning, as well as their future professional lives (p. 65). While these two studies showed the success of collaborative writing versus individual writing, it should be noted that the participants were advanced L2 learners, which may play a part in enabling the participants to interact and collaborate well with their peers, as they had more control of the language and the language task.

Other studies focused on only the learners' collaboration, and with larger numbers of group members. Kessler and Bikowski (2010) investigated the collaboration behaviours of a large group of learners involved in a long-term collaborative writing project using Wiki. Drawing from the same data as Kessler (2009), this study looked at the individual and group behaviours of a class of 40 ESL teacher trainees who worked together for a semester to create a class Wiki on the term 'culture'. The findings showed that the bulk of the contributions came from only a handful of learners, with most of the other students minimally involved. In total, only 5 students were involved in making four or more changes, 13 students contributed 2 changes while 22 students only edited the Wiki once throughout the duration of the course. The researchers further analysed 40 out of 160 changes recorded that were related to meaning, and they classified the changes into 5 categories: new information, deleted information, clarification/elaboration of information, synthesis of information, and the addition of URL links. In terms of group behaviours, 3 phases of collaboration were identified. Phase 1 was build and destroy, phase 2 was full collaboration, and phase 3 was informal reflection. The researchers suggested that a majority of the learners demonstrated autonomy as collaborative learners, by contributing or deleting information. The learners themselves also had positive perceptions about their experiences, revealing that they valued the experience and the contribution of peers in Wiki collaboration because the revisions resulted in an improved product. However, the researchers also noted the inclination of some learners

to opt for easier things to do like adding and deleting information instead of synthesizing the information, while other learners logged on to the Wiki page but chose not to do anything. This indicated that perhaps periodic monitoring or assessment from the instructor is required, especially for longer-term tasks, so the learners are compelled to participate in the collaborative task.

Other researchers have investigated the collaboration process of smaller groups of learners. Bradley, Lindström, and Rystedt (2010) investigated 25 groups of Swedish learners in an ESP class, who worked in pairs or groups of 3 to complete four short writing tasks on Wiki over the course of seven weeks. Their purposes were to find out how the learners collaborated and whether their collaboration promoted language learning. Although the writing tasks were designed to correspond with the teaching modules of the class, they were not graded. Also, the learners were given freedom in doing the collaboration with no interference from the researchers. The main reasons were to allow the learners to take charge of their own learning, and at the same time, obtain a naturalistic view of learners' collaboration process. In the data analysis carried out after the completion of the course, the researchers reported that 15 of the groups were collaborative, where the learners were engaged in joint construction of the task, with different group members adding ideas and refining each other's ideas. Five groups were found to be working cooperatively, where the group members took turns contributing to the task, but they worked separately and did not engage with each other's work. In the other five groups, no form of working together was observed, with mainly one or two group members doing most of the work by posting full pieces of text on the Wiki page. Part of the task requirement was that each group had to provide feedback to other groups, and the researchers reported that explicit feedback on both content and language were observed, with language feedback more prominent.

The researchers also discussed the learners' interactions, and reported that the groups who were collaborative would discuss and negotiate about the task in the discussion forum of the Wiki. They also provided feedback to their peers, by either editing the task directly, or leaving explicit comments. This presented opportunities for language learning, as explained by the researchers, revising their peers' work or receiving feedback facilitates critical evaluation and new insights for the learners. This study contributed insights on how small groups of learners collaborated in the computer-mediated mode and demonstrated the feasibility of computer-mediated collaborative

writing in L2 context. However, the lack of collaboration in some of the groups may be due to the task not being graded, thus it may be seen as less important by some of the learners.

Lai, Lei and Liu (2016) also found three styles of collaboration among their participants, consisting of 20 five-person groups of Chinese EFL learners (95 participants), who worked collaboratively for nine weeks to complete three graded writing tasks on Wiki. The researchers employed mixed methods to investigate the learners' collaboration patterns, and their connection with learners' learning and perceptions. They analysed the groups' archived Wiki pages for the changes made, and distributed a questionnaire to all the learners, as well as conducting focus group interviews with 19 randomly selected learners. The learners' collaboration styles were determined in regard to their division of labour, level of coordination, as well as the two important dimensions of equality and mutuality, which were also utilised by Storch (2002) in investigating patterns of interaction. Each group's collaboration style was derived from the consistent styles exhibited in at least two out of the three writing tasks, and corroborated with the learners' survey results. The findings showed that 11 out of the 20 groups exhibited style 1, single composing and interactive revising. This was where one group member was tasked with writing the task, and the other group members were involved in revising and editing the task. Five groups demonstrated style 2, parallel composing with concurrent interactive revising, in which each group member was in charge of different parts of the task, but the majority were involved in the revising process. Lastly, the remaining 4 groups showed style 3, parallel composing with limited interactive revising. This was where each member took charge of different parts of the task, but only one or no one was involved in revising the task. The survey results showed that the group members exhibiting style 1 reported the least enjoyment of as well as the least learning from their collaborative experiences; groups that employed style 2 reported the most positive attitudes in terms of perceived learning and enjoyment. In their open-ended responses, the learners using style 1 mentioned the lack of equal contribution, as that was one of the issues they faced in asking other group members to contribute. They also reported the sense of a lack of collaboration and joint ownership of the task. However, group members using style 2 and 3 reported the learning of new phrases, ideas, writing techniques, and even text-organisation skills as they worked collaboratively with their peers. They also mentioned the need to coordinate their parts with their peers, which

prompted them to pay more attention to other people's parts. This was absent in groups employing style 1. Interestingly, the researchers found that in terms of general attitude to collaborative writing, it was group members using style 3 that were the most negative, while group members using style 2 were the most positive. The reason for the negativity of group 3 was traced to the lack of peer revision in the learners' collaboration, the lack of mutuality. The learners commented that they required more feedback from their peers. This study informs the different ways the learners collaborated in the computer-mediated mode. In particular, equal contribution was a concern for the learners when collaborating. Additionally, it seems that being involved in the task and receiving feedback from their peers are the two aspects that would lead to the learners' positive perspectives about collaboration.

With equal contribution being one of the main concerns of learners, its ability to record every contribution and change made computer-mediated collaborative writing a good alternative to address this issue. However, two studies so far that have investigated learners' participation and contribution in collaboration, report otherwise. Kessler et al (2012) observed three levels of contribution among their participants. Generally, each group would have one member who contributed almost half of the task, 45-50%, then one member who was in the middle, 30-40%, and another group member who contributed the least, in the range of 15-20%. Similarly, Arnold et al. (2012) reported on four roles with similar contribution levels found in their collaborating participants. The roles are leader, who usually contributed the most, followed by team player, who assisted the leader, then social loafer who contributed occasionally, and lastly free rider, who hardly contributed to the task and relied on other group members to do the work. This finding illustrated that one of the pitfalls of collaboration was not really resolved despite the additional features possessed by computer-mediated collaborative writing. However, being able to see how much each learner contributes may help instructors to devise more effective ways of assessing collaboration, such as giving more marks to group members who contributed more, and less marks to group members who contributed less. This can be an effective way of encouraging learners to collaborate with their peers.

Overall, the studies demonstrated that collaboration is feasible in computer-mediated mode. However, the learners also demonstrated many different ways of collaborating with each other, and not all ways are collaborative. Similarly, the issue of unequal

contributions also exists in computer-mediated collaboration. As such, involvement of the instructor is required in providing monitoring, periodic feedback and also the appropriate assessments to manage collaborative tasks.

Factors influencing collaboration

Besides the nature of collaboration, some studies have also looked into the possible factors that could affect the collaboration process of learners. Most of the studies utilised questionnaires, supplemented by a small number of interviews. Guo and Stevens (2011) surveyed 205 first-year learners who tried out collaborative learning on Wiki as part of the blended approach of the information system course that they underwent. The researchers reported that mandatory use of the tool was beneficial for the learners who reported that they found it useful for their collaborative work, and they were interested to use it more in the future. In addition, assessment provided for the collaborative task as well as the positive attitude of the instructors was also found to influence learners' use and perspective of using Wiki for collaborative work.

Zorko (2009) also looked into factors that enhanced and inhibited learners' collaborations in Wiki based on the questionnaire results of 40 university students and subsequent interviews of three students who all experienced Wiki-mediated collaboration as part of their ESP course in Slovenia. Most of the participants had positive perspectives about their experiences. The researcher found that factors that enhanced learners' collaboration in Wiki were the visibility of everyone's work, the teacher's prompt feedback and encouragement, the availability of online resources, the user friendliness of the tool, and assessment of the task. However, the learners were hindered by their frequent face-to-face meetings, the lack of synchronous communication, technical problems and their preference for publishing only completed work.

Similarly, Lee and Wang (2013) also investigated the supporting and hindering factors contributing to learners' involvement in Wiki-mediated collaboration, but they interviewed their participants directly. Subsequently, the researchers reported different findings. The participants of the study consisted of 103 second year Taiwanese students from two different universities and two different majors, science and English who collaborated, in groups of 4 to 6 members, for a semester to produce an online picture book. After task completion, 18 randomly selected participants were interviewed,

individually or in groups based on their preference, about their experiences. The participants reported that factors that encouraged their involvements were even sharing of workload, appreciation of other people's opinions, and constant communication with other group members who were at different universities. On the other hand, the difficulties of asynchronous communication, which means having to wait for other group members to respond and not being able to receive instant feedback and justify their work spontaneously, time pressure, and personal attitude of some members who did not take their roles seriously, hindered their involvement. Additionally, the researchers noted the positive effects of "sustained participation", where some of the participants started to realise the benefits of collaboration after being involved for some period of time (p.242). This suggested that time is perhaps the essence in developing the learners' awareness of the purposes and benefits of collaborative work.

Lastly, in the Malaysian context, Chen, Chuah, Tho, and Teh (2015) examined the correlations of three factors with learners' perspectives about wiki-mediated collaboration: motivation, perceived usefulness, and perceived ease of use. The study used a questionnaire to find out the perspectives of 45 first year university students, who in groups of 5, collaborated to construct an English essay on Wiki for a remedial English course. The researchers reported overall positive perceptions among the participants regarding their experiences. They cited learning from their peers and improving the quality of their work as the main reasons. In addition, the researchers found positive correlations with the three factors, with motivation having the strongest effects, followed by perceived usefulness and perceived ease of use of Wiki. This suggested that students' attitude is an important aspect in collaboration, as what they perceived about the approach will affect the whole process and outcome of collaboration. As such, it is vital that instructors include these issues in their considerations when implementing collaborative tasks.

The findings of these studies illustrated the advantages of computer-mediated collaboration that created excitement for the learners, such as the ease of use of the tools, the ability to share workload, see each other's work as well as receive feedback. However, several shortcomings were also mentioned that affected the learners' collaboration adversely, such as the asynchronous nature of Wiki and the attitude of the learners themselves.

Patterns of interaction

Another focus of learners' collaboration process in the computer-mediated mode is their pattern of interaction. Drawing from the construct first developed by Storch (2002), patterns of interaction have also been studied in the context of computer-mediated collaborative writing. Li and Zhu (2012) analysed the interaction of three groups of three learners who collaboratively completed three essay writing tasks over the duration of 5 weeks on Wiki. The learners were of intermediate-high/ intermediate proficiency level. From the data collected from the Wiki's 'history' and 'discussion' pages, the researchers identified three different patterns of interactions in the three groups: collectively contributing/mutually supportive, authoritative/responsive, and dominant/withdrawn. The collective group was the most collaborative, with all members making equal contributions and willing to engage in discussion of each other's ideas. The authoritative group consisted of one leader who took control of the task, so contributions were unequal. However, the other members were cooperative and all three were engaged in each other's ideas. For the dominant group, there were two members who wanted to take control of the task and one member that was withdrawn. As a result, the members were unwilling to engage with each other's ideas and there was no reciprocal interaction and little mutual scaffolding.

From the subsequent interviews, the researchers discovered that different patterns of interaction have different influences on the students' perceived learning experiences. Learners who were engaged in collaborative interaction had positive perceptions, commenting that they enjoyed the experience and felt that they were able to learn from their peers and even developed friendships. However, for the members of the dominant/withdrawn group, while they acknowledged the usefulness of Wiki for learning, they themselves learnt little from the experience. Moreover, they expressed their unhappiness with their experience, citing the reason of unfamiliarity, lack of cooperation from others, and even the inconvenience of Wiki. This finding is similar to Lee and Wang (2013), who also realised that their participants' perceptions towards collaborative work corresponded with the success of their collaborative experiences. Although the overall findings were positive, Li and Zhu (2012) stressed the lack of participation that computer-mediated collaboration could bring, and suggested the evaluation of individual work to facilitate interactions and contributions among learners. Nevertheless, the findings of this study showed that despite the different

modes of collaboration, the way the learners collaborated, their patterns of interaction, were quite similar.

In a follow-up study, Li (2013) examined in greater detail the collaboration process of the group that was identified to be the most collaborative. The researcher analysed the content of interaction and the engagement levels of the group members. She identified five content categories: content discussion, social talk, task management, technical communication and language negotiation. She further analysed the individual learners' engagement levels, which were categorised into either initiating or responding, and also the writing/change function carried out during the revision: addition, deletion, rephrasing, writing and revising. The researcher found that the contributions were more or less comparable among the three learners. This was despite the fact that one learner was more proficient than the others. However, the researcher reported that this learner's attitude was collaborative and she took responsibility for correcting the language to improve accuracy. In addition, the researcher observed fluidity in the change of expert roles, with different people offering different expertise as they collaborated to complete the writing task. This suggested that the group members' attitudes were more important than the disparities in their proficiency in determining the success of their collaboration.

Later, Li and Kim (2016) investigated further the collaboration process of computer-mediated collaborative writing, this time in terms of patterns of interaction, process of text co-construction (in terms of writing change functions) and scaffolding strategies. Two groups of three learners each worked together on two out-of-class academic tasks, a research project and an annotated bibliography. The learners were intermediate/high intermediate ESL learners. Interestingly, the researchers reported that different patterns of interaction were displayed by each group for the different tasks. The first group was collaborative in the first task, but in the second task only two members were active and one was withdrawn, which resulted in reduced mutual engagement between the learners. In contrast, group 2 in the first task was dominant/defensive, with two members trying to take control of the task and as a result there were few reciprocal responses. However, in second task, they turned out to be more collaborative. This finding defied the researchers' expectations as the first task was deemed to be more collaborative than the second task, and thus they suggested that the role of tasks on learners' collaboration were not as impactful as expected. Nevertheless, the researchers

noted that collective scaffolding happened when the learners were collaborative. The findings of this study pointed to the variedness of collaboration process that occurred between the learners, which suggested the need for further study on how learners collaborate and why the process is different for different groups.

The studies discussed above showed that learners' patterns of interactions in computer-mediated mode are quite similar to face-to-face mode, which demonstrated the feasibility of computer-mediated collaborative writing. However, it was observed that most of the studies looked at intermediate or high intermediate proficiency learners, so more research is needed to look also at low-proficiency learners. The studies also found that learners' patterns of interaction could change across time and task, and this interesting finding warrants further investigation to find out whether it applies to all types of tasks and all types of context.

2.6.3 Learners' perspectives on CMCW

Finally, learners' perspective are also an important aspect of research in collaborative writing. As mentioned by many studies, learners' attitudes are crucial to the success of collaborative work. Thus far, several studies that have investigated learners' perspectives, mostly using the methods of questionnaire or short interviews, have reported positive findings.

Elola and Oskoz's (2010) and Strobl's (2014) participants were asked to carry out both individual and collaborative writing in pairs. They reported positive perceptions about collaborative writing in the computer-mediated mode. In particular, Elola and Oskoz's participants reported that working collaboratively allowed them to improve the quality of their essays, especially in terms of content and structure. Additionally, the synchronous chat feature also allows learners to discuss, explain and contribute better ideas to their writing. Nevertheless, the researchers concluded that essentially learners still prefer to write individually as they can retain more control and freedom. Similarly, Strobl's participants were convinced that the quality of text is better thanks to peer review, but some of the learners still preferred individual writing and mentioned problems like differences in style, work pace and free riding issues that affected the collaboration process.

Additionally, Blau and Caspi (2009) conducted a survey to investigate the perceptions of 118 undergraduates who undertook three different types of writing task using Google docs. The learners were asked to produce a draft of the writing task individually; then they were randomly selected to either read another document and then revise their own document, share their documents but receive no feedback, or collaboratively review and edit their documents with their peers. The results showed the learners valued collaboration, and they also perceived their work to be of better quality after collaborating with their peers. Overall, while the learners were positive about their collaborative writing experiences, they remained hesitant about future collaboration opportunities. It seemed that they were not completely convinced about the benefit and potential of collaboration for their learning.

In the Malaysian context, Chan, Pandian, Joseph, and Ghazali (2012) investigated both instructors' and learners' perspectives on the use of Wiki for collaboration. The researchers interviewed two instructors who worked together to implement a blended approach in their business writing course, and part of the course was two collaborative tasks carried out on Wiki. Additionally, the researchers also interviewed and analyzed the journals of seven advanced proficiency students who took the course. The researchers found that although the instructors were positive about using the tools in class as they could check the learners' progress and know everyone was contributing, the learners experienced some struggles in using the tool. The main problem faced by them was the functionalities of the tool. Although the Wiki was user-friendly and easy to use, the learners experienced technical difficulties in inserting website links on the Wiki page as well as loss of data, where the materials they had uploaded on the Wiki disappeared the next day. It caused a lot of frustration among the learners who wanted to revert back to using Microsoft Word.

Furthermore, the approach to collaboration differed among the groups, and while groups that were collaborative engaged in peer editing of both form and meaning, other groups struggled with unequal contributions and lack of shared ownership of the task. The researchers did not provide much detail about how the learners collaborated, such as the number of members in each group, as well as the possible reasons for the disparity in the learners' collaboration process. This made it difficult to reach a reasonable conclusion about the learners' collaboration on Wiki. Nevertheless, this study highlighted some of the struggles that learners may face when trying computer-

mediated collaboration for the first time, such as technical issues, and it is important that instructors are aware of the struggles and find ways to remedy them.

Learners' perspectives on computer-mediated collaboration were found to be largely positive in most of the studies, with learners appreciating the novelty and the convenience afforded by the computer-mediated mode. Nevertheless, when questioned further, the learners seemed to still prefer individual rather than collaborative work. This perhaps suggests a lack of awareness about the potential benefits of collaborative work in general. As most of the studies employed quantitative methods, it was difficult to have an in-depth understanding of the reasons why there is a mismatch between their perceptions of collaborative work and their reluctance to use the approach again. Thus, qualitative research is required to find out more in depth about the learners' perspectives on collaboration in both modes and the reasons behind their thoughts.

2.7 Comparative studies on F2F and CMCW

Besides studies that investigated only face-to-face (F2F) collaborative writing or computer-mediated collaborative writing (CMCW), a small number of studies have studied both modes of collaboration at the same time. Most of the studies, as discussed below, utilised the interaction approach framework, which looks at learners' negotiation of meaning when communication difficulties occur, and employed quantitative, experimental or quasi-experimental methods.

First, Sim, Kan, and Ng (2010) carried out a tightly controlled experiment where 32 mixed proficiency Malaysian ESL female learners worked in pairs, in a computer lab, to complete two language learning tasks in F2F mode and in synchronous computer-mediated mode (SCMC), using online chat software. The aim of the study was to compare the high and low proficiency learners' negotiation of meaning during their collaboration process in the two different modes. The findings showed that negotiation of meaning could take place in both modes of interactions for both high and low proficiency learners. Moreover, the researchers reported that all the learners were able to engage and respond to the different indicators of negotiation of meaning with their peers. This suggests that the synchronous computer-mediated mode could be a conducive environment for collaboration, even among low proficiency learners.

Secondly, Rouhshad, Wigglesworth, and Storch (2015) investigated the amount and quality of negotiation of both form and meaning that took place during pair interactions in both the F2F and SCMC modes. Twenty-four participants who were of intermediate proficiency worked in pairs to complete two decision-making tasks, first in F2F mode and then in SCMC mode using online chat applications. The researchers categorised negotiation of meaning in terms of interactions that happen during communication breakdowns, similar to Sim et al. (2010). On the other hand, negotiation of form is categorised as interactions that happen when there is no sign of communication breakdown, which the researchers then attributed to inaccuracy of language forms. The findings showed that the F2F mode produced substantially more negotiation, especially negotiation of meanings. Meanwhile, the SCMC mode produced a balance of both negotiation of meanings and of forms, but the amount was still less than F2F mode. Nevertheless, this suggested that the SCMC mode has the potential to draw learners' attention to language forms, possibly due to its textual form. In terms of quality, the F2F mode was found to produce more successful uptake or output modifications, which may be translated into learning opportunities. This is despite the fact that the learners required twice the amount of time in the SCMC mode as compared to the F2F mode for task completion and yet still produced a shorter text than F2F. The researchers speculated that this may be due to the visibility of the SCMC mode which meant that there was less need for negotiation of meaning as the learners can just scroll up and re-read previous messages for clarity. However, overall the study highlighted the superiority of F2F collaboration in promoting learners' negotiation of meaning and form.

This finding is similar to Kim (2014) who compared provision of assistance and use of learning strategies between paired learners on both modes of collaboration. The researcher found that the F2F mode fostered many more opportunities for collaborative co-construction of sentences (67 episodes to 5 episodes in SCMC mode) where learners discussed and jointly constructed the sentences for the tasks in the course of their conversations. The researcher, who also conducted the study from the interactionist approach perspective, reasoned that it was harder for the learners to notice that their partners were having difficulties in the SCMC mode, and to extend their help. This was due to the time delay in the SCMC mode, as the learners waited for each other to type their responses, and the lack of paralinguistic cues meant that they had no idea whether

their partner was thinking or struggling to express themselves. Additionally, Kim (2014) investigated the learners' use of strategies in asking for assistance, and noted that while similar strategies were employed in both modes of interaction, there were much fewer occurrences of strategy use in the SCMC mode. However, it was observed that the learners had the ingenuity to adapt some of the strategies used in the SCMC mode, such as using emojis, punctuation marks, and capitalization to make up for the lack of paralinguistic cues.

Rouhshad and Storch (2016) conducted another study that compared the effects of both modes of interaction, this time on learners' patterns of interaction and focus on language. In this study, the researchers utilised the sociocultural perspective and Google Docs as the computer-mediated tool. However, the types of participants and tasks were similar to their previous study. The findings showed that most of the 12 paired participants reverted to less collaborative patterns of interactions when they collaborated in the computer-mediated mode. This was despite the measures taken by the researchers to vary the order of tasks performed in both modes of interactions by the participants. Additionally, the researchers found that the F2F mode generated substantially higher numbers of as well as more extensively discussed LREs, compared to the CMC mode. As such, the researchers suggested that the mode of interaction seems to have a larger effect than the relationships formed between learners when it comes to focus on language in collaborative work, and advised for careful consideration in carrying out collaborative writing in the computer-mediated mode.

Several other studies investigated face-to-face and computer-mediated collaborative writing in natural, out-of-class settings, and interestingly, the computer-mediated mode was found to be more conducive for a better written outcome. In the Malaysian context, Ansarimoghaddam and Tan (2013) examined the effects of F2F and CMCW on learners' individual writing outcome using pre- and post-tests. Thirty Malaysian ESL participants worked for three weeks in groups of three to write an argumentative essay collaboratively in both F2F mode and on Wiki. The researchers divided the writing process into three phases, planning, drafting and revising, and different groups experienced each phase either in F2F mode or on Wiki. After the completion of each phase, the learners were asked to write an essay individually. The researchers found that the learners produced better essays individually after they had been involved in computer-mediated collaborative writing with their peers; this difference was not

however statistically significant. Additionally, semi-structured interviews with 6 groups of learners indicated their preference for computer-mediated collaborative writing. The learners cited the flexibility of time and space, convenience, as well as the ability to check back on prior discussion. The researchers concluded with suggestions from the learners for blended approaches, as different approaches are suitable for different stages of writing.

Similarly, Wichadee (2013) used pre-and post-tests to determine the effects of F2F and CMCW on learners' individual summary writing skills and a questionnaire to find out their attitudes about collaborative work. Two sections of 40 students were asked to work on summarizing 5 articles over the course of a semester, one section working in F2F mode, and the other working on Wiki. However, there were some discrepancies in terms of the time allocated, as the F2F groups were asked to complete their tasks in class, while the computer-mediated groups could continue their work after class. Feedback was given by the instructor after the completion of each task. At the end of the semester, the learners individually completed a summary writing task as a post-test. The researcher found that both groups improved their writing skills, but the computer-mediated groups showed more improvement, although it was not statistically significant. They also reported a higher satisfaction level as compared to their F2F peers. The researcher speculated that perhaps the knowledge that their participation and contribution were observable provided extra motivation to the learners to work better. The learners themselves mentioned the excitement of learning a new technology and the freedom to work on the task whenever they wanted to as their reasons for positive attitudes towards computer-mediated collaboration, although some of them complained about the delay of group members' posting and having to waste time waiting, as well as Internet access issues.

Suwanarathip and Wichadee (2014) also compared the outcomes and perspectives of 40 university learners writing paragraphs in both modes of collaboration, but using Google Docs. The findings were similar to Wichadee (2013), where the Google Docs groups performed better than the F2F groups. The questionnaire and interviews after the task also provided positive feedback from learners. They rated Google Docs highly as an accessible and user-friendly collaborative tool that increased their motivation and encouraged them to share ideas and interact with their peers. The researchers also discussed the effectiveness of Google Docs as the reason behind learners' better written

outcomes. They suggested that its many capabilities and ease of use as well as its ability to trace every contribution made heightened the learners' sense of responsibility and provided a conducive platform for learners to interact and collaborate with their peers.

Finally, Wang (2014) also compared the outcome of learners collaborating in both F2F and CMC modes of collaboration, but in an ESP context. Pre- and post-test results showed that Wiki-mediated collaboration improved learners' writing significantly, especially in the areas of "purpose and audience", "organization", "content and style", as well as "grammar and structure. The researcher further claimed that Wiki is conducive for collaboration and leads to collective knowledge formation for the learners.

Overall, these small number of comparative studies provided mixed findings. The carefully planned experimental studies mostly found face-to-face collaboration to be much more superior than computer-mediated collaboration, especially in terms of the amount of interactions and assistance provided by learners to each other. However, studies carried out in naturally occurring settings have all reported that learners collaborating in computer-mediated mode provided better written outcomes than when they collaborated in the face-to-face mode. These contradictory findings suggested that there are still much more to find out about both modes of collaboration, especially in terms of their affordances and constraints. Additionally, most of the studies utilised quantitative methods, and such, more studies, especially utilising qualitative approaches, are needed to find out more about both face-to-face and computer-mediated collaborative writing.

2.8 Gap in research

The review of the literature above shows that there is still much to learn about collaborative writing, in both face-to-face and computer-mediated modes. Researchers have reported on the potential of collaborative writing in benefitting learners' learning, be it in terms of language proficiency, knowledge construction, and on how to collaborate with each other. However, the variabilities shown by different groups of learners proved that many contextual considerations, such as the varying features and factors that may influence collaboration, need to be taken into account. Thus far, researchers are still undecided about the range of features and factors that play a part in collaborative writing and their potential impact. Further, most of the existing studies

utilised short, in-class tasks. The collaboration process of longer-term, out-of-class collaborative writing is still unexplored. This is despite the fact that this type of collaborative writing task is very common in the university setting and a prominent feature in workplace writing as well.

On the other hand, computer-mediated collaborative writing is a newly emerging area of research, especially in Malaysia. The studies on computer-mediated collaborative writing show that while it is a different approach from face-to-face collaborative writing, both modes do share a number of similarities, such as patterns of interaction, and the occurrence of features such as scaffolding, which are important for learning. This suggests the feasibility of the computer-mediated mode as a viable alternative to face-to-face collaborative writing, especially with its additional features of tracking learners' contributions and convenience of access when out of class. Most of the learners who tried computer-mediated collaboration also reported positive perceptions about their experiences. However, very few studies have investigated computer-mediated collaboration closely, especially to find out how learners collaborate when the process is mediated by computer tools and what factors, besides computer tools, mediate or shape the learners' collaboration. Most of the studies carried out so far, utilised quantitative methods such as questionnaires, which did not provide depths and details, and they have reported inconclusive findings.

Previous literature has identified that asynchronous communication, lack of monitoring and assessment, as well as lack of time were some of the issues that troubled the learners when they were collaborating in the computer-mediated mode. Now, with technology advancement, and by building on the literature, a different tool can be used that offers synchronous communication and a more comprehensive study can be employed to find out the full potential of computer-mediated collaborative writing.

In order to truly understand the phenomenon of collaborative writing, it is important to know what really goes on when learners are given the time and space, without the influence of the instructor, to work together. As Wigglesworth and Storch (2009) state, "An important area of inquiry... would be the insights which teachers gain from observing learners in collaborative writing situations and how these inform their pedagogical decisions and actions" (p. 461). These insights will be invaluable in understanding what learners really need and what approach suits them best.

No study has investigated out-of-class collaborative writing in both face-to-face and computer-mediated mode, naturalistically and utilising a longer-term task. Additionally, while a few studies have employed qualitative approaches to understand students' approaches to collaboration in greater depth, no study has looked at both modes of collaboration side-by-side to understand in-depth the learners' processes of collaboration and all the surrounding contextual aspects that shaped how the learners collaborate in different modes of collaboration. This study aims to fill that gap.

2.9 Research Questions

In this study, I will attempt to address the following research questions.

- RQ1. How do learners carry out an extended collaborative writing task in the out-of-class, face-to-face mode?
- (i) What are the salient features observed in the collaboration process?
 - (ii) What are the factors affecting the groups' collaboration process?
 - (iii) What characterizes the group members' attention to language during the collaboration process?
 - (iv) What are the group members' perspectives about their collaborative experiences?
- RQ2. How do learners carry out an extended collaborative writing task in the out-of-class, computer-mediated mode?
- (i) What are the salient features observed in the collaboration process?
 - (ii) What are the factors affecting the groups' collaboration process?
 - (iii) What characterizes the group members' attention to language during the collaboration process?
 - (iv) What are the group members' perspectives about their collaborative experiences?
- RQ3. What are the affordances and constraints of face-to-face and computer-mediated collaborative writing in an out-of-class, English for technical writing context?
- RQ4. What are the factors, besides mode of collaboration, that affect out-of-class face-to-face and computer-mediated collaborative writing?

Chapter 3. Methodology

3.1 Introduction

As discussed previously, the aim of this study is to provide a detailed account of out-of-class face-to-face and computer-mediated collaborative writing in the L2 context, and the factors that shaped the collaboration process. In this chapter, I will first describe the research context, research design, followed by the research methods and procedures employed in this study. I will then explain the framework and methods of analysis, as well as ethical issues and considerations of trustworthiness of this study.

3.2 Research context

3.2.1 Institutional context

This study took place in a public university that specialises in engineering programmes, located in Northern Malaysia. The university mainly offers various engineering programmes, ranging from the level of Diploma, Bachelor's degree, master's degree to PhD degree, as well as a small number of business and entrepreneurial programmes. Therefore, most of the students enrolled are engineering students. Due to geographical location as well as other factors, a large percentage of students are from the northern states of Malaysia, such as Kedah, Perlis, Kelantan and Terengganu, which are less urban than the big cities of Penang and Kuala Lumpur. Therefore, many students do not have high proficiency in English. The average proficiency level of the students in the university is around band 3 (Intermediate) or band 2 (Low proficiency) on the Malaysian University Entrance Exam (MUET), the national English university entrance exam, when they entered university.

Although the university does not offer degree programmes in language, it does have a language centre that offers language courses to students. Undergraduate students, besides the specific subjects of their programme of study, are also required to take a series of university core courses. In line with the concern for students' English proficiency as well as workplace expectations (see Chapter 1), one of the required courses that every student in the university has to enrol in and pass before they can graduate is an English technical writing course.

3.2.2 The technical writing course

The technical writing course, titled English for Technical Communication, is a semester-long course designed to educate students on the different types and conventions of technical documents and technical writing. The emphasis of the course is writing and speaking, specifically collaborative writing and oral presentations. In the course, the students are instructed on the collection of primary and secondary sources for research as well as techniques of analysing and interpreting a range of information and applying functional organization in report writing. They are also instructed on how to carry out effective oral presentations.

As a prerequisite to this course the learners must have obtained at least band 4 (high intermediate) in their MUET exam or they must undertake and pass a Foundation English course first, which is a general English proficiency course offered by the university. This requirement is because the focus on the specific genre of technical writing means that learners are expected to have sufficient proficiency in English when they enrol in this course. Because of this prerequisite, most of the students will take this course during their second or third year of study, after they have passed the general proficiency course.

3.2.3 The collaborative writing task

The main assignment of the technical writing course is a semester-long collaborative writing task. The task consists of writing a “proposal report” regarding a service or programme offered by the university. Divided into two parts, the first part of the task requires the students to review and modify a ready-made questionnaire distributed by the instructor. The questionnaire consists of questions about possible problems of the specific service/ programme, and potential solutions to the problems. Working in groups, the students write up a two-page questionnaire review discussing its strengths and shortcomings, drawing from what they have learned in class about the genre. They then submit the review, together with the revised questionnaire. After the instructor has approved the revised questionnaire, in the second part of the task, each group distributes the questionnaire to at least 50 respondents, usually their fellow students at the university. They then collect and tabulate the results, and collaboratively write a 15-page report about how to improve the specific service or programme of the university.

The duration of the task is about 12-weeks. Besides being longitudinal in nature, the collaborative writing task is also performed out-of-class. This is due to the magnitude of the task as well as the limited class time of the course, which is only two hours per week. Therefore, there is usually insufficient time in class for the students to discuss or work on the task. To compensate for that, instructors set periodic deadlines for the students to submit three drafts of the proposal report in the weeks leading up to the final submission deadline, so that feedback can be provided to ensure that every group is on track.

The assessment of the task consists of firstly, for the questionnaire review, accuracy of format. The students are expected to identify and rectify any mistakes found in the questionnaire and explain their decisions. Secondly, for the proposal report, the emphasis is on format and language, followed by content. The students are expected to know and adhere to the specific genre expectations for different parts of the report. They are also assessed on accuracy of language and production of content relevant to the task.

The task assessments reflect the purpose of the course, which is mainly for learners to learn about the different genres of writing and written documents that they are expected to encounter in their field of study. However, at the same time, another underlying purpose of the task and course, is for the learners to improve their English proficiency, hence the emphasis also on language accuracy. As Manchon (2011) explained, second language writing is multifaceted in nature and sometimes there are co-existing aims to learn not only about content, but also the language at the same time (p. 4).

In this study, I decided to utilise this longitudinal, out-of-class collaborative writing task as the context in which I investigated the process of and learners' perspectives on face-to-face and computer-mediated collaborative writing.

3.3 Research design

This study employs a qualitative approach, which as Friedman (2011) stated, allows for not only the focus on the phenomenon itself, but also its surrounding contextual factors. Collaborative writing is a complex phenomenon that consists of numerous features and is affected by various factors interacting with each other. Thus, in order to illuminate

and specify the features and factors that shaped each mode of collaboration, an in-depth and 'richly descriptive' (Merriam, 2009, p.34) discussion of the collaboration process occurring in each mode of collaboration, as well as the perceptions of the learners involved in the collaboration, are needed.

Furthermore, the main interest of this study lies in delineating the intricate process of how learners interact and navigate through their similarities and differences to collaborate for an extended period of time, with minimal supervision from the instructor, in different modes of collaboration, to construct a writing task. Qualitative research methods have the capacity to capture and reveal complexities of the phenomenon (Miles, Huberman, & Saldana, 2014), which suited the expectations of this study.

As a researcher, I subscribe to the philosophical stance of constructivism, which holds that reality is socially constructed, and thus there are multiple perspectives or interpretations of reality (Merriam, 2009). Qualitative research is based on the same philosophical perspectives (Baxter & Jack, 2008). Pertaining to this study, it is my belief that different learners bring different worldviews, attitudes and expectations about learning and about the task, and all these factors, besides the mode of collaboration, play a part in influencing their collaborative experiences. It is my intention to attempt to capture and discuss these factors as I seek to understand in-depth, both face-to-face and computer-mediated collaboration approaches.

However, despite my paradigmatic stance of multiple constructions of realities by different people, and despite the need for consideration of surrounding contextual factors, I believe that there exists an underlying pattern in human behaviour, and collaborative writing is no exception. As Miles, Huberman and Saldaña (2014) note, "some reasonably stable relationships can be found among the idiosyncratic messiness of life. There are regularities and sequences that link together phenomena. From these patterns, we can derive the constructs that underlie individual and social life" (p. 7). Thus, besides seeking to understand the nuances and intricacies surrounding the collaboration approaches in both modes, I am also looking to derive the patterns underlying the phenomenon. In other words, I look for a deeper understanding of collaborative writing in both modes, which also include identification of 'naturalistic generalizations' about the approach (Merriam, 2009, p. 44).

In this study, four self-selected groups of learners will work on an out-of-class, semester-long collaborative writing task, with two groups in face-to-face collaboration while the other two groups in computer-mediated collaboration. Each group's collaboration process will be recorded and each individual learner will also be interviewed a few times for their perceptions about their collaborative experiences. The research data collected consist of the face-to-face groups' self-recorded discussions, the online archive of Google Docs revision history and online chat transcripts of the computer-mediated groups, as well as the participants' individual interviews.

3.4 Pilot study

Before returning to Malaysia for data collection, I carried out a small pilot study in New Zealand. As it was not possible to find a similar research context, the main purpose of the pilot study then was limited to exploring the usability of Google Docs in facilitating collaborative writing and to find out any potential problems that might arise during the use of the tool. At the same time, the pilot study also presented an opportunity for me to practice my interview skills and try out my interview questions, which is an essential process (Merriam, 2009). Most importantly, carrying out the pilot study also allowed me to develop an understanding of how to understand people's ideas, meanings and values, as these are the crucial components of qualitative research (Maxwell, 2012, p. 122).

The pilot study was carried out at Victoria University of Wellington, New Zealand during the months of December 2014 and January 2015. After obtaining ethics approval, I recruited 12 ESL/ EFL background learners doing undergraduate and postgraduate studies at Victoria University, via recruitment posters around campus and on social media. In return for their participation, the participants were each given a \$10 supermarket voucher. The participants, who consisted of 6 undergraduate students and 6 postgraduate students, formed into three groups. Group A consisted of Malaysian students who knew each other, Group B consisted of four Chinese students who were also friends, while group C consisted of students from different nationalities who did not know each other prior to the pilot study.

Before recruiting the participants, I set out to design a writing task for the pilot study. Out of consideration for the participants, who were occupied with their studies, as well as their diverse backgrounds, I created a writing task that was short and applicable to

their experiences as international students. The writing task consisted of writing an article for the university magazine about their experiences, and advice to other international students in New Zealand particularly those studying at Victoria University of Wellington. The participants were familiar with the frequently informal and casual writing style of the magazine, which was published weekly and distributed free to all students. Therefore, it was expected that they would not find it too challenging to complete the task. To further aid them in the collaborative writing task, I also prepared a simple guideline about how to write a magazine article and distributed a copy to each participant.

Each group was given a week to complete the collaborative writing task on Google Docs. They were asked to refrain from discussing the task face-to-face and to use Google Hangout for any communication or discussion concerning the task. A briefing session was held for the participants before they commenced the task. I explained the procedure, obtained their written consent, and then conducted a 45-minute tutorial on using Google Docs and Google Hangout. However, some participants encountered technical issues in joining the group chats in Google Hangout, which prompted me to change to the use of the Facebook chat application for the groups' synchronous communication option.

The group members were given the freedom to decide their collaboration process and procedure. In the middle of the week, I logged in once to provide feedback and also to remind the groups to complete the task. After they had completed the task, I contacted the participants individually to have a short interview with them regarding their experiences and perspectives of using Google Docs to perform the collaborative writing task.

Although there were differences in context and details of the research, the pilot study yielded several interesting insights that proved useful for my main study. Firstly, I discovered that while Google Docs provides an integrated chat function, in which if people are online working together on the document at the same time, they can open a pop-up chat box and have synchronous communication with each other. Unfortunately, it does not keep a record of the chats, thus once the chat box is closed, all the conversations disappear. This integrated chat function is an important feature as it allows for convenient and seamless transition between synchronous and asynchronous

communication, which is the closest in similarity to the face-to-face context. Thus, I was very disappointed to find out that I was not able to use it in my actual study. As an alternative, I decided that I would use Google Hangout, as it is part of Google applications, and so it is quite integrated with Google Docs, which I hoped would be convenient for the learners to use.

Secondly, during the briefing in the tutorial sessions, I encountered several difficulties in setting up the technological applications. This was especially the case for Google Hangout, which was the alternative that I chose for synchronous communication opportunities for computer-mediated collaborative writing. Besides the issue of participation mentioned earlier which prompted the change to Facebook chat, I also discovered some unreliability in terms of feedback notifications for Google Docs. During the interview sessions, some participants were asked about their lack of response on the feedback given, and they said that they had no idea about the feedback as they did not receive the notification via email like some of their peers. One possible reason for this was that the email was mistakenly identified as spam mail and sent to the spam inbox. From this experience, I learnt that I should reduce the reliance on the abilities of the technological tools and have more than one way of communicating to the participants about issues involving the writing task such as the provision of feedback by the instructor. Therefore, in my actual study, I added the use of the WhatsApp mobile application and created group chat in the app for each group to ensure that they had an additional option for synchronous communication opportunities as well as making sure that I was able to communicate effectively with them during the data collection process.

The third insight was the realisation that the relationship between group members is a vital factor influencing the success of collaborative writing, especially out-of-class collaborative writing. The pilot study findings showed that groups who were familiar with each other had a higher amount of peer editing compared to the group with unfamiliar group members. In their interviews, the group members of Group A and B expressed their willingness and gratitude at having their work reviewed and edited by their peers. They mentioned that as they knew each other and had worked together before, they had trust in each other. Furthermore, individual members in each group voluntarily took on the job of editing the whole writing task without being asked. One such member explained that he decided to do it because he knew that the other group members were busy. Contrastingly, in Group C, there were also instances of peer editing

without this being assigned to, but when interviewed individually, one of the group members actually expressed her displeasure at having her work edited by other group members without their seeking her permission. She also said that the unfamiliarity with her group members made it difficult for her to ask them to do their work and for her to trust them with her work. Another group member said that she did not dare to edit other people's work as she did not know them well and she was afraid that it might offend them. The contrast of attitudes was glaring. As such, it provided the realisation that familiarity with other group members is an important component in facilitating collaborative writing, whether it is in the face-to-face or the computer-mediated mode. This strengthened my resolve to make sure that the groups in my actual study were able to self-select their own group members.

The fourth insight concerned the learners' positive perspectives on computer-mediated collaborative writing. For many of the participants, it was their first experience of using Google Docs, and they commented that the experience of the many functions and features of Google Docs, especially for group work, was a revelation for them. They were enthusiastic about using it again in the future. This was an encouraging insight for me to carry on with my study.

The last insight concern features of Google Docs of which I was not aware before. From the participants, I learned that Google Docs is not only accessible via laptop, but that it also has a mobile application which is free to download and use in smartphones. Many of the participants informed me that they worked on the task using their mobile phones during their free time, such as when they were on the bus home after class. Being able to access it on mobile phones meant that Google Docs is always available on various devices at anytime and anywhere for its users as long as they have a high speed Internet connection. This was a good understanding for me and I was able to inform the participants in my actual study about these additional features of Google Docs so that they could maximise their experiences of using the application.

Overall, the pilot study was an insightful and beneficial experience for me before I commenced my data collection process.

3.5 Data collection methods

Based on the insights obtained from the pilot study, I made some changes and refinement to my methods of data collection. The methods that I used in this study consisted of questionnaires, meeting recordings, online data, document analysis, and individual semi-structured interviews. I describe each of these in turn below.

3.5.1 Questionnaire

The first method of data collection was a questionnaire completed by each participant in my study. The questionnaire, consisting of both open-ended and closed-ended questions, was distributed to the participants at the start of the semester, before they began the collaborative writing task. I prepared two sets of questionnaires for the groups in different modes. For the F2F groups, the questionnaire, which consisted of 4 sections and 12 questions, asked about their experiences and the process of doing group work and collaborative writing (Appendix 6). For the CMC groups, the questionnaire, which consisted of 4 sections and 14 questions, asked about their experiences of doing group work and collaborative writing as well as their experiences and familiarity in using technology (Appendix 7).

The reason for the questionnaire was to garner a basic understanding of the group members' experiences regarding collaborative writing and technology use. Also, the questionnaire helped me in planning the questions for my first interview with each member of the groups.

3.5.2 Meeting recordings

My second method was the meeting recordings of the two face-to-face collaborative writing groups. A voice recorder was given to each group, and a group member was assigned to be in charge of it. The instruction to the participants was to record as many as possible of the discussions that the groups had relating to the collaborative writing task. Because of the out-of-class nature of the collaborative writing task and my wish for the data to be as naturalistic as possible, I did not attend any of the discussion or meetings of the groups. This was to avoid or minimise the 'observer effect' (Bogdan & Biklen, 2007, p. 38) which is the phenomenon where the participants act in a different or unnatural manner because of the presence of the researcher. Additionally, my absence allowed the participants to be in control of their collaboration process, and they could

carry out their discussion freely in terms of time and place. They could also decide how much information that they would like to share with me. After the completion of the collaborative writing task, I collected the voice recorder back.

The F2F participants were given the freedom to conduct the discussion in any language that they preferred, and both groups carried out discussion mainly in their first language, which was Mandarin and Malay respectively. All the discussions were transcribed and translated verbatim by me for analysis. The translation included the retaining of sentence particles like 'lah', 'ah', 'ma', as these particles, with no direct equivalent in English, carry or connote certain sociocultural meanings in the Malaysian communicative context, which are vital for the analysis of the groups' interactions.

In total, the first group, group F1, recorded seven meetings with a total of 295 minutes while group F2 recorded four meetings, but only two meetings involved the discussion of the collaborative writing task, with a total of 43 minutes. This disparity and its effects will be discussed fully in the findings section.

3.5.3 Online data

My third method of data collection was the online data collected from both computer-mediated collaborative writing groups. In particular, it consisted of each group's Google Docs revision history, the multiple drafts of the task, the chat transcripts of each group's Google Hangout and WhatsApp chat, as well as the transcripts of personal WhatsApp chat transcript of two group members, which was volunteered by the participants.

The reason for establishing Google Docs as well as the synchronous chat applications of Google Hangout and WhatsApp for the CMC participants was to emulate as closely as possible the interactional features of face-to-face collaboration. However, as Merriam (2009) advises, although the methods of collecting online data are not too dissimilar to offline data, it is still important that the researcher is aware of differences that exist that might have a profound influence on the data and the study. In particular, Merriam (2009) mentions considerations such as the effect of technological tools on the information transmitted, which includes the lack of paralinguistic cues, emotional responses, and possible delayed reaction time. Therefore, it was important that I kept these differences and considerations in mind when I came to carry out data analysis.

In this study, the CMC groups carried out the same collaborative writing task as their F2F counterparts, but they were asked to write using Google Docs and interact using Google Hangout and WhatsApp. Google Docs automatically saves all changes made every six seconds, and all these changes are compiled as different versions of the document that can be accessed via the revision history page. Throughout the duration of the task, the instructor periodically provided feedback on the task on Google Docs itself, using the comment function.

Similar to their F2F counterparts, the CMC groups also mostly interacted in their first language, which is Malay for both groups. However, their writing and drafts on Google Docs was in English. Although I had access to each group's Google Docs as well as their group Hangout and WhatsApp chat, I did not interfere or join in the discussion during the collaboration process. It was after completion of the task that I accessed the Google Docs as well as Google Hangout and WhatsApp chat of each group for analysis.

3.5.4 Text analysis

My fourth method of data collection was document analysis. For the F2F groups, I collected the multiple drafts of the task of each group, which they submitted periodically to their instructor for feedback.

Additionally, I also collected the peer assessment form that was given to all group members after the completion of the collaborative writing task in both modes. In the peer assessment form, each member was asked to assess and comment on their fellow group members' performance in regard to the collaborative writing task. This form provided important information that helped me to understand more about the nature of collaboration and the relationship between members of the four collaborative writing groups.

3.5.5 Semi- structured interviews

My final data collection method was semi-structured interviews, conducted with each individual member of each group in both modes of collaboration. Interviews, as defined by DeMarrais (2004) involve "a process in which a researcher and participant engage in a conversation focused on questions related to a research study" (p. 55).

During the period of the collaborative writing task, I held three individual interviews with each group member of the four collaborating groups. I conducted the interviews at the beginning of the task, in the middle of the task, and finally after the completion of the task. The format of my interviews was semi- structured, where I prepared interview guides on the questions and issues that I was interested in, but at the same time, I was responsive to the participants' answers and ideas that emerged during the interviews (Merriam, 2009). (Appendix 8 & 9)

My main purpose of carrying out individual interviews with each research participant is summed up by Patton (2002),

We interview people to find out from them those things we cannot directly observe... We cannot observe feelings, thoughts, and intentions... We cannot observe how people have organized the world and the meanings they attach to what goes on in the world. We have to ask people questions about those things. The purpose of interviewing, then, is to allow us to enter into the other person's perspective. (pp. 340–341)

The interview sessions were carried out at a time and place that was convenient for the participants. Having individual interviews gave freedom to the participants to express their thoughts and problems that they faced without fearing any repercussions about their marks or from other group members. In the interviews, I let the participants decide the language which they would be most comfortable to converse and express themselves. Some of the interviews were carried out in the Malay language, some were carried out in English, and some were carried out in a combination of both English and Malay. All the interviews were voice-recorded by me with the consent of the participants. After the completion of data collection, I transcribed and translated verbatim all the interviews in preparation for comprehensive data analysis.

In total, I verbally recorded 403 minutes of interview with the members of F2F groups, and 498 minutes of interview with the members of computer-mediated groups.

3.6 Research participants

The selection of participants is one of the most important aspects of a study. According to Maxwell (2012), unlike quantitative research that looks for samplings that can account for statistical generalization, qualitative research employs deliberate selection

of particular settings, activities and participants that can provide information on the specific questions and goals of the research.

In this study, the participants were selected from learners who were taking the technical writing course at time of research. They were from two classes, one class carried out face-to-face collaboration as per the usual procedure, and another class carried out computer-mediated collaboration for the first time. The learners were informed of the study and voluntary participation was sought. It was made clear that their participation would have no bearing on their work or grades. They were also assured of complete confidentiality and anonymity. Eventually, two groups from the F2F class and two groups from the CMC class agreed to be my participants. All the groups were self-formed by the learners, which has been found to be more preferable from my pilot study findings. Each group also self-selected a group leader as per the request of the instructor. As the collaborative task is extended and conducted out-of-class, the instructor's intervention was expected to be minimal, and thus it was hoped that the group leader could help facilitate and monitor the collaboration process (Li & Zhu, 2017).

For the F2F groups, the two groups were identified as group F1 and F2 to protect their anonymity. Group F1 consisted of 4 Chinese female students and one Chinese male student, while group F2 consisted of 5 Malay male students. Group F1 had the higher average proficiency level, with all group members scoring Band 3 (intermediate) in their MUET exam. Group F2 had one group member with Band 4 (high intermediate) and one group member with Band 3 (intermediate), while the remaining three group members scored Band 2 (low proficiency) in their MUET exam.

For the CMC groups, identified as group C1 and group C2, Group C1 consisted of 5 Malay male students, while Group C2 consist of four female Malay students and one indigenous female student. Both group C1 and C2 had two group members that at scored band 3 (low intermediate) and three group members that scored at band 2 (low proficiency). All the group members, except the one member who obtained Band 4, had undergone the requisite English proficiency course taught in the university. Therefore, it can be assumed that their English proficiency had improved. Nevertheless, with their differing initial proficiency, it was expected that the average proficiency of the CMC groups was lower than the F2F groups.

In return for their time and participation, each group were given one RM50 food voucher as well as some souvenir keychains from New Zealand. Additionally, I also informed the participants that they could consult me if they need any help during the duration of the collaborative writing task and technical writing course.

Group	Participants	English Proficiency level (based on MUET exam results)
F1	Annie	Band 3
	Yvonne	Band 3
	Polly	Band 3
	Kenneth	Band 3
	Winnie	Band 3
F2	Amir	Band 4
	Azwan	Band 3
	Azziz	Band 2
	Aidil	Band 2
	Hafiz	Band 2
C1	Hassan	Band 3
	Ashraf	Band 3
	Aiman	Band 2
	Kafi	Band 2
	Suhail	Band 2
C2	Becky	Band 3
	Ayu	Band 2
	Amy	Band 2
	Faye	Band 2
	Frida	Band 2

Table 3.1 The participants

3.7 Data collection process

My data collection for the main study commenced during the second academic semester of year 2014/2015. After receiving approval for my research proposal in August 2014, I began an email correspondence with my former colleague in the university who was the instructor as well as the coordinator of the course. The instructor was initially hesitant and was especially concerned about the complications of the tools and technological difficulties. To allay her fears, I set up a Google Docs document and shared the link with the instructor in order to demonstrate the usability of Google Docs. The instructor was

pleasantly surprised at the functions and convenience afforded by Google Docs and she expressed her enthusiasm to try it out.

After receiving consent from my colleague, I applied and received ethics approval from Victoria University as well as from the university in Malaysia to conduct my study (Appendix 1). Before the semester began, I had a discussion with the course instructor to discuss the data collection procedure. The instructor agreed that one of her classes would carry out the collaborative writing task face-to-face as the usual procedure, while another class would try out computer-mediated collaborative writing. In addition, we agreed that I would ask for voluntary participation from the students to participate in my study. I received the full cooperation from the course instructor to carry out my data collection in both of the classes that she would be teaching that semester.

Week 1–Week 2

In the first class of the semester, I followed the instructor to her classes to introduce myself and my study as well as to recruit students to be my participants. I also wanted to observe the students to decide which class was more suitable to carry out computer-mediated collaborative writing. Unfortunately, the attendance was low for both classes, with less than half of the class present and thus I had to wait until week 2 to introduce my research to the students. This presented a slight problem in terms of time because the course instructor had a syllabus that she had to cover and I was using up her class time. However, it was not possible to arrange a time outside of class time to meet all the students because they had different schedules and their schedules were tightly packed throughout the day. In week 2, I was able to identify the students' in the Thursday class as the class suitable to implement computer-mediated collaborative writing. This was decided based on the general responses and observations of the students as well as discussion with the instructor. I then explained my study and received verbal consent from the majority of the class to try computer-mediated collaborative writing for their course assignment for that semester.

Week 3–Week 4

Unfortunately, in week 3, I was informed of a sudden change of venue for the Thursday class, which was the initial class for computer-mediated collaborative writing. During the class, the students voiced their concern and hesitation about participating in my

study as the Wi-Fi connection was not good in and around the classroom. Because of that, I had to change my plan and implement computer-mediated collaborative writing in the Wednesday class instead. In week 4, I explained the change of circumstances and plan to Wednesday's class and fortunately the students were enthusiastic to try computer-mediated collaborative writing. When I explained about participating in my study, 6 out of the 7 groups agreed to be my research participants. However, eventually only two groups were able to participate fully until the completion of the task. The reasons for this included the fact that some groups ended up meeting face-to-face frequently to discuss the task as they said it was more convenient. Another reason was that some of the group members did not attend all the three interview sessions, resulting in incomplete data.

The next day, I informed the Thursday class that they would revert back to the conventional face-to-face collaboration for their task. Then I requested for voluntary participation of the groups for my study. Surprisingly, the students were reluctant, despite my assurances of confidentiality and offers of compensation for their time. When asked why, some of them expressed discomfort of having to record their discussion, and some of them said as they did not have fixed ways of discussing the tasks, it might be hard for them to record all their discussion. After some clarification about the purpose of the study, eventually two groups signed up to be my participants.

Week 4

In week 4, I arranged for a tutorial session to be held for the computer-mediated class about the use of Google Docs and online collaboration. I encountered difficulty in arranging a suitable time and place for the tutorial sessions, as the students had different classes at different times and the solitary computer lab in the school was too small to accommodate 35 students at one time. In the end, I arranged for the tutorial session to be held one hour before class, and the students were requested to bring their laptop or tablet to the session. During the tutorial session, I demonstrated the step-by-step procedure on how to log on to Gmail and then to access Google Drive and Google Docs as well as how to set up Google Hangout. The students were also asked to try out the technology during the session. However, several problems arose during the tutorial session. First, the bus bringing the students arrived late and the session started late. Second, while the Internet access provided at the main campus has the fastest speed in

the whole university, it was not able to handle 35 students logging on to Gmail and Google Docs at the same time. As a result, some students encountered lagging and delays while the students who were able to keep up were forced to wait, and some of them became restless. This also led to the tutorial session extending into their actual class time, which caused some displeasure from the course instructor. Eventually, the students were asked to stop and just watch my demonstrations, displayed on the big screen via the projector. However, overall the attitude of the students was positive. Most of the students had an existing Gmail account, but only a handful had heard of Google Docs, and none of the students had used Google Docs and Google Hangout extensively before. They expressed their fascination with the many features of Google Docs and the excitement to try the tool.

At the same tutorial session, I distributed the questionnaire to all students asking about their group work and technology use experience (Appendix 7). Then, I set up individual Google Docs for each group to work on the collaborative writing task. The Google Docs page set up for each group was only accessible to the group members, the course instructor and me. Additionally, I set up group chat for each group on Google Hangout and WhatsApp mobile application, with accessibility to only the group members and me. However, I made clear to the participants that I would not be monitoring or participating in their conversations and discussion despite having access to the group chat. The instruction to the CMC groups was that they should try their best to discuss and work on the task online and avoid meeting each other face-to-face to discuss the task. I explained that part of my research was to capture the group interactions and discussion and these aspects could only be observed online where everything is captured and recorded in Google Docs, Hangout and WhatsApp.

In the same week, I also arranged for separate briefing sessions for each of the two F2F groups. During the session, after explaining and ensuring the understanding of the learners, I distributed the questionnaire (Appendix 6) to each individual group member. Then, I provided each group with a voice recorder and the instruction to record every discussion they had about the collaborative writing task. However, I made clear to the participants that they could do the writing task in any way they want to, and there was no obligation to do it in any specific way. The reason for this is that I wanted to capture the interaction and process of learners collaborating in a naturally occurring context. Additionally, I also reminded the group members to provide me with the drafts of their

collaborative writing task. Lastly, I set up group chat for each group using the WhatsApp chat application in order to provide a communication channel for the participants and me to contact and consult each other when necessary, such as to arrange for the time of the interview sessions.

In this week, the instructor distributed the questionnaire to each group based on the topic of their choice and uploaded the questionnaire for the groups in the computer-mediated mode class. The learners began to work on the first part of collaborative writing task, the questionnaire review.

Week 6–Week 7

In week 6, the first individual interview sessions were scheduled with the participants. I encountered two problems when interviewing the participants. First, it was difficult to schedule a time and place to meet each participant, and I ended up having to travel around different places to accommodate their time and convenience. I also had to schedule back to back interview sessions with the participants. The second problem was deciding the language to use in the interviews. By default, I spoke English to the students due to my status as a former instructor of the course, but during the interviews the participants were given the option to decide whether they preferred to hold the interviews in Malay or English Language so that they could express themselves to the best of their abilities. I noted that, even though they were struggling with the language, some of the students insisted on having the interviews in English. As a result, there were occasions when misinterpretation or misunderstanding of the questions happened and sometimes, not wanting to embarrass them, I proceeded to the next question.

Unfortunately, this resulted in some instances of incomplete information about certain aspects of the interview questions. Other students made known their preference for having the interviews in the Malay language and sometimes I struggled to form the questions in the Malay language to ask them. This was because I rarely speak Malay in my daily communication and although I am fairly proficient in the language, my receptive knowledge of the language is much better than my productive knowledge. I prepared by writing key words of the interview questions in Malay beforehand, but sometimes when it came to follow-up questions or clarifications, the students were not able to understand simple English terms while I had difficulty finding the equivalent

words in Malay. I completed the first interview sessions with all the participants in week 7.

In week 7, the groups also submitted their first draft of the task to the instructor. The F2F groups had to print out their drafts and submit it in class. The instructor provided written feedback directly on the draft and returned it the week after. The CMC groups had to complete the draft on Google Docs by the deadline given, after which the instructor would log on and leave her written comments. After the instructor had provided the feedback, she informed the students in class. I also notified each group via Google Hangout and WhatsApp.

Week 8–Week 9

In weeks 8 and 9, the groups worked on the collaborative writing task. Although I made clear that I was available for consultation, especially with regard to any technical issues regarding the use of Google Docs and Hangout, none of the groups approached me. At the same time, I helped the course instructor with designing of the peer assessment form, which was to be given to the students after the completion of the collaborative writing task. In week 9, the students submitted their second draft of the collaborative writing task and received feedback from the instructor.

Week 10–Week 11

In week 10, I contacted the participants to arrange for the second round of interviews. Again, I faced some difficulties in arranging a suitable time for each participant as they were having their mid-term exams during these weeks. I managed to complete the second round of interviews with all participants by Week 11. In week 11, both classes submitted their third draft of the collaborative writing task to the instructor.

Week 12–Week 13–Week 14

In week 12, the students received the final feedback from the instructor. They then had a week to revise and complete the collaborative writing task before the official submission in week 13. After submission of the task, each learner was distributed the peer assessment form to fill in and return to the instructor in class.

As part of the assignment, each group had to conduct an oral presentation of their reports to their peers. The oral presentation was scheduled in class during week 13 and week 14.

After the completion of the collaborative writing task, I contacted the participants to arrange for the third sessions of individual interviews. I managed to interview all the participants by the end of week 14, which is the end of the semester. My data collection was completed on 7th June 2015.

3.8 Researcher's role

To avoid conflict of interest, I decided to be an observer instead of instructor of the classes in which I carried out my study. I obtained the cooperation of my former colleague to conduct the study in her classes. Throughout the period of data collection, I was not involved in the teaching or assessment of the classes. Additionally, during the period of data collection, I attended some of the classes to introduce my study and communicate with the participants. However, most of my data collection was carried out at a different place and time from the course time, so as not to cause any interference. I was very grateful for the instructor's cooperation in my study, and I gave her some small gifts as a token of my appreciation. In addition, I also provided some assistance to her in creating the peer assessment form for the classes as well as in her other working responsibilities.

3.9 Data analysis

My data analysis utilised both inductive and deductive approaches, which is common in qualitative research (Daymon & Holloway, 2011). I started with the inductive approach, where I scrutinised the data collected from each group carefully to find patterns, themes and categories. In particular, I employed the method of thematic analysis (Braun & Clarke, 2006) to identify relevant and salient patterns, themes and categories in the data. Later on, with further reading of literature, the deductive approach was used as I begun to discuss my findings based on the categories and understanding I derived from the literature.

According to Braun and Clarke (2013) thematic analysis is “a method of analysing and identifying themes and patterns of meaning across a dataset in relation to a research

question” (p. 175). One of its main strengths is its ability to also take context into consideration. The authors provide six general steps for carrying out thematic analysis, which I will discuss next in regard to my study.

Firstly, familiarise yourself with data. The overarching purpose of this study is to obtain an understanding of how learners collaborated when they were out-of-class, in both face-to-face and computer-mediated modes. As such, I identified the main data to be the self-recorded meetings of the face-to-face groups, and the archived revision history of Google Docs as well as the synchronous chat transcripts of Google Hangout and WhatsApp, for the computer-mediated groups.

I started my analysis by first transcribing and translating the meeting recordings and the synchronous chat transcripts as well as exchanges on Google Docs that were all carried out in the groups’ shared L1, which was Mandarin for group F1, and Malay for group F2, C1 and C2. Building on the system used by other similar studies, I created a transcription notation system for my data (Appendix 4). Several considerations were considered during data transcription and translation. Firstly, all the data was transcribed verbatim, word by word. The reason for this was to make sure accurate representation of what really transpired between the group members was provided so that further interpretation could be made. Additionally, doing this allowed me to make constant reference to the data and engage in a recursive process of data analysis, which is a crucial feature in thematic analysis. Secondly, in the process of translating the data from another language to English, I struggled between transcribing the data as it was or modifying it for grammatical accuracy. I eventually decided on modifying the structure of phrases and sentences to be as grammatically accurate as possible without compromising the meaning. My main objective was to stay true to the data as much as I could, even with repeating words. Thirdly is the inclusion of sentence particles like ‘lah’, ‘lo’, ‘meh’ in data transcription. The use of sentence particles is integral in the Malaysian communicative context, even cutting across different languages such as Malay, Mandarin and English. These sentence particles carry no lexical meaning on their own, but they impart certain meanings when used with other words in a sentence. For example, the particle -lah, can convey both positive meaning such as showing rapport and friendliness, or negative meaning such as indicating impatience or unhappiness, depending on the softening or the hardening of the tone of voice (Yong, 2006). Another example is the particle -ma, when spoken in a soft tone, usually indicates a questioning

stance, which in turn indicates a less assertive stance on the part of the speaker, signalling a willingness to listen to other viewpoints. From the perspective of collaboration, this indicated that the speaker was more open to listening to other people's ideas besides his/her own. Therefore, having an understanding of these sentence particles' usage is crucial to find out as well as to show how the learners truly collaborated with each other.

After preparing and reading all the data thoroughly, I moved to the second step of thematic analysis, which was *generating initial code*. To help me in this process, I utilised the NVivo 11 software. I uploaded all the data to the software and scoured through the data of each group, coding every incident that was interesting. As my interest lay in the learners' collaboration with each other, I coded my data in episodic units of analysis, of the learners' interactions with at least one other group members, since collaboration was not observable in individual learners. Furthermore, as Ingram and Hathorn (2004) and Donato (2004) have argued, learners' participation or interaction itself is not collaboration, as collaboration is more than just participating in discussion and interacting with each other. Therefore, in my data analysis, I scrutinised the learners' interactions for instances or episodes that exhibited actions or features that were deemed to be collaborative. I also looked for contrastive episodes that were considered unfavourable for collaboration, as that was also equally important in gaining understanding about out-of-class collaboration.

Then, in the third step of analysis, I *searched for the themes* that truly represent the research data. I reviewed the coding categories and data many times, sorting and combining them to identify the overarching themes. As a result, I was able to identify salient features of collaboration shown by each group as well as the factors that influenced their collaboration process. I also noted the learners' attention to language while they were collaborating with their peers. I constantly submitted and discussed my coding categories and themes with both of my supervisors during our regular tri-weekly meetings, and thus both of my supervisors took on the role of inter-coders for my study. Although Braun and Clarke (2006) explain that thematic analysis is each researcher's own interpretation of the data, and the themes reside in the researcher's mind rather than in the data, meaning that it is subjective, it was still important to check my data analysis in terms of validity of rationale and justifications. My supervisors' critical feedback helped me in *reviewing my themes*, which was the fourth step of thematic

analysis. Additionally, this process also promotes conformability, another important measure in qualitative research.

The fifth step of thematic analysis was *defining and naming themes*. In organising my themes, the main criteria were prevalence across the data, which has been suggested by Braun and Clarke (2006) as one of the ways, although not necessarily the only way, to identify themes in datasets. This is because one of the ways to obtain an understanding of how learners collaborated was to find out what things they did most or discussed the most during the collaboration process with their peers. However, I also identified themes that were not prevalent, but were highly pertinent in the learners' collaboration process. Additionally, I also triangulated the findings derived from the main research data of the groups' collaboration process, with the learners' individual interviews, which were carried out during the learners' collaboration process, as well as the numerous drafts of the task that the groups submitted to their instructors. These additional insights helped to affirm or negate my findings and provide further information that helped me to have deeper understanding and contextual details about my findings.

Lastly, the final step of thematic analysis was to *produce report*, in which I presented and discussed my findings in the findings chapters.

3.10 Ethical considerations

As mentioned before, ethical approval was obtained from Victoria University of Wellington to carry out the study (Appendix 1). During data collection, I also distributed the information sheet and consent form (Appendix 2 & 3) to all the participants and informed them that participation was completely voluntary. Furthermore, I made clear my position as a researcher who would not interfere in the teaching or assessment of the course. Lastly, the participants were also compensated for their effort and time.

3.11 Trustworthiness

In qualitative research, there are usually four criteria used by researchers to ascertain the rigor and trustworthiness of a study. The criteria are credibility, transferability, conformability and dependability (Lincoln & Guba, 1985, cited by Merriam, 2009). First, to achieve credibility, I employed multiple methods of data collection to triangulate my data (Merriam, 2009). Besides collecting the naturally occurring data of the groups'

spoken and written interactions, I also conducted interviews with each participant to find out what they thought and felt about collaborative writing. Furthermore, I collected additional information such as the groups' multiple drafts, their questionnaires and peer assessment forms. This allowed me to have a comprehensive interpretation of events and enabled a fuller understanding of out-of-class face-to-face and computer-mediated collaborative writing. Secondly, to enhance the transferability of the study, I have provided a rich and thick description of my research settings and participants, data collection methods and procedures as well as detailing the problems and issues that I faced during my data collection. As such, readers will be well-informed of the study details and they can compare and judge the transferability of the findings according to their own contexts (Merriam, 2009). The third aspect is conformability, which is achieved when "the findings of the study could be confirmed by another person or another study" (Marshall & Rossman, 2014) , p. 253). I worked closely with both of my supervisors throughout the duration of this study, and they checked and provided feedback on my data categorisations and analysis. Additionally, I also had discussion with my fellow PhD colleagues and sought their opinion about my work. Lastly, for the aspect of dependability, which is whether the findings that I obtained are consistent with the data, the measures that I took such as data triangulation, thick descriptions and supervisors checking helped me to ensure the dependability of my study.

3.12 Chapter Summary

In this chapter, I have reported the context, methods and data collection process of my study. I also elaborated on my methods of analysis and the issues of ethics and the trustworthiness of study. In the next chapter, I will discuss my findings, starting with the face-to-face groups.

Chapter 4. Findings: Collaborative writing in face-to-face mode

4.1 Introduction

As mentioned in the literature review chapter, there is a lack of understanding about how learners collaborate, particularly when doing out-of-class tasks, where there is minimal presence of instructors. In this chapter, I seek to provide a comprehensive understanding of the collaboration processes of the two face-to-face (F2F) groups. I will do so by drawing out the collaborative features displayed by each group, the factors that shaped their collaboration processes, and their attention to language. As I present the findings, I will also discuss the findings in relation to the literature.

The findings show that the F2F groups, who differed quite considerably in terms of amount and duration of discussion recorded, also had quite different processes of collaboration. However, a number of similar collaborative features were observed in both groups.

4.2 F2F Group F1

The first F2F group, named group F1, consist of one male and four female students, to whom I have given the pseudonym names of Kenneth, Annie, Yvonne, Polly, and Winnie. Annie was elected to fill the leadership role as required by the instructor. All the group members shared a similar English proficiency level, in the range of lower-intermediate level (Band 3), as evidenced by their results in the national English proficiency exam (discussed in Chapter 3, section 3.6).

This group self-recorded seven meetings over the course of 12-weeks of task duration, with all five group members present at the meetings. The lengths of the meetings were as follows: Meeting 1 (49 minutes), meeting 2 (18 minutes), meeting 3 (16 minutes), meeting 4 (55 minutes), meeting 5 (28 minutes), meeting 6 (21 minutes), meeting 7 (1 hour 55 minutes), totalling to 452 minutes. This large amount of recorded data meant that the understanding obtained of this group was much more comprehensive than group F2, who recorded much fewer meetings. In their meetings, the group members predominantly conversed in their shared L1, which was Mandarin, interspersed with brief use of English.

4.2.1 Salient features of collaboration

Group F1 exhibited a number of features that were indicative of how the learners carried out their collaboration process, as discussed next.

Co-construction of task

The first prominent feature of collaboration observed in this group is co-construction of task. The group members shared and built on each other's ideas to construct points and content for many parts of the task, with Annie as the scribe, typing it out on the laptop. The co-construction of task was especially evident in the first part of the task, the questionnaire review which was shorter and more straightforward in nature, compared to the proposal report which was lengthier and required analysis and discussion of data. This also showed that the nature of the task could affect the way the learners collaborate with each other.

In Excerpt 4.1 below which comes from meeting 1, the group members agreed to Annie's suggestion of listing out all the points first for the questionnaire review task. Subsequently, they contributed and built on each other's ideas to construct first, the point about the lack of instructions in the questionnaire (line 5-9). Secondly, they discussed how closed-ended questions are an advantage for the questionnaire (line 10-28). All the group members participated in the discussion, providing their ideas and elaborating on other group members' ideas. No one asserted their opinion, even Annie who was the group leader (line 17). Instead, the group members were open to all ideas and they also provided justifications for their opinions (line 20, 22, 28), indicating their willingness to obtain the consensus of everyone. By doing so, they were able to garner their collective expertise and co-construct the task.

Excerpt 4.1.¹ Group F1 members' co-construction of task during collaboration

- 1 Ann: So we should first **list** out what are the **weaknesses** and what are the **strengths**
 2 first, and then we can decide three two or four one [points].
 3 ...
 4 Ken: We discuss **section** by **section** first
 5 Ann: it didn't have **instruction**
 6 Ken: [In] **Section A**, it is straight away the **overview** [section]
 7 Yvn: I think every **section** should have **instruction**
 8 Ann: Because it's different, this section is **yes/no** question, then this section is [Likert]
 9 **scale**
 10 Yvn: Earlier we talked about **close ended questions** and **open ended questions**, what
 11 are they, **advantage**? Is this considered as **strength**?
 12 Ann: But this is considered **close-ended** [questions]
 13 Win: **Open** [ended questions] required writing your own **opinions**
 14 Yvn: **Yes and no** is **close-ended**?
 15 Ann: Both are **close-ended**
 16 Yvn: Then this is considered **strength** or?
 17 Ann: **depends** on what we want to do [with the questionnaire data]
 18 Ken: I think this is better
 19 Win: Easy
 20 Pol: **Close** is better, because you don't have to think about what to write
 21 Ken: Ah it's easy
 22 Ann: So I think it's an **advantage**, because it can, how to say, **simplify**
 23 Pol: **Simple**
 24 Win: People don't like complicated things
 25 Ann: **Advantage, simple**, and also easier to collect **data**
 26 Ken: Because if it's **open-ended**, it is difficult
 27 Ann: Will be very broad
 28 Ken: Ah, it will be hard to find **similarities**
 29 Ann: And then? [next point]

Co-construction of the task is the epitome of collaboration as it signifies the provision and sharing of expertise between the group members, especially to create new knowledge that will benefit all members, which is the main purpose of collaboration. By sharing expertise, the learners were able to think of and create better ideas and elaboration which led to a higher quality of the task than could be achieved individually. Moreover, as they shared their expertise, the group members also had the opportunity to learn from each other. An illustrative example shown above was Yvonne who was

¹ Transcription key: **Words in bold**: Spoken in English
 Ellipsis (...): redacted parts of interaction
 Brackets [] : Researcher's note
 Further transcription notations, refer Appendix 4

initially unsure whether closed-ended questions can be considered a strength or shortcoming of questionnaires, asked the question about this (line 10-11, 16). Different group members then provided their opinions which helped to inform her understanding of the issue (line 17-28).

This finding is similar to Nykopp et al. (2014) who reported on the different ways of learners constructing knowledge during collaboration. The researchers found that their participants were engaged in collaborative completion the most, where one member suggests a sentence or an idea and another group member completes it. Collaborative completion is similar to the instances of co-construction of task shown by this group. Nykopp et al. (2014) proposed that this activity promoted a more meaningful and productive collaboration for the learners involved, which was also observable in this group.

In addition, this finding agreed with the findings of Storch (2005) who reported that her collaborative writing participants spent the longest time generating ideas, an activity which they valued greatly. Further, Storch and Wigglesworth (2007) and Wigglesworth and Storch (2009) both reported that collaboration benefits the learners by providing them opportunities to co-construct knowledge and assist each other. This finding showed that the benefits were also applicable in longer, out-of-class collaboration.

Shared ownership

The second salient feature of collaboration in this group is the strong sense of shared ownership among the group members. This was observed from their constant checking and confirming with each other about all aspects of the task, which was the most frequent activity carried out by the group members during the collaboration process. The group members were especially concerned about making sure of the uniformity of structure and format of the task, especially for the proposal report where they divided parts of the task to do individually. In addition, they also sought confirmation about various other aspects of the task, approval of their ideas and work, as well as checking on other group members' progress. This is illustrated in the next excerpt.

Excerpt 4.2 from meeting 7 showed how the group members checked with each other on even minute details of the task format such as spacing and font size (line 1-11, 15-16) to ensure that their work aligned with each other.

Besides that, they also paid attention to global aspects of the task, such as references and content of the task, as illustrated in Excerpt 4.3 from meeting 7 and 4.4 from meeting 4.

Excerpt 4.2. Group F1 members' discussion about aligning format of task

1	Ann: Between line and line, line spacing is 2 [double]?
2	Pol: ahh, line spacing put 2
3	Ann: For the spacing , they have before and after , between paragraph and paragraph ,
4	what to put for that?
5	Pol: I didn't do that, I just press enter then start at the next paragraph, you don't have
6	to add space... I didn't change that, don't have to change that I think
7	Ann: Because I have already set it to all my parts, can I see yours?
8	Pol: I just changed this part to 2.0 only
9	Ann: ahh, but because I have changed my parts, you have to let me know how much, can
10	you check your paragraph [spacing] is how much?
11	Pol: zero and 10
12	Pol: Font size 12 is big, and then we will exceed the page limit
13	Ann: If exceed also no choice
14	Pol: Maybe we change to 11, then it'll become one page
15	Yvn: This numbering you want to put in front or middle? we have to standardize
16	Pol: Middle

Excerpts 4.2, 4.3, and 4.4 demonstrated in several ways the strong sense of ownership of task shared by the group members. First, as illustrated in Excerpt 4.2 above, the group members were aware that it was a collaborative task, and thus individual group members adapted and aligned their individually written work into a jointly composed text. The group members took the initiative to check and negotiate with other group members about the required format and structure of task, and then revise their work accordingly. No group member demanded or imposed their opinion or way of doing the task on other group members.

Excerpt 4.3. Annie's checking of reference use among other group members

1	Ann: Did you use any reference ? I only have three
2	Ken: Did you guys use any?
3	Ann: We need at least 4, I don't think their parts require referencing, only the front
4	sections need references, I think we can put in introduction , you can put what is
5	survey , or what is convenience store
6	Ken: Oh
7	Ann: I help you search and see

Secondly, the group members checked on other group members' work, as shown by Annie in Excerpt 4.3 above, who asked Kenneth about use of references in the

introduction section, and then offered to help him with it (line 1-5, 7). This was indicative of the sense of collectiveness the group members had, as they did not just focus on their own parts of the task after dividing the work. Instead, they were also concerned about other group members' work on the task, and even extended their assistance, as they were aware that the task is collective and responsibility is shared by the whole group.

Excerpt 4.4. Annie's solicitation of approval from other group members regarding her part of task

1	Ann: [Reading from her draft] There's no complicated sentences, it only contains
2	short and no long wordy sentences. From the questionnaire we can notice
3	that the questions or statements are in one sentence that less than 20 words
4	which makes the respondents easy to answer the questions. This is [what] I
5	added extra
6	Ken: okay
7	Ann: Then , here, although there are two strengths in..
8	Ken: Can add directly I think
9	Ann: But we found out that there are more weaknesses that make this a bad
10	questionnaire. Firstly, confidential statement is not in this survey
11	Yvn: Included or stated in this questionnaire
12	Ken: is not stated
13	[Annie typing]

Thirdly, the group members also sought the approval of other group members about their work, indicating their awareness that the task belongs to all group members and not to an individual. Excerpt 4.4 shows Annie reading out her work to other group members to see whether they approve what she has written (line 1-10). Doing so also allowed her to receive immediate feedback from others (line 8-11), which enabled her to improve the quality of the work.

In addition, throughout the collaboration process, all the group members participated and engaged in all the discussions of the task, contributing their efforts to construct the task. This indicated the awareness that they owned the task and it was their responsibility to complete the task.

Overall, it can be seen that the group members' shared sense of ownership, which was manifested in various ways, was one of the main aspects that contributed to the group's successful collaboration.

Collective scaffolding

The third feature of collaboration observed in this group is collective scaffolding.

Collective scaffolding refers to the assistance the group members, who were of similar proficiency, provided to each other as they worked on the task. Collective scaffolding is an important feature in collaboration as it allows group members to create an outcome that is beyond their individual capability, as well as to gain personal understanding and learning (Donato, 1994). There were many instances of collective scaffolding, especially as the group members were co-constructing the task. Additionally, the group members also offered and sought help from each other during the collaboration process.

In Excerpt 4.5 below, Winnie, who did not understand what a thesis statement was, asked (line 3, 11) and received assistance from other group members, Annie, Kenneth and Polly, who explained the concept to her with the aid of course notes (line 12-17). Subsequently, Winnie was able to apply her understanding of the concept by contributing her input towards the task (line 19-22). The collective wisdom offered by her multiple group members seem to have aided Winnie in developing understanding about important concepts of the course. This finding extends the concept of collective scaffolding to out-of-class collaborative tasks. Even without the presence of the instructor, the learners could autonomously proffer assistance to their peers and individual learning could take place with collective assistance. Additionally, this finding also resonates with Yu's (2015) assertion that collaboration allows learners to generate learning possibilities via scaffolded assistance.

Excerpt 4.5. Group F1 member's collective scaffolding of Winnie's understanding about concept of task

- 1 Win: Annie's [part] has what problem?
2 Ann: **Thesis**, you guys have a look first la
3 Win: What is **thesis**?
4 Ann: That
5 Ken: **The purpose of this review**
6 Ann: **Is to evaluate a questionnaire survey on the convenience store at**
7 **Mechatronic Engineering School of UniMAP. This is a close-ended**
8 **questionnaire. Overall it is not a good questionnaire because it has more**
9 **weaknesses than strengths. There are a few corrections to make in order to**
10 **improve the questionnaire.** And then it's thesis
11 Win: What is thesis?
12 Ann: Thesis is, in my file [notes] **thesis statement, a single statement somewhere in**
13 **your first paragraph that present**
14 Ken: **Your arguments or your plans to the readers, tell your readers what to**
15 **expect from**
16 Pol: like [writing] your essay, if now you want to discuss few points, then you say oh,
17 below are some of points like this
18 ...
19 Win: Actually isn't this **thesis** meh?
20 Ann: Which one?
21 Win: like we focused on the main point and say we have three **strengths** and two
22 **weaknesses**

A factor in the many occurrences of collective scaffolding was the willingness of the group members to seek help and to offer help to their group members. The group members sought help for clarification of tasks, for their lack of understanding about aspects of task, and especially for feedback on their individually written parts of the task, exemplified in Excerpt 4.6 from meeting 4 below.

In the excerpt, Kenneth asked for his group members' feedback about his part of the task (line 1-5), and the other four group members obliged. Together, they helped him to revise and construct a more accurately worded point for his part of the task (line 6-13). On other occasions, the group members, such as Polly, Yvonne and Annie, would offer to help with other group members' unfinished parts of the task, and to manage and compile the task to make sure all parts of the task were coordinated and uniform in terms of format and style.

Excerpt 4.6. Group F1 members' collective feedback to Kenneth about his part of the task

- 1 Ken: now it's the section below, this I put it to the first, **the store owner should longer**
 2 **the operate hour to 7pm**, because this initially is second ma
 3 Pol: **Longer hours** and 8-7 seems like the same thing leh
 4 Ken: And then **owner should hire more employee**, this is he should hire more
 5 **employee to store**, and then..
 6 Yvn: the first one is not '**longer the operating hours**' I think
 7 Ann: **Increase**
 8 Win: **Increase** lo
 9 Ken: [Writing] **increase** also sound weird
 10 Pol: **Extend**
 11 Win: Ahh
 12 Ken: Ahh, **extend** [writes it down] **t and t?**
 13 Yvn: **t and d**

These findings illustrated the strong trust between the group members who relied on each other as source of information and assistance. They also demonstrated the good relationship between the group members which encouraged them to offer help and provide feedback on each other's work. One of the reasons for this may be the familiarity between the group members, who were self-selected. In their interviews, the group members mentioned that they were close friends and they had collaborated before. As a result, they were comfortable with each other and they would have been aware of and developed trust in each other's abilities. Thus, this finding supports the notion that learners should be allowed to self-select their group members when doing collaborative work, especially extended out-of-class tasks, as trust between group members is an important component in collaboration.

Overall, this finding agreed with Mutwarasibo (2013) who also found peer support to be crucial in learners' collaboration. However, as the findings of this study showed, establishing a good relationship between the group members first is important in order to encourage effective peer support among the learners.

Negotiation of task

Another prominent feature of collaboration observed in this group concerns the many instances of extensive negotiation that happened between the group members as they discussed the task. The group members were active in contributing their ideas, and as a

result, many differences in opinion or disagreement occurred. However, they were observed negotiating extensively to reconcile the differences and attain a consensus.

In Excerpt 4.7 from meeting 4 below, the group members were deliberating on which convenience store they would like to do their research on. As they had been given a ready-made questionnaire, they had to make sure the questions were applicable to the convenience store that they focused on. Polly and Yvonne disagreed on which convenience store to select for the task (line 6-15). To resolve the issue, Annie initially suggested consulting the instructor (line 16), to no avail. However, Annie was then able to come up with a better suggestion which met all the requirements of the questionnaire and all the group members were satisfied with the solution (line 18-35).

The group members' willingness to voice their opinion and to disagree with each other enabled them to come up with better ideas and output for the task. Moreover, the group members were focused on disagreeing about the task only, and their disagreement did not involve any personal element. They were open to reason and receptive to other people's ideas that were better, which allowed for productive discussion of the task. This finding supports Nykopp et.al. (2014) who proposed that disagreements actually signified engagement of the learners, since they would be obliged to provide reasoning to defend their ideas. This was also the situation in this group.

Additionally, this finding agreed with Tocalli-Beller (2003) and Pathinathan and Yong (2012) who discussed two types of conflicts, and propose that cognitive conflict, which focused on task only, would be productive for collaboration, as it facilitates learning. In contrast, affective conflict which extends the disagreement beyond the task onto personal issues, could be detrimental to the collaboration and the relationship between the learners (Tocalli-Beller, 2003). The group members demonstrated that they could resolve their cognitive conflicts amicably, which brought improvement to the outcome of their task. They resolved the conflict usually by either creating a better alternative by compromise, or when other group members provided support for one of the differing ideas. This provided another important finding as it suggests that having more group members could be beneficial to collaboration as it could aid the decision-making process.

Excerpt 4.7. Group F1 members' extensive negotiation of task

- 1 Yvn: Should we change [the location], if you guys want to change it [from campus] to
 2 hostel?
 3 Ann: We can't change to hostel, because they are open in the morning
 4 ...
 5 Ann: now we should first confirm how many stores in that campus
 6 Yvn: That day we said two stores, but not sure whether it's right
 7 Pol: You have to think that this questionnaire was constructed last year, that time the
 8 campus is still new, so maybe there's only one store, and the operating time is
 9 short
 10 Yvn: I know, but now we are discussing what should we change, not about the past, we
 11 have to make changes and then distribute it to people
 12 Pol: So I think you can directly **label** which convenience store, just say which particular
 13 store that you are researching
 14 Yvn: But this way you are still **misleading** your respondents, why must you only go to
 15 that store, can't go to another store meh
 16 Ann: I think we should just ask the instructor lo
 17 Pol: I just want to survey this particular store la, I don't want to do for [another] store
 18 Ann: I know already, here, the store at [their engineering school], there's only one store
 19 Win: School's convenience store then, and its operating hours are not long
 20 Ann: And it doesn't open on Friday
 21 Ann: It opens very late, later we go and see, okay, so we just change to school's then
 22 Win: **Okay**
 23 Ken: how to change the time? [operating hours]
 24 Ann: We just go and see its **operation hour** lo
 25 Ken: then we just make the changes in this is it?
 26 Ann: Hmm
 27 Win: okay **on!**
 28 Pol: Then does it employ employees?
 29 Win: Ah, there's only two, the owner and one more person, and when they take breaks
 30 they don't open, both take breaks together
 31 Pol: Yes, good
 32 Yvn: Who suggested this?
 33 Win: Annie
 34 Yvn: yaaaayyyy
 35 Pol: let's change

Additionally, the extensive negotiations also indicated the equal status between the group members in terms of giving opinions and making decisions for the task. They could challenge each other's ideas, suggest alternatives and defend their own viewpoints, thus leading to lengthy negotiations for a shared consensus. The group members also acknowledged their equality in status, with Polly explaining during her

individual interview, when asked who the group leader was, that there was no leader, and everybody just worked together (refer Section 6.2.1).

Some researchers (e.g Yong, 2006; Tocalli- Beller, 2003) have emphasized that affective factors such as trust, reliability, respect and so on, are a key factor in collaboration and in determining the type and outcome of conflict experienced by the learners. This seems to be evident in this group's collaboration. The good relationship between the group members, which was demonstrated in the form of trust and respect for each other, provided opportunities for the learners to freely and willingly contribute their ideas, disagree with each other, seek help from each other, and ultimately be able to complete the collaborative task together.

Social talk

The fifth feature that was prominent in this group's collaboration was the social talk between the group members. It was not prominent in terms of prevalence, but in terms of salience. Throughout their collaboration, the group members mostly focused on discussing and doing the task. However, there were several occasions where they would stray off-task. There were two interesting observations during the learners' off-task talk. Firstly, when the whole group was distracted and was discussing another issue, one of the group members would then remind the others to come back to the discussion of the task. The second notable point was the occurrence of simultaneous talk by the group members. A few group members would go off-task, but at the same time, the remaining members would continue the discussion about the task. This would then have the effect of bringing other group members back to focus on the task again, as shown in the following excerpt.

In Excerpt 4.8 below, from meeting 1, in the midst of the discussion, Polly mentioned that she wanted to go and buy biscuits, which prompted replies from Kenneth and Winnie (line 3-7). However, at the same time, Annie and Yvonne remained on task and continued the discussion. This allowed Kenneth and Winnie to re-join the discussion and contribute their input, and the discussion was not disrupted (line 9-18). This finding adds support to the debate about pair and group collaboration (Fernández Dobao, 2012b), especially for out-of-class context, as it shows that having more group members can be beneficial in terms of managing and monitoring the collaboration process, in the absence of the instructor.

Excerpt 4.8. Group F1 members' off-task talk

1	Yvn: That yes or no seems like dichotomous ah, I am not so sure
2	[Polly, Kenneth and Winnie were talking about buying junk food]
3	Pol: I want to go buy biscuit
4	Ken: I want Mamee
5	Win: I want Tam Tam
6	Pol: Don't make noise la you, if you want come and buy yourself
7	Ken: buy for me
8	Win: we want to discuss
9	Ann: and then what else?
10	Yvn: Just write its advantages
11	Ken: Shhh [quietening Winnie down], easy
12	Ann: easy to answer
13	Yvn: Respondents easy to answer
14	Ann: [writing it down] d-a-n-t or d-e-n-t ?
15	Yvn: d-e-n-t
16	Ann: Respondent easy to answer and then researcher easy to collect
17	Yvn: collect and analyse data
18	Ken: easy to compile the data , okay can already

One of the concerns about out-of-class collaboration is whether the learners would be distracted and may have difficulties focusing on doing the task. This finding suggests that the group members seemed capable of self-monitoring and working autonomously with each other to complete the task.

Collaborative pattern of interaction

According to Storch's (2002) criteria for determining patterns of interaction in collaborating groups, equality, in contribution and control of task, and mutuality, in terms of engagement with each other's work, are the main factors. Based on this definition, group F1 can be deemed a collaborative group, as it was clear from the features discussed above that both equality and mutuality between the learners were high.

Thus, this finding reinforces Storch's (2002) claim that groups who are collaborative not only produce better written outcomes, but they also generate more opportunities for learning. Moreover, the above findings show that even in out-of-class contexts with minimal monitoring from the instructor, highly collaborative groups are possible.

4.2.2 Factors influencing collaboration

Aside from the features present in learners' collaboration, another intriguing line of research concerns the possible factors that shaped or influenced the learners' collaboration. Scrutiny of this group's collaboration process suggests several factors with varying degrees of influence.

The first factor concerns the roles taken on by different group members. In particular, Annie, Yvonne and Polly, played varied but equally instrumental roles in the group's collaboration. Firstly, Annie who was the elected group leader, displayed excellent leadership skills in managing the group's collaboration. As mentioned before, the group members were equal in status, and even Annie downplayed her role as a leader during her individual interview, saying that she was just a leader in name (Further discussion in section 6.2.1). True to her word, there were open discussions, shared decision-making among the group members, and Annie also sought the approval of other group members for her own work (e.g. Excerpt 4.4). But these features were to a significant extent the result of her orchestration, as exemplified in her actions. For example, Annie took on extra responsibilities, volunteering to be the scribe for the task, writing down ideas and typing the draft of the task on the laptop. Additionally, as shown in Excerpt 4.9 below, she also managed the collaboration process effectively, asserting her opinion when necessary (line 5-7), but giving in on other occasions so that the discussion could proceed smoothly (line 10-14), and helping to resolve the conflicts between her group members (Excerpt 4.7).

Annie's leadership was invaluable to the group. Her contribution and good management of both task and people enabled a smooth and productive process of collaboration for her group members, which ultimately led to a successful collaborative experience for them.

Excerpt 4.9. Annie's demonstration of her leadership role in the collaboration

- 1 Meeting 1
 2 Pol: And then for the other one is to add **likert scale** or **rank order**
 3 Ann: We choose one la
 4 Pol: No, we can write both ma
 5 Ann: No, we choose one right now, because we are doing it now
 6 Pol: Oh, okay
 7 Ann: Because we can straightaway make the changes
 8 Meeting 5
 9 Pol: We should write down now the **title** of the **figures**, this should be 3.1
 10 Ann: Actually it's better if we don't put in the **numbering** first
 11 Pol: Why?
 12 Ann: We should put it at the end, because now it's very messy
 13 Pol: it wouldn't be, because we are submitting all of it together
 14 Ann: **I mean**, now we have not completed all the figures yet, okay, never mind, never
 15 mind

In addition to Annie, Yvonne also played a pivotal role in the group's collaboration. She was the critic of the group, often disagreeing and challenging other group members' ideas, forcing them to further explain themselves or re-evaluate their ideas. This often led to extensive negotiation with other group members, which created opportunities for better ideas and output that would improve their work. A good example was illustrated in Excerpt 4.7, where Yvonne disagreed and challenged her group members' ideas, which ultimately led to a better outcome for the task. Yvonne also paid great attention to detail, frequently reminding her group members about details of the task or task requirements that they might have overlooked (Excerpt 4.10, line 15, 20). She was also sceptical and careful in providing feedback to her group members, wanting to make sure all parts of the task were constructed in the best possible manner. When other group members went off-topic, often it was her who steered their attention back on track (Excerpt 4.10, line 9).

Yvonne's role was different from Annie, but no less important. Her contributions helped to improve the quality of the task in many ways and created learning opportunities for her group members as well.

Excerpt 4.10. Yvonne's varied but important roles in group F1's collaboration

- 1 Meeting 1
2 Ken: Yes, yes, I think so too, if not if you just put it down in the **paper** [questionnaire],
3 for **students in unicity** only, I feel its very **awkward**
4 Ann: It's called "**school-cist**", haha
5 Ken: [laughs] "**school-cist**"
6 Win: What's that?
7 Ann: You understand? Like **sexist, racist, school-cist**
8 Win: Annoying lo [laughs]
9 Yvn: What else?
10 ...
11 Meeting 2
12 Ann: So, we will take **introduction** and **content** [points], and then **confidential issues**,
13 **instruction** and **misleading statement. Anything else?**
14 Pol: No, can call it a day already
15 Yvn: har, finish? I think we should discuss what are the things we should we revise and
16 what are the things that we don't want to revise
17 Pol: What should we revise? Just follow the feedback given
18 Ken: We have to write it in essay form right?
19 Ann: Hmm
20 Yvn: And then also **conclusion, at least** the **introduction** you have to write how do you
21 want to revise it

Polly was another group member who was quite vocal with her ideas. She also served as a check on other group members (e.g. Excerpt 4.9, line 11). She would question or dispute ideas from Annie and Yvonne, asking them for clarifications or the rationale behind their ideas. She would also sometimes assert her opinion (e.g. Excerpt 4.10, line 14, 17), but she was willing to listen to other group members. Thus, Polly's behaviour helped ensured that no group members dominated the discussion and heightened the quality of the discussion as the group members had to think carefully and defend their ideas when asked.

This finding contributes new insights about how learners collaborate. The roles of group members in collaboration has scarcely been discussed before in the literature, possibly because it was not an obvious feature, especially when doing short, in-class, mainly language-oriented tasks where the instructor is present to guide and monitor the collaboration. However, when doing extended, out-of-class collaboration, such as in this study, the learners might feel the need to take on certain roles or perform certain actions to facilitate the collaboration process. After all, the responsibility fell on the learners themselves, in the absence of the instructor, to manage their own collaboration.

Furthermore, the extended nature of the task also provided the time for the learners to develop their relationship (Donato, 2004), which allowed them establish the different roles that different group members should take on to ensure the success of the collaboration. All of these reasons may explain the salience of the roles of different group members, observed in this collaboration.

Interestingly, the roles performed by Annie, Yvonne and Polly were similar to some of the roles discussed by Belbin ('Belbin's Team Roles', n.d.) as being integral to teamwork in the workplace. Belbin categorised nine different roles according to three group types: Action-oriented roles, people-oriented roles and thought-oriented role. According to Belbin's framework, Annie was a coordinator, a people-oriented role, a traditional team leader who guides the team to achieve its objective. On the other hand, Yvonne and Polly were shapers, which is an action-oriented role. Shapers challenge the team to improve. They like to question the norm and stimulate others to find the best approaches to doing the task, keeping the team on its toes and not be complacent. The similarities between the roles that the group members took on and the roles that have been discussed in workplace teamwork literature, is interesting and perhaps significant. This is because preparing learners for workplace writing in the future has been one of the main purposes of the course, and while emphasis has been placed on teaching learners how to collaborate, the types of roles learners should take on during collaboration has never been focused on. Yet, here the learners demonstrated the ability to perform different roles instinctively, perhaps based on their personalities and the needs of the group, to ensure that the collaboration process could proceed smoothly and effectively. With similarities found between the roles of learners collaborating in the academic context and roles typically found in workplace writing, this suggests another important pedagogical potential for collaborative work, especially in tertiary educational contexts, and definitely warrants further exploration.

Besides the roles of group members, another factor that shaped the group's collaboration was the good relationship shared by the group members. The group members, who self-selected their group members, knew each other and shared a friendly relationship. There was also equality in status, as mentioned by the group members themselves during their individual interviews (refer Section 6.2.1). This gave the group members freedom to voice their opinion and disagree with each other. Nevertheless, the group members also put in effort to maintain their friendly

relationship. Excerpt 4.9 above, showed an example of how the group members' used sentence particle to soften their words when giving opinion, so that it didn't come across as too offensive and imposing to other group members (line 3-4). This indicated the group's members respect for each other and their efforts to maintain a friendly relationship, even when they were disagreeing with each other.

The good relationship between the group members also saw them assist each other in many ways, such as helping other group members to do their parts, and providing feedback or explanation to other group members. The good relationship between the group members was especially evident in the occurrences of scaffolding, negotiation of task, social talk and the sense of shared ownership among the group members.

Also, the number of group members was another factor. As discussed previously, having five group members helped the group retain focus on their discussion, as when one or two members went off-track, the other three members were able to continue the discussion and eventually made everyone focused again. In addition, when there was disagreement of ideas between two members, other members would help to resolve the conflict by choosing one of the options, or suggesting another option. Although it was not major, these aspects were crucial in determining the success of the group's collaboration. Thus, this finding affirmed Fernández Dobao's (2012b, 2014) findings that bigger groups of learners is better than paired learners in collaboration.

Additionally, another factor that helped the group's collaboration process to proceed smoothly, I believe, was the group members' ability to use their L1. The group members conversed in their shared L1 throughout the collaboration, which gave them liberty to express their ideas freely and more accurately, and that resulted in more active participation and lively discussion of the task, and a better written outcome. Thus, this finding lends further support to allowing the use of L1 for learners when they are collaborating with their peers, especially when doing extended tasks.

The pedagogical aspects of the task were another factor that influenced the learners' collaboration. In particular, the expectation of task uniformity, which could be attributed to the nature and requirements of the task. As genre-based tasks, the format and conventions were paramount, especially for the proposal report, and it was important that the formatting and structural aspects were aligned throughout the entire report. In addition, this was emphasized by the instruction in class as well as a small mark

awarded for collaboration in the assessment. Because of this, the group members worked closely together, negotiated and checked frequently with each other to make sure that everyone's work was aligned.

Lastly, the role of conflict, which was discussed earlier in section 4.2.1, also had some influence in shaping the group's collaboration process.

4.2.3 Learners' attention to language

Although the main purpose of the collaborative writing task as well as of the course that the learners were enrolled in was not language learning, it remains an important goal for both the learners and the instructors. Furthermore, there has been extensive literature detailing how collaborative writing can lead to language learning. While the extent of the learners' language learning is beyond the scope of this study, I am still interested to investigate how much attention the learners paid to language. Instances of attention to language can be considered as opportunities for language learning during collaborating with their peers in this extended, out-of-class context.

I used the construct of language-related episodes (LREs) (Swain & Lapkin, 1998) for data analysis, as it is well-established and appropriate for capturing interactional data. As discussed in the literature review chapter (section 2.4.1), the initial LRE categories proposed by Swain and Lapkin (1998) were only lexis-based and form-based LREs, which were based on their context of short, in-class language tasks. Due to differences in context and nature of the task in my study, I revised and added two additional categories of LREs in accordance with my data, which are discourse-based LREs and translation-based LREs. The categorisation of discourse-based LREs was adapted from Loewen and Basturkmen's study (2005), who also investigated genre-specific tasks. On the other hand, translation-based LREs is a new category that has not been discussed before in the literature. This category relates to the group members' efforts in translating different aspects of the task to each other, both from English to their shared L1, and vice-versa. Table 4.1 displayed the categories and definitions of the different types of LREs as observed in this study.

Table 4.1. Revised categories and definitions of language-related episodes (LREs)

LRE category	Definition
Lexis- based LRE	Lexis-based LREs are any discussion relating to lexical items, including the appropriate word choice and terms, additional words to convey the intended meaning and orthography features of particular words and terms.
Form-based LRE	Form-based LREs are any discussion about grammar and syntax, such as word order, tenses and use of correct grammatical forms.
Translation-based LRE	Translation-based LREs are instances where the participants discuss or carry out translation, either from English to the shared L1, or from the L1 to English. Translation may be of the instructions (from English to the L1) concerning the tasks and feedback provided by the instructors, to ensure the understanding of their group members and to elicit more ideas from them; it can also be when participants translate ideas from their group members, as expressed in their shared L1, to English in order to incorporate the idea in the writing task.
Discourse-based LRE	<p>Discourse-based LREs are any discussion relating to the textual structure and features of writing specific to the proposal report writing genre and general written discourse. There are two sub categories: genre-related and written-discourse related.</p> <p>Genre-related LREs are any discussion involving the schematic structure and linguistic/text features (i.e. the way it should be written) which are related and specific to the assigned genres.</p> <p>Written-discourse related LREs are any discussion relating to aspects of the written discourse, such as text cohesion, coherence and consistency.</p>

Table 4.2 below showed the amount of different LREs that occurred during group F1's discussions of the task.

Table 4.2. Occurrences of LREs in group F1

LRE categories	Group F1		Total
	Q. Review	Prop. Rep	
Lexis-based LREs	13	11	24
Form-based LREs	4	5	9
Discourse-based LREs - Genre-related	1	9	18
- Written-discourse related	2	6	
Translation-based LREs	1	9	10
Total	21	40	61

The findings showed that lexis-based LREs were the language aspect most discussed by the group members. As they discussed and co-constructed the task, the group members helped each other to correct word errors, suggest better alternatives, and think of appropriate words to use as they wrote. Excerpt 4.11 exemplifies an instance of a lexis-based LRE, where the group members collectively work out the correct word to use in the questionnaire review.

Excerpt 4.11. Example of lexis-based LRE in group F1

1	Ann: how to say 'implement'?
2	Ken: implement?
3	Ann: to implement the solution
4	Pol: melaksanakan (Malay language)
5	An: ahh, yes, how to say it in English?
6	Win: launch
7	Ann: launch ?
8	Pol: apply
9	Yvn: Apply is better
10	Ken: carry out
11	Ann: ahh, carry out

In contrast, there were not many instances of discussion about grammar, or form-based LREs. This was perhaps caused by the difficulties of detecting and providing feedback on grammatical errors during oral discussion as well as the difficulty of discussing grammar rules which are complex. Therefore, the small number of form-based LREs mostly concerned different forms of words in use or concepts of grammar, as exemplified in Excerpt 4.12 below. The group members deliberated and decided on the suitable transitional words to use for a particular sentence, based on its function, as they revised the questionnaire review task.

Excerpt 4.12. Example of form-based LRE in group F1

1	[Annie revising the questionnaire review]
2	Ann: For instance doesn't seems suitable
3	Pol: In addition
4	Ann: In addition , yes. In addition, there is no difficult vocabulary
5	Yvn: It does not contain difficult vocabulary.
6	Ann: For instance, in Section A

Another interesting finding is the high amount of discourse LREs, which was the second highest category of LREs in this group. The relative prominence of this category suggests

that the group members were quite aware of the genre-specific requirements of the task, as well as of expectations for written discourse, such as cohesion and coherence. Excerpt 4.13 below shows an example of genre-related discourse LREs. When Kenneth suggested the point of ‘more job opportunities’ for the benefit section (line 1), Yvonne replied that the point can be used in the management section but structurally it should be written as ‘hire more employees’ instead (line 4). This was because the management section should be written from the perspective of how to implement the proposed solutions of the task, rather than about the potential benefits of the solution, as suggested by the Kenneth. Annie shared the same understanding as Yvonne (line 5 & 7), although she pointed out that Kenneth’s point would be applicable for the benefit section. Both Yvonne and Annie showed their awareness about the appropriate linguistic/text features to use for different sections of the proposal report.

Excerpt 4.13. Example of genre-related discourse-based LRE in group F1

1	Ken: More job opportunities
2	Ann: Ha?
3	Win: Eh, can also
4	Yvn: But that should fit the next [section], you can write hire more employees
5	Ann: That is for how, management , but this section also can
6	Yvn: But this does not fit with that
7	Ann: But for benefits , we can write more job opportunities
8	Pol: I think it’s okay, because [the owner] can increase work shifts
9	Ann: Ya

Excerpt 4.14 below, from meeting 4 exemplified an episode of written-discourse LREs, another sub-category of discourse-related LREs, which concerned aspects of cohesion and coherence.

Excerpt 4.14. Example of written-discourse related discourse-based LRE in group F1

1	Ann: [typing] Respondents may refuse to answer the questionnaire because they
2	will worry about leaking some of personal information to
3	Win: To the public
4	Ann: To other parties
5	Pol: To third parties ah
6	Ann: May cause
7	Yvn: Inconvenience? Difficulties?
8	Pol: Annoying?
9	Ann: [typing] This may cause unwanted problems
10	Win: To occur
11	Ken: No need ‘ occur ’ anymore, already have ‘ cause ’

In Excerpt 4.14 above, the group members are co-constructing sentences for the questionnaire review task, and when Winnie suggests adding ‘to occur’ (line 10), Kenneth replies that this is not necessary as the word ‘cause’ in the sentence already implies the occurrence of the problems (line 11). Thus, this indicates a concern in this discussion about text cohesion rather than about grammar.

The final category of LREs in Table 4.2 is translation-based LREs, which was the third highest category of LREs. Excerpt 4.15 below shows how Winnie and Annie translated Polly’s idea about electricity bill, which was mentioned in their shared L1 (Line 1), into English in order to incorporate it in the writing task (line 3, 7).

Excerpt 4.15. Example of translation-based LRE in group F1

1	Pol: With longer operating hours, the electricity bill
2	Ann: ahh, electricity bill, electricity bill
3	Win: electric bill
4	Yvn: Isn’t this already considered under expenses ?
5	Ann: Just now it was about worker salary , we can add more elaborations
6	Yvn: Ahh, worker salaries is included under expenses isn’t it?
7	Ann: hmm, and then electrical bill

The presence of translation-based LREs can be attributed to the duality of language use by the learners in their discussion. The example above demonstrates how the learners first think in their L1, and then translate their ideas into English, their L2, as required by the assigned task. Another situation where translation happened was when one group member translated information about the task or the course from English to the shared L1, to aid the understanding of other group members. This is exemplified in Excerpt 4.16 below where Annie translates the chosen solution in the questionnaire in order to elicit more ideas from her group members. This demonstrates the ability of the learners, who were of equal proficiency, to be a source of linguistic knowledge for each other when there was no instructor present.

Excerpt 4.16. Example of translation-based LRE in group F1

1	Ann: The store owner should find more suppliers to add the variety of goods sold,
2	need to increase the variety
3	Ken: Ah, right, right

Overall, the group members could be seen paying considerable attention to language as they discussed the task. More importantly, they were also able to successfully resolve

most of the LREs, which sheds a positive light, especially on out-of-class collaboration as it indicated that the learners could scaffold each other's learning even without the presence of instructor.

The findings of group F1 suggested that the group members had a productive collaborative experience, as indicated by the positive collaborative features observed. Now, I move on to the consideration of the second face-to-face group, group F2.

4.3 F2F Group F2

The second F2F group, group F2, consists of 5 male students, their pseudonyms being Azziz, Amir, Aidil, Hafiz and Azwan. Azziz was the elected leader. There was significant disparity in terms of proficiency between the group members. Amir was highly proficient; he scored Band 4 (higher-intermediate) in the national English proficiency exam, followed by Azwan who scored Band 3 (Intermediate). On the other hand, the other three members, Azziz, Aidil and Hafiz had a score of Band 2 (low-proficiency). During their discussion, the group members mostly spoke in their shared L1, which is the Malay language, interspersed with brief use of English.

This group self-recorded four meetings while doing the collaborative writing task, totalling 54 minutes. The first meeting, which was about the questionnaire review task, was 29 minutes. The second meeting was about proposal report task and was 13 minutes long. Then, the third and fourth meeting, which were about the group members' preparation and practice of their oral presentation, were 3 minutes and 9 minutes respectively. Compared to group F1, this group provided fewer extended interactions, and thus the understanding obtained of the group's collaboration is less comprehensive. However, there is still sufficient data to afford a glimpse of the nature of the group's collaboration and the factors that influenced their collaboration.

Although the group recorded less oral discussion than their group F1 counterparts, they used the online mobile phone chat application, WhatsApp much more extensively. This was because one of the group members, Azwan, lived away from the hostel where the other four group members were staying. Consequently, he did not attend many of the meetings with the other four group members. Instead, the group members used WhatsApp to communicate with him about the task, such as in terms of dividing the work, discussing the task, and compiling the task.

4.3.1 Salient features of collaboration

In their collaboration process, group F2 displayed the features of strong leadership, co-construction of task, scaffolding of group members, negotiation of task, and expert/novice pattern of interaction.

Strong leadership

The most prominent feature of group F2's collaboration was strong leadership by one group member, Amir. Although Amir was not the elected leader, he was the de facto leader. The main reason for this was presumably his superior proficiency compared to other group members. Throughout the group's collaboration process, he led and managed the discussions, and accordingly his group members also followed his guidance. Amir was a good leader. He led the discussion, but he did not make his own decisions regarding the task. Instead, he encouraged contributions from his group members, and listened to them. It was observed that the most prevalent activity in the group's collaboration was solicitation of ideas, largely by Amir to his group members.

Excerpt 4.17 from meeting 1 below shows how Amir first determined the direction of the discussion (line 1-4), but after that, he asked and elicited ideas from other group members about content of the task (line 4-10). This went on for most of meeting 1, where Amir would elicit ideas and generate discussion with his group members.

Excerpt 4.17. Amir's demonstration of his leadership role in the collaboration

1	Ami: Now, based on this review right, we need to identify the problematic questions ,
2	let's look at it first and try to identify , if we follow the notes from the slides here,
3	the first one, example of problematic question , presuming or leading question ,
4	so look at this [questionnaire] survey , is there any?
5	Azw: In Section B , [question] number two, " don't you agree ", that's leading question
6	right?
7	Group [collectively]: Presuming right
8	Aid: Ah, right
9	Azz: Okay, that's the first point
10	Ami: Take note ya, is there any more?
11	Aid: Try find and see

The importance of Amir's role concurred with Yang's (2014) finding that group leaders was one of the factors that mediates learners' collaboration. In this group, it was observed that other group members relied on Amir to lead and manage the

collaboration process. However, they did participate and contribute in the collaboration, as discussed next.

Co-construction of task

All the group members participated in the discussion and contributed their ideas eagerly. As a result, several instances of co-construction of task were observed, making this another prominent feature of the group's collaboration.

Excerpt 4.18. Group F2 members' co-construction of task during collaboration

1	Ami: That's the first weakness , the second, if according to the guidelines on the
2	slides...
3	Azz: It didn't mention clearly.
4	Ami: Ahh, it didn't mention for who, and by who
5	Azw: target audience
6	Azz: hmm, target audience of survey questionnaire
7	Aid: Does not indicate.
8	Azz: Instruction was not clear, how to say, not specific
9	Ami: The instruction is clear, but it didn't mention who is this questionnaire for, from
10	who, who are the respondents, and who are we who carry out this survey
11	Aid: hmm
12	Azz: ya
13	Ami: And then it also did not mention the way to return [the questionnaire]
14	Aid: does not inform how to return this questionnaire
15	Azz: how to return the questionnaire back
16	Azw: hmm

In Excerpt 4.18 above, taking cues from Amir, different group members contributed their input, building on and disagreeing with each other's ideas to decide that incomplete instructions was one of the weaknesses of the questionnaire (line 1-13). They then attempted to co-construct the point in English as well (line 14-15). The co-construction of these tasks showed active participation from the group members as well as their emphasis on equality in contribution, despite the disparity in proficiency. After their discussion, the group members divided the work to do individually.

Scaffolding of group members

The third feature of collaboration is scaffolding, mainly by Amir who had superior English proficiency. He became the main source of knowledge for his group members in

understanding various aspects of the task and course, as well as in addressing the instructor's feedback.

Excerpt 4.19. Amir's scaffolding of Azziz and Hafiz's understanding about reference use

- 1 Azz: Honestly I'm still confused how to do the IEEE reference?
- 2 Ami: just **refer** to the book
- 3 Azz: I have **refer** but I still don't understand
- 4 Haf: How is the IEEE format?
- 5 Ami: Okay hold on, what **page** is IEEE at? [in textbook] IEEE citation, **page** 42... now if
- 6 you take this text, like what we are doing now, you have to create a **reference**
- 7 right? Yes, to put at the **reference**, you have to take, like from the **website**, what
- 8 did you use from the **website**?
- 9 Azz: Title
- 10 Ami: ahh, use this **style**, whether its **in-text citation** or **quoting** or **paraphrase**, but
- 11 mostly we use **paraphrase** I think, we don't have **direct quotation**, we will use
- 12 **paraphrase**... you have issue about how to write the **reference** or?
- 13 Azz: The way to write the **reference**
- 14 Ami: Here is the **guidelines** right? First, you put the number, following the **order** of it
- 15 appearing, just look at the examples
- 16 Aid: example Azz
- 17 Ami: And then, if it is book, it is shown here, if it is a book, or a book chapter, **paper**,
- 18 **conference**, **journal**, and even **website** I think, there is a way to write it
- 19 Aid: I see!

In Excerpt 4.19 above from meeting 2, Azziz and then Hafiz asked for help on how to do the referencing correctly using IEEE format, as stipulated by the task guidelines (line 1-4). Amir helped by referring them to the guidelines provided in the textbook, which listed the referencing format for different types of sources, and provided brief explanations (line 5-18). On another occasion, shown in Excerpt 4.20 below from meeting 2, the group members addressed the instructor's feedback, which was in English, and Amir helped to clarify what the feedback meant for his group members (line 2-9).

Excerpt 4.20. Amir's scaffolding of other group members' understanding regarding instructor feedback

- 1 Azz: I don't understand this part [Reading feedback]
- 2 Am: Okay, then [reads feedback] Ohh, it's like the **conclusion** is not very right
- 3 Azz: Conclusion is not very right?
- 4 Am: Like, it's correct, **as conclusion**, the **problem** is not very **problematic**, but we can
- 5 still give **suggestions**, maybe that is what instructor wants, I think
- 6 Azz: **Suggestion**?

- 7 Am: To **improve** the program, you understand?
8 Hf: To make the problem **clearer**
9 Am: Even though this is not a **problem**, but later we will still have **solutions** right

Besides the assistance provided by Amir, there were also instances where the group members collectively scaffolded each other, such as in Excerpt 4.21 below. Amir and Azwan provided explanations for other group members about a particular expectation required of the questionnaire by translating and paraphrasing (line 1-9), and then the group members were able to contribute their ideas and co-construct a point for the questionnaire review task (line 10-13). This finding illustrated how important scaffolding was for some of the group members, as their low grasp of the language meant that they struggled to fully comprehend some aspects of the task. With the scaffolding provided by their more proficient peers, they were able to obtain better understanding of what was expected of them and subsequently contribute their input towards the task.

Excerpt 4.21. Amir and Azwan's scaffolding of other group members' understanding about the content of the task

- 1 Ami: In terms of **content** of this **questionnaire**, is the information that it wants to
2 provide adequate?
3 Haf: What, which one?
4 Azz: Don't understand
5 Ami: **does the questionnaire measure what it needs to measure?**
6 Azw: Meaning whether the questions that they asked is enough for
7 Ami: **Based on** these questions, is there enough information
8 Azw: Whether they can get the data right
9 Ami: hmm
10 Haf: There are not many questions la
11 Azz: Maybe can add more I think
12 Aid: Can improve I think, add more of the **points** maybe
13 Azz: Add more question

Negotiation of task

The fourth feature observed in this group's collaboration was the negotiation between the group members as they discussed the task. Although there were just a few occurrences, it showed the equality in status between the group members which enabled them to voice their opinion and negotiate with each other, despite the dominance of Amir as the leader. Excerpt 4.22 below shows the group members

negotiating their differences in opinion regarding whether the questionnaire could be considered reader-friendly or not. Azziz suggested that it was not reader-friendly, but Amir explained his rationale and suggested otherwise (line 3, 6, 9). This illustrated the openness and non-dominating display of leadership by Amir, who listened to other group members' ideas, and provided justifications for his own opinion.

Another possible reason for the negotiations of task despite the dominance of Amir as a leader and in terms of proficiency, is the learners' use of L1. Lee (2011) who also reported extensive negotiations of task between her participants while they were collaborating, suggested that it was because the learners were using their L1 in their discussion. It seems that it was also the case here, as the group members were able to convey their thoughts and argue their case freely using their L1, rather than their L2 which they were not very proficient in. Thus, this finding agreed with Raayati et.al.,(2011), DiCamilla and Antón (2012) and Edstrom (2015), and supports the use of L1 in collaboration, especially for low-proficiency learners.

Excerpt 4.22. Group F2 members' negotiation of task during collaboration

1	Ami: "Is it reader friendly ?" Reader friendly
2	Azz: Reader friendly, not really, because both pages front and back is inconvenient
3	Ami: But they have many questions
4	Aid: Look at the questions, if we want to add, then maybe there will be more, if only just
5	these questions
6	Ami: Then we don't have enough information , [so] maybe can print front and back I
7	think
8	Aid: Maybe the font size can be smaller or reduce spacing
9	Ami: So they have to print front and back I think

Expert/novice pattern of interaction

The final feature of this group's collaboration was their expert/novice pattern of interaction, based on the patterns proposed by Storch (2002). In terms of the construct of equality of contribution and control of task, it was a little unequal, with Amir taking on a larger responsibility than other group members. In terms of mutuality however, it was quite equal as all the group members were engaged in the discussion and were able to voice their ideas and contribute to the task.

Although not as collaborative as the collaborative pattern of interactions exhibited by their group F1 counterparts, the expert/novice relationship is also a collaborative

pattern (Storch, 2002). Despite differences in proficiency, the group members were still able to reap the benefits of collaboration, such as sharing of expertise and mutual learning. This finding adds support to out-of-class collaboration as being a potential option for collaborative work as even learners of limited ability demonstrated that they could autonomously and beneficially work together out of the confines of the classroom.

4.3.2 Factors influencing collaboration

There were two prominent factors that shaped the group's collaboration. The first factor was the role played by the group members, specifically Amir who took on the role of the leader of the group. Amir's influence was pivotal. He dictated the direction of the discussion, but he asked for and elicited ideas from his group members; he also provided assistance and feedback to his group members to help them in understanding and constructing the task. His actions allowed the group's collaboration process to go well, and facilitated the participation and contributions of other group members, which contributed to a successful collaboration for the group.

Other group members acknowledged Amir's role, with Azziz stating in his individual interview that Amir was the main leader of the group, while Aidil mentioned that there were two leaders in the group, Azziz who was the official leader, and Amir, who really led the group during their collaboration. This finding showed the importance of the role of leadership, which, interestingly, has not been explored much in the L2 collaboration context. Yang (2014) mentions the importance of the group leader as one of the mediational means in collaborative writing, but did not provide much detail on why it was important. The present study demonstrated how crucial the role of the leader was, especially in the absence of the instructor.

The second important factor was the learners' use of CMC tools, specially the online mobile chat application WhatsApp. This was an unexpected finding, as the learners had been asked to collaborate in the F2F mode only, but it turned out to be vital to the group's collaboration. As the group members explained in their interviews (refer Section 6.2.3), the physical distance between Azwan, who lived some distance away with his family, and the other group members, who all lived in the hostel, could only be bridged by the online chat. Although the group members shared some classes together, it was difficult to meet on campus as they usually had full and different schedules.

The group members utilised WhatsApp to discuss the task with Azwan, to coordinate meetings, to remind each other about task deadlines, and to provide feedback about the task. It was an effective communicative tool for the group members, and Azwan acknowledged in his interview that it would not have been possible to collaborate with his group members, especially in the later stage of collaboration, without the online chat application. This finding provides a glimpse of how technology can be used to complement face-to-face collaboration, and suggests a possible combination of both F2F and CMC modes, especially for group members who are physically distant from each other.

4.3.3 Learners' attention to language

Table 4.3 below showed the amount and categories of LREs that occurred in group F2's discussions of task.

Table 4.3. Occurrences of LREs in group F2

LRE categories	Group F2		Total
	Q. Review	Prop. Rep	
Lexis-based LREs	4	1	5
Form-based LREs	1		1
Discourse-based LREs - Genre-related	1		2
- Written-discourse related	1		
Translation-based LREs	2		2
Total			10

Compared to group F1, there were fewer instances of LREs in group F2's discussion. One of the reasons for this is the much shorter duration of the meetings recorded by this group. Another possible reason was the disparity in proficiency of the group members which led to less attention and discussion of language. However, all four categories of LREs can still be found in the group's discussion about the task. Moreover, both groups reveal a similar focus on different aspects of language, with this group also focusing on lexis-based LREs the most, followed by discourse-based LREs, translation-based LREs, and lastly form-based LREs. Excerpt 4.23 below shows an example of this group's lexis-based LREs. Azwan asked for explanation regarding the meaning of the phrase 'prior knowledge' (line 2) and Amir explained the meaning of this phrase (line 3). When he

realised that Azwan still did not understand, he provided a further example for clarity which also helped to inform other group members like Aidil (line 5-7).

Excerpt 4.23. Group F2's example of lexis-based LREs

1	Ami: Then, " questions that require prior knowledge ", there is I think
2	Azw: How is it like ya, prior knowledge ? I don't remember
3	Ami: Prior knowledge is like if you don't know about the thing, you couldn't answer it
4	Azw: Ahh, okay, things that are irrelevant to us is it?
5	Ami: Like this question in Section B about Dataran Sheikh Ahmad, If people who do not
6	know, who have never been there
7	Aid: Hmm, right right

The second category of LREs, in order of prevalence, was discourse-related LREs. Genre-related discourse LREs is exemplified below in Excerpt 4.24. The group members were discussing the instructor's feedback and Amir explained to the other group members that the proposal report genre required the proposing of solutions to the problems mentioned and later suggestions to resolve or improve the problem stated in the proposal report (line 5-10).

Excerpt 4.24. Group F2's example of genre-related discourse-based LREs

1	Azz: I don't understand this part [Reading feedback]
2	Ami: Okay, then [reads feedback] what does it mean? Ohh, it's like the conclusion is not
3	very right
4	Azz: Conclusion not very right?
5	Ami: Like, it's correct, as conclusion , the problem is not very problematic , but we can
6	still give suggestions , maybe that is what instructor wants, I think
7	Azz: Suggestion ?
8	Ami: To improve the program, you understand?
9	Haf: To make the problem clearer
10	Ami: Even though this is not a problem , but later we will still have solutions right

Interestingly, similar to their group F1 counterparts, several instances of translation-LREs were also observed in this group. It was mostly carried out by Amir, who translated information and aspects of task to aid the understanding of his group members, shown in Excerpt 4.25 below.

Excerpt 4.25. Group F2's example of translation-based LREs

1	Ami: " are the questions asked in line with the purpose of the study " Is it in line with
2	our purpose of doing this survey, these questions, or are they irrelevant?
3	Aid: If it is for students from this university, then can, if other people, maybe not
4	relevant

The last LRE category found was form-based LRE. In Excerpt 4.26 shown below, Azziz agreed to Azwan's suggestion after he realised the question was indeed indicative of a memory-type question, which was about events that had happened previously (line 4).

Excerpt 4.26. Group F2's example of form-based LREs

1	Ami: Then, any question that rely on memory ?
2	Aid: This one I think
3	Azw: Ah, section A , question number two, have you join the activity of festkon ?
4	Azz: Memory right, have you, [means] ever happen before

The findings of group F2 showed that the group had a relatively successful collaborative experience, as they were able to demonstrate a number of collaborative features. In particular, the group's findings highlighted the prominence of the leadership role, as well as the possible necessity of technology use in collaboration.

4.4 Discussion

In this section, I will discuss the findings of both face-to-face groups together. Despite the differences in terms of the collaboration process, the two F2F groups' findings reveal several similarities. Both groups demonstrated several features vital for successful collaboration, which were co-construction of task, scaffolding of group members and negotiation of task. The presence of these features can be attributed to the active willingness of the group members in contributing and collaborating on the task. Additionally, the close proximity afforded by sitting together to discuss the task enabled the group members to provide more extensive and detailed responses to each other, and be more engaged and involved in the discussion.

Another finding that was similar in both groups' collaboration was the prominence of various roles played by different group members, particularly the group leader. Annie and Amir played varied, but central, roles in managing and leading their group to complete the task successfully. In addition, there were also other roles that other group members took on, which, as Polly and Yvonne demonstrated, were also crucial to the success of the group's collaboration. The role of group members has hardly been discussed in the literature, and thus this finding is especially significant in terms of pedagogical implications.

In terms of attention to language, both groups also showed similar focus, with lexis-based categories the most discussed language aspect, followed by discourse-based LREs, translation-based LREs, and lastly form-based LREs. This finding is similar to Storch and Wigglesworth's studies (Storch, 2005; Storch & Wigglesworth, 2007; Wigglesworth & Storch, 2009) who also found that lexis-based LREs were the main language focus of learners during collaboration. In addition to lexis-based LREs, the learners also focused a lot on discourse-based LREs, and this can be attributed to the genre-based nature of the collaborative task. Thus, this finding is similar with Loewen and Basturkmen (2010) who reported that discourse-based LREs became the main focus of the learners when they worked on genre-specific task.

Lastly, the discovery of translation-based LREs was interesting, as it has not been discussed before in the literature, but was nevertheless observed in both groups' collaboration process. Translation-based LREs were crucial in the groups' interactions, either from the shared L1 to L2, which is English, or vice-versa. It allowed the group members the freedom to convey their point in the language they were most comfortable in, which was their L1, before it was translated to English by their peers, and it allowed the group members to assist other group members by translating the instructions or task requirements from English to their shared L1, so that their group members could fully understand the expectations of the task and provide better ideas. Thus, this was an important finding that perhaps capture the reality of how second language learners navigate between their two languages as they tried to learn the L2.

Overall, the findings for both F2F groups shed positive light on out-of-class collaboration, and provided insights about the features that occurred and the factors that influenced the collaboration process.

4.5 Chapter summary

This chapter has described the collaboration features and influencing factors of the two face-to-face groups participating in this study. The findings in this chapter will receive more discussion in Chapter 7. In the next chapter, I discuss the computer-mediated groups to investigate their collaboration process and the factors that influenced their collaboration.

Chapter 5. Computer-mediated collaborative writing

5.1 Introduction

Having discussed the process of face-to-face (F2F) collaboration in the previous chapter, in this chapter, I will examine computer-mediated (CMC) collaborative writing. In a similar fashion, I will discuss the features that characterised the collaboration process of each of the two CMC groups, the factors that influenced each groups' collaboration, and the learners' attention to language during collaboration.

Like their face-to-face counterparts, both of the computer-mediated (CMC) groups were from the same class, and each group self-selected their members. It was the first experience for all the learners in carrying out computer-mediated collaborative writing. To emulate the synchronicity of face-to-face collaboration, each group used Google Docs for writing and revising of the task, and Google Hangout as well as WhatsApp chat applications, which allowed for both synchronous and asynchronous texts, for their interactions. Thus, the data analysis for both groups was based on each group's Google Docs revision page, which records every contribution and change made by each group member, and the histories/archive of the groups' online chats (as discussed in section 3.5).

Unlike the case of the F2F groups who had to record their discussion, every interaction made online and every change made to the task on Google Docs by the CMC groups was automatically saved. Therefore, more detailed and complete information about the process of collaboration was obtained, from the start to the end of the process. The findings showed that the CMC groups differed markedly in their collaboration processes. However, several similar features were observed, which perhaps can be linked to the influence of the mode of collaboration. In addition to the collaboration mode, a number of other factors were also found to be influential in shaping the groups' collaboration.

5.2 Group C1

The first CMC group, group C1, consisted of 5 male students. I gave them the pseudonyms Hassan, Ashraf, Aiman, Kafi, and Suhail. Hassan was the elected group leader. In terms of proficiency in English, Hassan and Ashraf were more proficient, scoring band 3 (lower intermediate) as compared to Aiman, Kafi and Suhail who scored

band 2 (low proficiency) in the national level English proficiency exam (MUET). In their online interactions, the group members predominantly interacted in the Malay language, which is their shared L1, interspersed with brief use of English when referring to the task. However, most of their contributions in Google Docs were in English.

5.2.1 Salient features of collaboration

Unequal contribution

There were several features observed in group C1's collaboration. The first and most prominent feature was the clear disparity in terms of contribution among the five group members. The group leader, Hassan, did almost all of the questionnaire review task himself (Figure 5.1), as well as more than half of the proposal report. Moreover, he also contributed the most in editing other group members' work for content and language, and in organizing the proposal report in accordance with its appropriate format and conventions.

On the other end of the spectrum, Suhail only contributed to one section of the proposal report, and worse, he did not follow-up on the instructor's feedback, forcing Hassan to do the revision for his part before the deadline for draft submission. Suhail appeared again at the last stage of the collaboration process, where he just revised his own part and then left.

Ashraf, Kafi and Aiman, also had differing degrees of contribution to the task. Ashraf was the second major contributor to the task, after Hassan. He contributed to the questionnaire review, and for the proposal report task he completed his assigned part and he was also involved in editing the language and organisation of the report. Further, he collaborated with Hassan to discuss and construct many aspects of task and assisted Hassan in managing the collaboration process with other group members.

In contrast, Kafi and Aiman required repeated reminders to work on the task. Although they completed their parts of the task for the proposal report, these were not considered good enough by Hassan, who redid their parts later. However, in the final stages of collaboration, Kafi and Aiman did help to do some editing of other group members' work on Google docs.

Figure 5.1. Hassan's insertion of questionnaire review write-up on Google Docs

Several reasons led to the group's unequal contribution. The main reason was the vastly different attitudes of the group members towards the task. From the start, Hassan was committed and conscientious: he gave clear instructions to other group members about the task and sent frequent reminders to his group members about deadlines and instructor's feedback. Moreover, he also voluntarily took charge of many parts of the task. However, contrastingly, there was lack of interest and initiative from Suhail, Kafi and Aiman. They did not start working on the task until Hassan had sent repeated reminders that the deadline for the draft submission was pending or that feedback had been given by the instructor. Additionally, they did not take the task seriously, making jokes and giving excuses that they could not do the task. Excerpt 5.1 below

demonstrated snippets of Hassan's reminders throughout the collaboration period, and his group members' replies.

Excerpt 5.1. Hassan's repeated reminders to his group members to do the task

- 1 **Week 4 22 Mar²**
- 2 Hassan: **Hello guys...looks like your personal schedule quite pack...hahaha just to**
- 3 **remind you all...please read the questionnaire review[instruction and**
- 4 **details] that can be download from portal under [instructor's]**
- 5 **name...take a look at all documents at portal and your email given so that**
- 6 **we can imagine/think/creating idea/making draft about what exactly**
- 7 **that we must do for our assignment...due to different free time we have,**
- 8 **we all can just write information/things that necessary that we collected**
- 9 **into the Google doc provided by [the researcher]**
- 10 Aiman: **Okay no problem, nothing is possible**
- 11 Hassan: **Reminder: the draft of the assignment should be submit tomorrow while**
- 12 **the full assignment on the next Monday [30 march]**
- 13 Aiman: **Ouh before midterm break right? Okay Hassan**
- 14 Hassan: **Hope we all can cooperate well regardless no face to face meeting. I think**
- 15 **tomorrow we can make it so hope you guys prepare well. So do I. Best**
- 16 **regard. <grin emoji> Yup Aiman**
- 17 Aiman: Don't speak **English** so much Hassan, I only understand a little. <exasperated
- 18 emoji>
- 19 ...
- 20 **Week 5 25 March**
- 21 Hassan: Can you guys finish doing the draft first? We need to finish it before
- 22 12am...**please**
- 23 Suhail: Where's the document? **I don't know** huuuu <sweat emoji>
- 24
- 25 **Week 9 28 Apr**
- 26 Hassan: Hi guys, hahaha, tomorrow 12am is the **due date** for the **latest draft**.
- 27 Whatever that is not changed yet, that needs **improvement** or that is lacking,
- 28 please add ya...thank youu. **#justareminder**
- 29 Aiman: Tonight before 12 eh
- 30 Hassan: Tomorrow
- 31 Ashraf: Where's Suhail and Kafi?
- 32 ...
- 33 Suhail: Yes, I'm here. So I just continue from the other day is it?
- 34 Kafi: Yes, I'm here

²Transcription key: **Words in bold:** Written in English
 Ellipsis (...): redacted parts of interaction
 Brackets [] : Researcher's note
 Further transcription notations, refer Appendix 4

- 35 Hassan: Open GDocs first, Suhail... Miss gave some comments... if there's anything to
 36 do, it's based on the comments... if there's anything lacking, refer to the
 37 textbook.
- 38 Kafi: On Suhail's behalf, okay
- 39 Hassan: You too, Kafi
- 40
- 41 **Week 11 13 May**
- 42 Hassan: **Attention please**, Suhail, please revise the **executive summary** by **today** ya.
 43 The others, please check back the comments and make the necessary changes.
 44 **The rest** I will try to **settle**. By today okay?
- 45 Ashraf: <thumbs up emoji>
- 46 Aiman: Thanks Hassan
- 47
- 48 **Week 11 14 May**
- 49 Hassan: **Tonight!**
- 50 Ashraf: I'm turning it **on**
- 51 Aiman: ok, nice, I'm **on the way**
- 52 Ashraf: Where are the other two members? Kafi is in charge of the **introduction** right?
 53 His **part** needs a lot of revision.
- 54 ...
- 55 Kafi: From just now I can't connect to the Internet with this **laptop**. I don't know
 56 what else to do.
- 57 Aiman: Borrow from your housemate
- 58 Kafi: He doesn't have
- 59
- 60 **Week 12 18 May**
- 61 Hassan: SO MANY COMMENTS FROM THE INSTRUCTOR.
- 62 Aiman: Luckily my **parts** did not get any comment
- 63 Hassan: I've changed your **parts**. You better read it, and I don't see that you are **online**,
 64 you are just saying it. This is the **latest** round of feedback.
- 65 Aiman: Hahaha okay, sorry Hassan, **my careless mistake**

The snippets of Hassan's reminders to his group members throughout the collaboration process demonstrated his gradual exasperation. As the weeks progressed, his tone changed from informing, to pleading, to the text equivalent of shouting or emphasis with full capitalization in order to get the message across to his group members (week 12, line 61). His reminders also changed from general to the specific mention of Suhail's name asking him to revise his part of the task when he could see that Suhail was not contributing his effort (week 11, line 42). However, Hassan remained polite and he did not demand or force his group members to do the task. In his individual interviews, Hassan explained that their friendship came first and he was not willing to jeopardise

his friendship with other group members over the collaborative work. Thus, he would rather do the work himself when other group members insisted on not contributing to the task. (See the subsection “affective conflict” below for further discussion)

On the other hand, Aiman joked with Hassan by saying “nothing is possible” to Hassan’s request of doing the task (week 4, line 10) and later on, he pretended that he had read the instructor’s feedback although he had not (week 12, line 62-65). Similarly, Suhail initially claimed that he could not access the document on Google Docs (week 5, line 23), and later, he also replied to Hassan without even reading the instructor’s feedback (week 9, line 33-37). As for Kafi, when he was asked to revise his part of the task, he gave the excuse that he could not access the task on Google Docs due to problems with his laptop (week 11, line 55-58).

It seems that in this situation, the friendly relationship between the group members was taken advantage of by the three group members in order to shirk their responsibilities for the collaborative work. The only group member that completed his parts of the task and collaborated with Hassan to construct the task was Ashraf. As Excerpt 5.2 below shows, he took the initiative to personally message Hassan to ask about task progress and worked together with him (line 2-12). Later, when conflict occurred between Hassan and other group members, Ashraf also assisted Hassan to manage the task by dividing the work and passing messages from Hassan to other group members (line 19-25).

Excerpt 5.2. The personal interaction between Ashraf and Hassan about the task on WhatsApp

- 1 **Week 7 14 April**
- 2 Ashraf: Hassan, for the task, what does [instructor] want us to submit tomorrow?
- 3 Hassan: [instructor] want to see our **data** and **proposal draft**
- 4 Ashraf: So she wants the **full report draft**?
- 5 Hassan: Aah
- 6 Ashraf: Ok, when are we doing this Hassan?
- 7 Hassan: Tonight, hahaha, I'm **analysing data** now
- 8 Ashraf: I should do which part?
- 9 Ashraf: There's **executive summary, intro, methodology, result and discussion,**
- 10 **conclusion, reference, appendix**
- 11 Hassan: You just try to do whatever you can first. It feels like only two of us is working
- 12 on this assignment [laugh crying emoji]
- 13 Ashraf: Where is the other three?
- 14 Hassan: No idea Ashraf, Kafi went out, his flatmate said. Aiman and Suhail no idea, no
- 15 sound from them
- 16 Ashraf: I will WhatsApp them
- 17 Hassan: Actually we can use Google Docs, don't even have to meet face-to-face
- 18 ...
- 19 Ashraf: We just tell them what they should do. If we wait for them, don't know when
- 20 will they do it
- 21 Hassan: You tell Ashraf. If I do it, they make a lot of noise again
- 22 Ashraf: Which part are you doing? **Result discussion?**
- 23 Hassan: I'm **analysing** the **data**, so probably **result** and **discussion**
- 24 Ashraf: Ok. I give Aiman **conclusion, reference**, Suhail **appendix, executive**
- 25 **summary, introduction** Kafi, **method** me. Later I will help **check** their parts.
- 26 Hassan: Okay, if I need help, I will ask you, hahaha

The second contributing reason for the group's unequal contribution was the lack of proficiency of some group members. In the later stages of collaboration, for the proposal report task, Aiman did try his best to do the sections that he was assigned to. However, his weak grasp of English meant that he could not fully understand the requirement of the task and the subsequent feedback from the instructor. He sought help multiple times from other group members to help him explain the task and he attempted to revise his parts of the task several times (Excerpt 5.3). He also tried to help with the format and organization of the report. Despite his efforts, the quality of his work was not good enough, and later Hassan revised his work by deleting and rewriting the entire section of the task Aiman was responsible for. Suhail and Kafi also had low proficiency, especially compared to Hassan and Ashraf, and that might have also contributed to their disengagement from the task.

Excerpt 5.3. Hassan's extensive scaffolding of Aiman on how to do the task on WhatsApp

- 1 **Week 9 2 May**
- 2 Hassan: **Morning**, Aiman, have you changed the **cost part**?
- 3 Aiman: **Morning**, I have changed a little, do you want me to change more? What else to
- 4 put, Hassan, let me know
- 5 Hassan: I don't know whether the changes you made are enough, hahaha, how did you
- 6 do the cost section weh?
- 7 Aiman: if wrong let me know Hassan, I don't know, I follow Suhail's opinion
- 8 ...
- 9 Hassan: Our **solution**, for **aspect 1**
- 10 Aiman: Ok ok
- 11 Hassan: **"The rental time should be extended which currently the time for rental**
- 12 **is maximum only 8 hours."**
- 13 Hassan: **Solution** for **aspect 2**
- 14 Aiman: Hold on, is this **cost**?
- 15 Hassan: **"Provide more top-up machines"**
- 16 Aiman: More more. I will do it now.
- 17 Hassan: The **cost** is for the **solutions** that we will implement. Those are the only two
- 18 **solutions**. So the **cost** is **based on** the **solution**, how much the total cost that
- 19 we will use.
- 20 Aiman: Ouh, so the **rental time** is the time we use the bicycles is it?
- 21 Hassan: Did you read what I wrote just now?
- 22 Aiman: I did. Can you translate a little in Malay?
- 23 Hassan: If you don't do it after I have translated, watch out
- 24 Aiman: I will, I will
- 25 Hassan: Okay, don't interrupt, let me explain
- 26 Aiman: Okay Hassan aka old aunty, like me, hahahaha
- 27 Hassan: We have two **aspects**, **first: bicycle rental**, **second: practical use**. For the
- 28 **solution** part, we have one **solution** for each part of the problem. **Solution** for
- 29 **aspect 1**: We extend the rental time for the bicycles, the maximum time now
- 30 for rental is only 8 hours. This solution does not cost money. So just write, **"no**
- 31 **expenses are required in implementing the solution"**, then explain. For
- 32 **solution** of **aspect 2**, **"provide more top-up machines in campus"**. This one
- 33 requires cost, you just **estimate** how much is the cost. At the last part of this
- 34 cost [section], you just give a **powerful statement** to convince the readers to
- 35 accept the **solutions**. That's all.
- 36 Aiman: Ouh, ok ok
- 37 Hassan: For the **conclusion part**, wait for the **benefit part** to finish first. It will be
- 38 finished in a while. Then let me **say sorry** to miss because we are supposed to
- 39 send this last Friday night.
- 40 Aiman: ok ok I'm doing it now
- 41 ...
- 42 Aiman: **Done**, read my parts, Hassan

43 Hassan: Okay Aiman
 44 ...
 45 Hassan: hahaha, Aiman, never mind lah, well done lah, I will help you edit later.
 46 Aiman: Haha, **stylish** right? My sentences are **bombastic**
 47 Hassan: <criing laughing emoji>

Excerpt 5.3 above offered a glimpse of Aiman's effort to do the task. He was open to feedback and he eagerly listened to Hassan who gave lengthy explanations on what was the task requirement for the cost section and how to do it (line 3-36). Aiman then tried his best to revise his parts of the task before asking Hassan to check it (line 40-42). His efforts were appreciated by Hassan who complimented him and offered to help him edit his work later (line 45). Nevertheless, despite his efforts, Aiman remained hampered by his lack of proficiency, and collaborating in the computer-mediated mode also added to the challenge, as discussed in the next point.

The third reason for the group's unequal contribution was observed to be the CMC mode that the learners collaborated in. The detached nature of the CMC mode, where the learners did not see each other face-to-face and did not have to be physically in one place, appeared to make the group members more prone to disengage from the task. Further, it was easier for the group members to shirk their responsibilities by not going online, thus forcing other group members to do their work for them as it was a collective task (e.g. Excerpt 5.7 later in this chapter). On the same note, the detachment of the CMC mode also made it harder for Aiman to seek and receive help, as he failed a few times to solicit help from other group members (e.g. Figure 5.2 later in this chapter), and when he did receive help, he still failed to fully understand the requirements and expectations of the task. This finding highlighted a potential disadvantage of computer-mediated collaborative writing, as it showed that the feature which was deemed beneficial, the ability of learners to work at any time and any place of their convenience, could also impair the learners or be exploited negatively by them.

Overall, this finding corresponded with those of Arnold et al. (2012) and Kessler et al. (2012) on the differing roles and levels of contribution among their computer-mediated collaborative writing participants. Although this group consisted of five members, compared to both previous studies that looked at groups of three to four, similar roles as identified by Arnold et al. (2012) were observed, namely Hassan as the group leader, who contributed the most, Ashraf as the group member, who contributed second most,

then Aiman and Kafi as social loafers, who contributed a little but not their fair share of work, and lastly, Suhail as the free-rider, who barely contributed at all but received the same grade as other group members. Thus, this finding dispels the notion that collaborating in the computer-mediated mode may lead to more equal participation among learners (Chew & Ng, 2016).

Co-construction of task

Although unequal contribution was prevalent in this group's collaboration, there were also a number of positive collaborative features, and one of these was co-construction of task. This feature was especially evident between Hassan and Ashraf who pooled their knowledge to help each other and do the task together in their personal WhatsApp chat. Excerpt 5.4 below demonstrates the unconventional way that Hassan and Ashraf had of co-constructing the task although they were physically in different places. Initially it was Ashraf who provided the idea for Hassan to edit the task, as Ashraf was away from his laptop (line 2-12), and the next day Ashraf returned the favour by editing the task based on Hassan's suggestions when Hassan could not access the task as he was away from his laptop (line 15-24). Later, Ashraf also asked and received a direct response from Hassan about how to construct the confidentiality statement for the questionnaire (line 26-28). This finding shows the different ways that collaboration was carried out in the CMC mode, as compared to the F2F mode. Further, it reveals the ingenuity of the learners in adapting to the qualities offered by the CMC mode, and using it to their best benefit.

Excerpt 5.4. The co-construction of task by Hassan and Ashraf via WhatsApp

1	Week 6 30 March
2	Ashraf: Hassan, which part of the assignment you want me to edit?
3	Hassan: Okay, edit it quickly. The confidential part, the explanation is not correct.
4	Please amend it.
5	Ashraf: Okay, okay, I am at a restaurant, I will edit it later.
6	Hassan: Err, [it's due] at 12. Give me the idea quickly, I want to edit it now, I am
7	already in front of my laptop
8	Ashraf: Oh, hold on... say it is better if we don't ask the name of the respondents , but
9	if we want to, the question has to be at the last page. Hmm, if we ask the name
10	of our respondents , we have state that we will keep this information
11	confidential
12	Hassan: Okayy
13	...
14	Week 6 1 April
15	Ashraf: Hassan, our review , is it okay? I saw the instructor's comments , it seems
16	there is a lot that needs to change, or this is the one that has been changed?
17	Hassan: Ohh, the review I have settled . The one at the bottom is acceptable
18	Ashraf: Okay okay
19	Hassan: How about the questionnaire ? Done?
20	Ashraf: So what to change for the questionnaire ? I am about to do it now, haha.
21	Hassan: Haha, if there's questions that need to change to yes or no , change it, and with
22	the double barrel one. That's all. I can see you editing , haha, I'm outside.
23	Ashraf: Okay okay. If there's anything I will ask you
24	Hassan: Okayy
25	...
26	Ashraf: How do we write that we will keep the information confidential? Your
27	information will be kept as secret and not be publish to anyone?
28	Hassan: All personal information will be kept confidential

However, aside from Hassan and Ashraf, no other instances of co-construction of task were observed between the group members. This was despite the few occasions when the group members were online and working on the task on Google Docs at the same time, although on their respective parts. They interacted with each other on Google Hangout while working on the task (e.g. Excerpt 5.5), but they did not engage in in-depth discussion such as constructing the content of task together. This may be due to the group members' unfamiliarity with the technology and thus uneasiness about having a discussion in the computer-mediated mode, where they had to expend effort to type out their thoughts and they could not see each other to gauge each other's responses. Additionally, some of the group members were not very proficient in English and not

very interested in doing the task, and that might also explain their lack of engagement in the task.

Nevertheless, this finding shows that co-construction of task is possible in computer-mediated collaboration, albeit in an unconventional manner and with only two out of the five group members.

Scaffolding/Collective scaffolding

The third feature of collaboration and a second positive feature, was the scaffolding or assistance provided by the group members to each other during the collaboration process. Hassan and Ashraf, who were more proficient in English than other group members, frequently scaffolded the understanding of other group members by providing explanations about the task requirement, suggestions on how to do the task, as well as directly editing the drafts done by their group members. Excerpt 5.3 above was a good example, where Hassan patiently explained to Aiman what he had to do for the task. Hassan and Ashraf also collectively scaffolded each other, as shown in the last part (line 26-28) of Excerpt 5.4 above.

Excerpt 5.5 Ashraf's scaffolding of Suhail and Aiman about the task on Google Hangout

1	Week 7	14 Apr
2	Suhail:	What to put in management and cost ? What does management means? Do
3		we put value in cost ?
4	Ashraf:	Cost we put value
5	Suhail:	How much?
6	Ashraf:	Management as I understand have to put the people who are responsible, up
7		to you
8	Suhail:	Put people who are responsible ya
9	Ashraf:	<thumbs up emoji>
10	Suhail:	Okayy, later when you log on just see whether it's okay or not
11	Ashraf:	Cost is the cost of our solutions you know, you have to see the data , what
12		solutions that people pick
13	Suhail:	haa? It's not the cost of photocopying and all? Whattt?
14	Ashraf:	Look at the book page 128
15	Suhail:	Seems like the cost of photocopying...right? That's all we are covering in cost
16		right?
17	Ashraf:	No, it's the cost of our solutions , not the cost of carrying out the
18		questionnaire , haha
19	Suhail:	Do we have cost ?
20	Aiman:	Cost for the bicycles right?

21 Suhail: Seems like don't have
 22 Aiman: I've just done it
 23 Ashraf: Just do a rough estimate, not **detailed**
 24 Aiman: Oh no, I have done it in **detail**, wait I will put in on GD
 25 Ashraf: Even better, haha
 26 ...
 27 Ashraf: Wait, for the **cost**, what did you guys say? **Cost** of using the bicycle?
 28 Aiman: I said about paying at the beginning
 29 Suhail: That's why I said... I don't understand... Is it not the cost that we incur for
 30 carrying out this research?
 31 Ashraf: No, I read the [textbook], it's the **cost** to carry out our **solutions**. Now we still
 32 don't know our **solutions**
 33 Aiman: The **table** is not necessary then
 34 Ashraf: Hassan is still doing [solution section], so **cost management benefit** we can't
 35 do yet
 36 Suhail: Sooo left it blank for now, okay??
 37 Aiman: Oi, don't **delete** it, I took a lot of effort to do it
 38 Ashraf: Hassan will finish soon
 39 Suhail: What I did was wrong?
 40 Ashraf: W
 41 R
 42 O
 43 N
 44 G
 45 Suhail: <flat-faced emoji> <angry emoji>
 46 Aiman: Hahahaha

Excerpt 5.5 above illustrated another example of scaffolding between the group members via synchronous interactions on Google Hangout, as they worked on the task on Google Docs. After Suhail and Aiman asked for help, Ashraf explained the task requirements for management and cost sections of the proposal report to them as well as asking them to refer to the textbook for further guidelines (line 2-25). Later, after Aiman had written the cost section, Ashraf was able to read his work on Google Docs immediately and provided the feedback to Aiman that what he had written was not correct (line 27- 44). In this situation, the synchronous interactions allowed the group members to ask and receive help immediately, and later the shared access afforded by the CMC mode was shown to be beneficial to the learners in enabling provision of instant feedback. This allowed the learners to know whether their work was good enough and to rectify their mistakes rather than continuing doing the wrong thing.

Nevertheless, there were also a few occasions where the group members asked but failed to receive help from their group members. This happened when the group members were working on the task at the same time on Google Docs, but at different parts of the task. Figure 5.2 below illustrated how Aiman who was working on the cost section, attempted to seek Kafi's help by writing "help me, what should I edit" at the bottom of table of contents page where Kafi was writing. Unfortunately, there was no reply from Kafi and some moments later, Aiman deleted the sentence and went back to writing the cost section. The possible reason for the unsuccessful attempts was that the group members did not notice their peer's pleas for help or they were too preoccupied with writing their own parts of the task to provide help to anyone else.

Figure 5.2 Aiman's attempt to ask for help from Kafi on Google Docs

Besides asking and receiving assistance from their peers, the group members also scaffolded each other by directly editing each other's work. Working on Google Docs allowed all group members to access the latest draft of the task at any time and anywhere and this benefit was utilised by the group members to check and make changes to improve the task. Aside from Suhail, all four other group members made at least one change on another group member's part of the task, despite their disparity in proficiency (e.g. Figure 5.3). Most of the changes made were correct.

Figure 5.3. Aiman's correction of a spelling mistake in the table of contents section written by Kafi

List of Illustrations		
Tables	Title	Page
Table 1.0		
Table 2.0		
Figures		
Figure 1.0		
Figure 2.0		

This finding suggests that the CMC mode promotes provision of peer editing as well as a sense of shared ownership among the group members. Having their work available in one document which was accessible by all group members promoted a sense of collective ownership which prompted their efforts to improve all parts of the task, regardless of who had written the part. The group members themselves were also aware of the collective ownership of task, which was made evident by their repeated requests to other group members to check and edit their work (e.g. Excerpt 5.3, line 38; Excerpt 5.5, line 9). This is an important finding as shared ownership is one of the vital characteristics in collaboration (Storch, 2005; Yong, 2010).

Overall, this finding demonstrates the possibility of scaffolding among the learners, perhaps in a different way, despite the additional mediational effects of technology. Furthermore, new insights were obtained about collaboration in the CMC mode, such as the importance of synchronicity of interaction in encouraging scaffolding and making it more effective among the learners, as well as the high occurrence of peer editing as compared to the F2F mode, where the learners usually have extensive discussions but never directly edit each other's work.

Affective conflict

The final feature of this group's collaboration was affective conflict, which refers to conflicts that extend beyond the task onto personal relationships among the group members and can be detrimental to the collaboration (Tocalli-Beller, 2003). The main

cause of the conflict was discrepancy in the attitudes of the group members during the collaboration. The lackadaisical attitude of Suhail, Kafi and Aiman caused a lot of frustration for Hassan who had to remind and instruct his group members repeatedly to do the task. Excerpt 5.6 below shows Hassan's attempt to engage his group members by asking their opinion about the suitable types of question to be used in the questionnaire (line 2), and his annoyance (line 18-23) when his group members' replies indicated their ignorance and lack of seriousness about the task (line 3-17).

Excerpt 5.6. Hassan's unsuccessful attempt to discuss the task with other group members on WhatsApp

1	Week 5 25 March
2	Hassan: Do you guys prefer Likert scale or yes or no only?
3	Suhail: Likert scale
4	Kafi: Likert scale
5	Hassan: Why?
6	Suhail: Because I'm human
7	Kafi: Because more choices
8	Suhail: Not everything can be yes and no
9	Kafi: No bias later
10	Suhail: Sometimes the answer for yes has its limit ,
11	Hassan: Can you guys give answers that make [me] calm?
12	Suhail: meaning there are some that agree a lot, there are some that agree little..haa
13	Hassan: try have a look at the questionnaire
14	Suhail: So, more accurate
15	Hassan: is it suitable for all questions to use Likert scale ? If not, please provide other
16	suggestions.
17	Kafi: the yes and no answer is too limited
18	Hassan: We have to make improvement on the questionnaire , not just leave it like
19	that, so you guys please make any necessary changes
20	Kafi: You can't do the full research or be specific
21	Suhail: What's this Hassan? I don't understand anymore, you asked whether yes or no
22	or Likert scale only right?
23	Hassan: I'm sorry, this assignment is not as easy as that
24	Suhail: Hahaha, yes la, yes la
25	Aiman: Yes la, I'm wrong in this matter

On the other hand, the three group members were also unhappy with Hassan's ways and the conflict eventually caused the group members to stop communicating with each other. At one time, all the group members were online at the same time. However, Hassan did not log on to the group chat, preferring to work alone separately and only communicating privately with Ashraf (Excerpt 5.2). Meanwhile, other group members

were discussing the task in the group chat (Excerpt 5.5). Fortunately, Ashraf stepped in to be the middle person and resolved the situation. He discussed the task and division of work with Hassan, and then he conveyed the information to other group members on the group chat. He helped to manage the collaboration and update Hassan's progress on the task to other group members, as the proposal report task required linking of information from different sections of the report, which was done by different group members (Excerpt 5.5, line 31-35). Thus, the group members were able to continue their collaboration.

Later on, the group members reconciled their relationship and continued working together, with the exception of Suhail. As Excerpt 5.7 below shows, his absence from the group chat and refusal to revise his parts of the task despite the impending deadline caused unhappiness, especially to Hassan, who had to take on a heavier responsibility and do Suhail's work (line 3,7).

Excerpt 5.7. Hassan's unhappiness at Suhail's unfinished work on the task, expressed on WhatsApp

1	Week 11	14 May
2	Aiman:	What else we need to change, let me know. There's 8 minutes left.
3	Hassan:	Have you changed your parts, cost and conclusion? Suhail's part is still
4		unchanged
5	Aiman:	My parts are fine I think. Miss like to read it. She commented good, brilliant
6		boy. Which part is Suhail's?
7	Hassan:	I'm stressed with the parts that has not been changed yet, you don't make
8		jokes here
9	Aiman:	okay okay
10	Kafi:	Where's Suhail?
11	Aiman:	Maybe it's the line [internet], the line in the back of the hostel is not good.
12	Hassan:	I'm reluctant to say anything in case someone take offence

The affective conflict between the group members caused communication breakdown, resentment and at one point almost destroyed the collaboration. In their individual interviews, the group members discussed the issue. Hassan admitted that there was a time when he was so frustrated with his group members that he contacted the instructor requesting to change to another group, but later he withdrew the request. He explained that he was especially unhappy with Suhail because Suhail gave the excuse of not having Internet access for his failure to do the task on Google Docs, but then he saw that Suhail was active on social media such as Twitter (Excerpt 6.13 in Chapter 6). Regardless, in the third interview after the completion of the task, Hassan mentioned

that he had made peace with all the group members, including Suhail, and he valued their friendship above what occurred during the collaboration. That was also the reason he gave full marks to all his group members in the peer assessment form despite doing many parts of the task himself.

As for Suhail, in his interviews, he admitted that he did not contribute much to the task, and he gave the excuse of being busy with personal co-curricular activities as well as not being able to access the Internet access in his hostel room due to its location. He expressed apology to his group members, but mentioned that Hassan should not have admonished him directly in the group chat. Nevertheless, similarly to Hassan, Suhail explained that after completion of the task, they were friends again and they had put the unpleasant experiences behind them.

This finding contributed insight into the possible reasons for affective conflicts during collaboration and its damaging effects. Although the group members' attitudes were the main reason for the conflict, the computer-mediated mode also played some part in exacerbating the conflict. Additionally, this finding revealed interesting insights about presence visibility in the CMC mode, that learners' presence could be tracked. It means that despite the possible assumption that it would be easier for learners to shirk their responsibilities as they were not meeting face-to-face, it was actually the opposite as their group members could find out when others were online and when they were not. This is an important pedagogical insight for instructors looking to implement this approach. Lastly, the findings also showed that the existing friendship among the group members, which had been found to be beneficial in face-to-face collaboration, made the members of this group reluctant to confront other members that did not do their work well, and this could be a hindrance to effective collaboration.

Leader/loafer pattern of interaction

Overall, the pattern of interaction exhibited by this group did not quite fit into any of the four patterns proposed by Storch (2002) or by Li (2012) who investigated patterns of interaction in computer-mediated collaborative writing. Li (2012) employed the same indexes of equality and mutuality as Storch (2002) and reported three differing patterns of interaction in her study: collectively contributing/mutually supportive, authoritative/responsive, and dominant/withdrawn.

In this study, the dominant pattern consisted of Hassan, the dedicated leader who shouldered most of the responsibility for the task while three of the remaining four group members, especially Suhail, were the loafers who did not contribute or engage in the task as much as they should. Thus, using the same indexes, I propose a fourth pattern of interaction to add to those of Li's (2012): the leader/loafer pattern. In this pattern, equality was low, because Hassan contributed to the bulk of the task, while mutuality was moderately low, as there was engagement in the task between Hassan and Ashraf, but not with the other three group members.

5.2.2 Factors influencing collaboration

Several factors were instrumental in shaping the group's collaboration process. As discussed in the previous section, the group members' attitudes and the computer-mediated mode that the learners used for collaboration were found to be especially influential. Faced with uncooperative group members who were not committed to the task, the positive attitude shown by Hassan and Ashraf was the main reason the group were able to work together to complete the task. Hassan led by example. He worked on many parts of the task himself and was also the most involved in editing and organising the task. He also provided support in the form of instructions, reminders, feedback and encouragement to his group members so that other group members could complete the task. As for Ashraf, he was the only group member who took the initiative to ask Hassan privately about task progress and what to do next. He collaborated with Hassan to construct and discuss the task and became the middle person who kept the collaboration going by conveying messages from Hassan to other group members and vice-versa, when the affective conflict occurred during the collaboration. Without Hassan and Ashraf, this group could not have completed the task successfully.

In addition to the group members' attitudes, there were the mediational effects of the computer-mediated mode. These included the lack of in-depth discussion and engagement about the task and the failed attempts by the group members to seek and receive help. The effect was especially apparent for learners who were of low English proficiency, such as the case of Aiman, who needed more support and assistance to do the task but did not receive it. Additionally, there was also the issue of the visibility of group members' online presence in non-task-related activity, which exacerbated their affective conflict. However, the ability of the group members to access and edit the task encouraged peer editing from most of the group members and promoted a sense of

shared ownership of task. In a way, computer-mediated collaboration provided an equaliser effect, where all group members, regardless of their proficiency, could contribute their input to the task. This finding echoed Chew and Ng's (2016) study who also found that computer-mediated collaboration provided more balanced participation for introverted and low proficiency students, as compared to the face-to-face mode. Thus, it can be seen that the computer-mediated mode shaped the group's collaboration in both good and bad ways.

The final influencing factor was the pedagogical aspects of the collaboration. Due to the out-of-class nature of the collaborative task, the instructor set up periodic submissions of drafts for feedback, and that was proven to be important and effective. Throughout the collaboration, the group members only started working on the task a day or two before the deadlines and much of the editing done by different group members was based on the instructors' feedback. Further, the mark set aside to evaluate the collaborative efforts of the group member, although it represented a low proportion of the overall mark, and the ability of the CMC mode to record every contribution, were somewhat effective in encouraging the group members to contribute to the task, exemplified in Excerpt 5.8 (line 3) below.

Excerpt 5.8. Hassan's reminder to Aiman about the assessment for individual contribution on WhatsApp

1	Week 5 25 March
2	Hassan: Guys , I have edit , I mean I have edit the latest [draft]. You guys when are your
3	turns? 12am yo, hahahaha, bye
4	Aiman: Just edit all Hassan
5	Hassan: Hahaha, no Aiman, don't, later you don't have any marks
6	Aiman: Okay okay

5.2.3 Learners' attention to language

Another focus of this study is the group members' attention to language during the collaboration. Similar to their F2F counterparts, the construct of LRE (Swain & Lapkin, 1998) was used to capture the group members' focus on language. However, the definition of LRE were expanded to accommodate the differing ways the learners interacted about language in the computer-mediated mode, particularly their direct editing of each other's work. Similarly, the categorisations of the LREs were also amended in order to capture the different nature of learners' attention to language in computer-mediated collaboration, as shown in Table 5.1 below.

My extended definition of LRE is

“Any instance where learners focus their attention on language, when they reflect on, discuss or try to resolve without discussing, language-related issues of others that they encounter while working on collaborative tasks.”

Table 5.1. Revised categories and definitions of language-related episodes (LREs)

LRE category	Working definition
Lexis- based LRE	Lexis-based LREs are any discussion or editing relating to lexical items, including the appropriate word choice and terms, additional words to convey the intended meaning and orthography features of particular words and terms.
Form-based LRE	Form-based LREs are any discussion about or editing of grammar and syntax, such as word order, tenses and use of correct grammatical forms.
Translation-based LRE	Translation-based LREs are instances where the participants discuss or carry out translation, either from English to the shared L1, or from the L1 to English. Translation may be of the instructions (from English to the L1) concerning the tasks and feedback provided by the instructors, to ensure the understanding of their group members and to elicit more ideas from them; it can also be when participants translate ideas from their group members, as expressed in their shared L1, to English in order to incorporate the idea in the writing task.
Discourse-based LRE	Discourse-based LREs are any discussion or editing relating to the textual structure and features of writing specific to the proposal report writing genre and general written discourse. There are two sub categories: genre-related and written-discourse related. Genre-related LREs are any discussion or editing involving the schematic structure and linguistic/text features (i.e. the way it should be written) which are related and specific to the assigned genres. Written-discourse related LREs are any discussion or editing relating to aspects of the written discourse, such as text cohesion, coherence and consistency.

Table 5.2 below showed the amount and types of LREs that occurred in group C1's collaboration process. No LREs were found in the questionnaire review task, mostly because Hassan was the only group member that was observed writing the task on Google Docs.

Table 5.2. Occurrences of LREs in group C1

LRE categories	Group C1	
	Q. Review	Prop. Rep
Lexis-based LREs		8
Form-based LREs		13
Discourse-based LREs		
- Genre-related		5
- Written-discourse related		4
Translation-based LREs		1
Total		32

A large percentage of the group's LREs consisted of the group members directly editing other group members' work on language, rather than discussing it as their F2F counterparts did. There was only one language-related discussion observed, which was when Aiman asked Hassan to translate his explanations about the task from English to Malay (Excerpt 5.3, line 22-36). Hassan and Ashraf were the main contributors to the peer editing, followed by Aiman and Kafi. It was only Suhail who focused on his own parts and did not make a single edit on other group members' parts of the task.

Interestingly, the group members focused on form-based LREs the most, followed by discourse-based LREs and lexis-based LREs, and lastly there was one translation-based LRE, which has been shown in Excerpt 5.3. This was a direct opposite of the findings of the face-to-face groups. Figure 5.4 below shows an example of form-based LRE, in which Ashraf attempted to correct a sentence to include the appropriate past participle language form of the word 'extend' and the infinitive form of 'provide' in the benefit section which was written by Hassan.

Figure 5.4. Example of form-based LREs in group C1's collaboration

6.0 BENEFIT

Our proposed solution as agreed by our respondents is that the rental time of the bicycle should be ~~extend which the maximum time now is only 8 hours~~ extended from its current maximum time of 8 hours for aspect 1 and ~~provide~~ to provide more top-up machines in the main campus for aspect 2. The extension of the rental time of the bicycle will give more benefit to both student and

The second highest category of LREs in this group was discourse-based LREs, which was related to the task genre and writing discourse such as cohesion and coherence. Figure 5.5 below illustrates an example of genre-related discourse LRE which occurred in the

introduction section written by Kafi. Understanding the requirement of the task to include references for specific concepts mentioned in the proposal report, Hassan added the in-text citation and reference for the specific concept which was mentioned in the section.

Figure 5.5. Example of genre-related discourse-based LREs in group C1's collaboration

bicycle each. The approximate cost for this U-Sikal program is around RM60k. ~~U-Sikal service uses the "Radio Frequency Identification" (RFID) concept technology.~~ U-Sikal service uses the RFID tagging system that uses small frequency to be detected by sensor at the parking bay when renting any bicycle-. According to [2], "RFID tagging is an ID system that uses small radio frequency identification devices for identification and tracking purposes". Students can buy 1 Go-Green card containing RFID to rent any

Figure 5.6 below exemplifies a written-discourse related discourse LRE, where Hassan deleted a sentence deemed redundant to improve the coherence of the introduction section written by Kafi.

Figure 5.6. Example of written-discourse related discourse-based LREs in group C1's collaboration

2.0 INTRODUCTION

This proposal report is about Go Green U-Sikal program in UniMAP. The U-Sikal program is under Unimap and is fully supported by the university ~~ands~~ it is an initiative in making campus Alam Pauh Putra as a sustainable Campus. ~~U-Sikal program helping the campus more environmentally friendly.~~ U-Sikal service provide bicycle for students as a transport within campus with certain fee. The total amount of bicycles are around

Lastly, the group's third highest category of LREs was lexis-based LREs, in which the group members corrected spelling mistakes and edited inappropriately used words, as shown in Figure 5.7 below, where Ashraf corrected the word "residences" to "respondents" in the introduction section written by Kafi.

Figure 5.7. Example of lexis-based LREs in group C1's collaboration

the problem for better improvement in the future. However, not all students in UniMAP are involved in this process. We only take 50 residencespondents and its only take a few minutes for them to fill in all of this questionnaire in a day.

Overall, although the group members did not focus on language as much as their F2F counterparts, they had more in-depth editing of language as seen by their focus on form-related and discourse-based LREs. Thus, it seems that the constant access afforded by the CMC mode as well as the written form of the drafts allowed for more structural level changes of language by the learners as compared to the F2F mode.

In the next section, I will discuss the collaboration process of group C2.

5.3 Group C2

The second CMC group, group C2, consisted of five female students. Their pseudonyms are Ayu, Amy, Becky, Faye and Frida. Becky was the leader appointed by the group. She had higher English proficiency than her group members, scoring band 3 (lower intermediate) in the national level English proficiency exam (MUET) as compared to other group members who scored band 2 (low proficiency). The group members did not share the same first language since Ayu, Amy, Faye and Frida were Malay speaking while Becky belonged to an indigenous ethnic group from Sarawak. However, during the collaboration process, the group members mostly interacted in the Malay language, interspersed with brief use of English. During the collaboration process, this group mostly utilised Google Hangout as their primary means of communication about the task, with WhatsApp mainly used by the group members to communicate with me.

5.3.1 Salient features of collaboration

Interestingly, the collaboration process of group C2 was quite a contrast to that of group C1, almost a direct opposite, as shown by the distinct features discussed below.

Collective commitment of group members

The first salient feature of group C2's collaboration concerns the equal participation and engagement of task shown by the group members. They divided the task between

individuals and every group member contributed and completed their part. Later, after each round of feedback was given by the instructor, the group members were also involved in revising their own parts as well as other group members' parts of the task.

Additionally, throughout the collaboration, different group members took the initiative to start working on the task as well as to voluntarily do various aspects of the task which had not been assigned, such as checking and aligning the format and organisation of the task. For example, for the questionnaire review task, after the group members had completed writing their respective parts, Faye voluntarily revised the format of the revised questionnaire, aligning the questions and deleting extra spaces. Excerpt 5.9 below showed the initiative taken by Ayu (line 2-3) and subsequently by other group members as well to discuss and do the task during their week-long semester break when they were away from each other in their respective hometowns. In their discussion, the group members were agreeable to each other's suggestions of which parts of the task to do, and willingly took on the responsibility of contributing to the task. All of them were aware of and committed to collectively achieving the goal of the collaboration, which was to complete the task together successfully.

Excerpt 5.9. Group C2 members' dividing of work for proposal report task on Google Hangout

1	Mid-semester break Apr 7
2	Ayu: Hi all , how was your holiday? Hahaha. I want to discuss about the [proposal]
3	report. Is everyone online?
4	Anis: Hi Ayu
5	Becky: I'm here!
6	...
7	Ayu: Amy for the [proposal] report we start from intro right? Everyone, can I do
8	intro?
9	Faye: Cannot!! Haha just kidding . So you guys have already divided the parts ? What is
10	my part ? #honeymoon mood <love emoji>
11	Amy: Aah, intro, methodology and general view , no more right?
12	Faye: Me is to do what?
13	Amy: What do you want to do? Methodology is a lot
14	Faye: Shake my legs? Can?
15	Amy: So need 2 or 3 people to do that
16	Faye: Oh, give me [the part] that I can settle by myself. It will be long time before I go
17	back [to university]
18	Amy: Take general view then, but what to write for general view eh, did you copy
19	from discussion in class? Ayu?

- 20 Faye: **general view?** Okayyy, later if I don't know, I will ask you guys. I **try** and have a
 21 look first, can??
 22 ...
 23 Anis: So Ayu, **intro**, **method** and **solution** only?
 24 Ayu: Yup, that's all I ticked in the textbook
 25 ...
 26 Anis: I will do **methodology section** la, Ayu do **intro**
 27 Ayu: Okay
 28 Anis: Faye, what do you want to do?
 29 Amy: Becky and Frida?
 30 Faye: Whichever **part** that is available, I don't mind
 31 Amy: **Section B** and **C**, and **solution**
 32 Faye: Ok, when is **due date**?
 33 Ayu: If I'm not mistaken, we should finish the **draft** before class on Wednesday
 34 Faye: **Google Docs** right?
 35 Ayu: Yup
 36 ...
 37 Ayu: So we should **confirm** today the **parts** to divide. Me and Anis have decided that
 38 we will do 2 **parts**
 39 Frida: Okay
 40 Amy: I do **methodology**, Ayu do **intro**
 41 Frida: I do the **solution** part for **section A**, can?
 42 Amy: Becky and Faye you guys choose la, you want section B or C
 43 Ayu: Okay I agree
 44 Becky: I **section B** la
 45 Ayu: **Anything** you guys just inform, if there's anything you are not **clear**, who knows
 46 any of us can explain. So **deal** already, **enjoy your work**, hewhewhew
 47 Becky: the result for the **sections** we get it from the **questionnaire** or how?
 48 Amy: Aah Becky, get it from **questionnaire**, but we haven't distributed the
 49 **questionnaire**, we will do it next week when we go back to university
 50 Ayu: So you guys' [parts] can hold for now but must finish before the class
 51 Becky: Alright <okay emoji>
 52 ...
 53 Faye: I do **part C** is it?
 54 Ayu: Yes Faye
 55 Becky: **no more choice**, hahaha

The collective commitment of the group members was also observable in a few other instances. One of them was the willingness to sacrifice personal expectations for the collective gain of the group, exemplified in Excerpt 5.10 next. Faye initiated the discussion to divide work and start working on the questionnaire review task and requested to be in charge of writing the introduction (line 1). However, when Amy asked for that part to be given to Becky and Faye to do another part, Faye was quick to oblige

(line 2-5). Similarly, other group members also had no objections with their assigned parts, which demonstrated their willingness to contribute to the task.

Excerpt 5.10. Group C2 members' dividing of work for questionnaire review task on Google Hangout

Week 5 24 March

- 1 Faye: Everyone, which **part** should I do? Can I do **intro**?
- 2 Amy: Faye, you do the '**protection of confidentiality**' part. For **intro** and **conclusion**
- 3 can Becky do it?
- 4 Becky: Can can
- 5 Faye: Ok
- 6 Amy: Ayu do the '**questions are relevant**' point can?
- 7 Frida: Later we just type on **Google Docs** ya
- 8 Becky: Everything combine together or how? **I mean** in one essay or it has different
- 9 **parts**?
- 10 Amy: Aah, like **essay**
- 11 Becky: So we just type below the **questionnaire** right?
- 12 Amy: Yup Becky
- 13 Frida: Okay

In addition, although the group members also faced problems with Internet access, especially in their hostel, similar to their group C1 counterparts, the group members found ways to overcome it with other alternatives, such as going to the library to do the task, as mentioned in Excerpt 5.11 (line 7-10) below. In their individual interviews, the group members also elaborated on the issue of the Internet access problem in their hostel, and they explained how they sought other alternatives such as going to the library or staying on campus to do the task.

Excerpt 5.11. Frida's initiative to do the task despite Internet access problem

Week 11 May 14

- 1 Faye: I think right Frida, what you did is okay already niceeee <love eyes emoji>
- 2 Frida: But I don't know how to write the **conclusion**
- 3 Faye: Help me do my **part** please
- 4 Frida: haha
- 5 Faye: Kah3 **Conclusion**?
- 6 Frida: **Library** is closing, I can't do for you, haha. I don't know how to **conclude** the
- 7 **costs** [section]
- 8 Faye: You in **library** ya, sigh, my **Internet** has **problem**
- 9 Frida: Aah, at hostel I can't get **Internet**, so I go to **library**
- 10 Faye: I think you need to **focus** to say the cost is affordable, and it's not impossible to
- 11 implement the **solutions** that you **mentioned**. That's all I can understand <kiss
- 12 emoji>
- 13 Frida: Ok

All these reflected the commitment of the group members to participate and complete the collaboration successfully. They were aware of their responsibilities, and they were willing to contribute their best effort to do the task. They also cooperated well with other group members, putting aside personal preferences in order to achieve the collective goal. As a result, there were no conflicts between the group members who worked together from beginning to end to complete the task.

Collective scaffolding

The second salient feature of collaboration was the collective scaffolding provided by the group members to each other. On several occasions, the group members asked for help on Google Hangout, and other group members responded, such as in Excerpt 5.11 above, where Faye asked for help from Frida (line 4).

Excerpt 5.12 next also showed some instances of scaffolding occurring between the group members via synchronous interaction on Google Hangout. First, Amy asked for group members' opinions on the introductory sentence she wrote for the questionnaire review and Faye responded with her approval (line 2-4). Then Frida asked whether she could combine the questions in the questionnaire, and her group members replied affirmatively (line 7-11). The next day, Ayu asked Amy to explain the problem with the format of the question used in the questionnaire, and she obliged (line 18-22). However, while the group members were quick to respond to their peers, most of the exchanges were short and succinct and there was no in-depth or extensive discussion of task.

Excerpt 5.12. Group C2 members' instances of collective scaffolding on Google Hangout

1	Week 5 23 March
2	Amy: please help us by taking a minute to answer this questionnaire. this survey
3	is conducted to gather info about laundry service , okay or not?
4	Faye: Oh that is okay I think. Do we have limit for how many questions we should ask?
5	Ayu: Don't have I think but have to be relevant la
6	...
7	Frida: For section B , the initial questionnaire has aspects , can we combine the [two]
8	aspects?
9	Faye: Can Frida.. [if] combine will look more neat
10	Ayu: Can I think, as this is our questionnaire
11	Frida: okay.. <okay emoji>
12	Faye: So later after we compile have to print right?
13	Ayu: yup.. So Amy can you help to print later, after we compile
14	Amy: can I think
15	Faye: Check back before print , in case there are typos
16	Amy: Later I will print , alright..
17	Week 5 24 March
18	Ayu: Amy, for section C and B , I don't understand about agreement and
19	disagreement??
20	Amy: Oh, that is about the rank from 1 to 5, [the problem is] it did not say which
21	[number] is the most agree [option], [whether] its 1 or 5
22	Ayu: Okay I get the point.. tq Amy
23	Amy: if my sentences are wrong, you please help me correct them ya
24	Becky: When is the last [time] to submit the draft?
25	Frida: Tomorrow, before 12 midnight
26	Ayu: 12am
27	...
28	Frida: Everyone, I have done my corrections for the draft, if there is any mistakes let me
29	know ya<smiley emoji>

Instead, the group members explicitly asked each other to give feedback by editing their work, as shown in Excerpt 5.12 above (line 23, 28) and that was another form of scaffolding that occurred in this group's collaboration. The group members' direct editing is exemplified in Figure 5.8 below, where Amy added elaboration to Frida's work. All the group members, except Becky, were observed editing each other's work in terms of language, content and formatting. As with group C1, the shared access of task afforded by the CMC mode seemed to encourage the group members to welcome as well as make direct changes on each other's work, which also suggested a strong sense of shared ownership of task among them.

Figure 5.8. Amy’s elaboration on the point written by Frida in questionnaire review task on Google Docs

Nevertheless, it was noticed that there were also several unsuccessful attempts by the group members in seeking help from each other, in both Google Hangout and Google Docs. This finding was similar to group C1’s finding. In Excerpt 5.13 below, Faye twice asked for help about the task in Google Hangout but there were no replies from her group members, presumably because they were not online at that time.

Excerpt 5.13. Faye’s unsuccessful attempts at seeking help on Google Hangout

1	Week 6	31 March
2	Faye:	How to spell confident that has the ‘t’?
3	...	
4	Week 9	Apr 30
5	Faye:	Can [anyone] give idea how to do the management

Then, Figure 5.9 below illustrated Becky’s also unsuccessful attempt in seeking help on Google Docs. As Becky worked on the benefit section, she asked for help by typing “Ayu help me” and subsequently “Ayu help” in big, capitalised font on the top of the benefit section, presumably to attract Ayu’s attention. Ayu replied soon after by typing on the same page, but she wrote that she was also unclear about what to do for Becky’s part of the task. She then suggested that Becky refer to other parts of the task and take any sentences that could be useful. Later, Becky deleted the interactions and she continued writing the benefit section.

Figure 5.9. Becky's attempt to seek help from Ayu on Google Docs

As was the case with group C1, the failed attempts at seeking help from group members indicated the potential disadvantages of computer-mediated collaborative writing, such as being overlooked by other group members who were not online at the same time, and the difficulties in discussing the task in detail and helping other group members because they were not physically in the same place.

Collaborative awareness of the task

The third feature of this group's collaboration was the group members' collaborative awareness of the task. As the task was genre-based, the organisation and formatting of the task was especially crucial, and the group members, who divided the task to do individually, were aware of the importance of standardizing the format and writing style for all parts of the task. Thus, different group members were observed changing their writing style and format of tables at the sections they were working on in the proposal report task in order to align their work with their group members.

Figure 5.10 and 5.11 below illustrated how the group members attempted to align their work with each other. In figure 10, Faye changed the use of the word 'student' to 'respondent' in her solution section to match Becky's problem section (Figure 5.11). In turn, Becky also changed the writing style and the format of the table in the problem section in order to be similar with Faye's solution section (Figure 5.11).

Figure 5.10. Faye's attempt at aligning her work with Becky's

Aspect 2: Location				
Statements	Yes		No	
	Male	Female	Male	Female
Residential college should separate male and female laundry area	18	28	4	0
The location of the laundry room should be near to the students' hostel.	18	27	4	1
Residential college management should put the washing machine and dryer at the 3rd and ground floor at each block.	15	21	7	7

Table 3.2: Location of washing machine

Table 3.2 shows the respondent respond on location of washing machine at Tan Sri Aishah Ghani Residential College. First of all, majority of the students think that residential college should separate male and female laundry area. 18 of them are male meanwhile 28 of them are female. Next, majority of the students respondent agree that the location of the laundry room should be near to the students hostel. The majority respondent consist of 18 male and 27 female. Besides that, majority of the respondent suggest that residential college management should put the washing machine and dryer at the 3rd and ground floor at each block. The majority consist of 15 male respondent and 21 female respondent.

Figure 5.11. Becky's attempt at aligning her work with Faye's

SECTION B: PROBLEM				
Table 2.1: Aspect 1: Quantity of the Washing Machines				
Statements	Yes		No	
	Male	Female	Male	Female
UniMAP has provided enough washing machines for students.	9	4	13	24
Tan Sri Aishah Ghani Residential College provides the least quantity of washing machines to students.	17	23	5	5
More washing machines will help students to save time to do laundry.	21	27	1	1

Table above 2.1 shows the students participation in the laundry service quantity of the washing machines for in Tan Sri Aishah Ghani Residential College. Firstly, the majority of the respondents disagreed that UniMAP has provided enough washing machines for students. 37 of the respondents said 'No' out of 50 respondents that have answered the questionnaire. There are 13 male respondents and 24 female respondents who disagreed. Next, there are majority of the

The group members' efforts were made possible by their joint accessibility to the task on Google Docs, as they could see and refer to other people's work. Thus, this finding revealed a promising advantage of the CMC mode for collaboration, especially for tasks that have a specific format and require uniformity in organisation of task.

Cooperative pattern of interaction

The final feature of the group's collaboration was their cooperative pattern of interaction. Based on the indexes of equality and mutuality as proposed by Storch (2002), the equality was high as all the group members contributed to and had control of the task. However, the mutuality was moderate to low because the group members did not engage much with and on each other's work. On several occasions, the group members were online and working on the task at the same time, even once on the same page, but they mostly worked only on their own parts (e.g. Figure 5.12). In Figure 5.12 below, the three different colours signified the editing by the three different members of the group.

Figure 5.12. The group members' simultaneous writing on questionnaire review task

Nevertheless, the group members' general attitudes towards the collaboration were positive. Everyone contributed their effort to do the task, and they were also engaged in

discussing the task and offering assistance to each other. Thus, it was deemed that the group members had a cooperative pattern of interaction.

5.3.2 Factors influencing collaboration

Similar to group C1, the main factors that shaped the collaboration process of this group were the attitude of the group members and the computer-mediated mode of collaboration. The group members' attitudes were in direct contrast of group C1's members. As mentioned in the previous section, the members of this group were willing to contribute, and were responsible and cooperative. They compromised personal preferences, assisted other group members, and were engaged in the task from the beginning to the end of the collaboration. Additionally, the group members also shared a good relationship, as evidenced by the friendly interactions and jokes made throughout the collaboration.

While all the group members played their parts during the collaboration, one group member's role, Amy, stood out. Although Amy was not the appointed leader, it was observed that she voluntarily took up the leadership role. She assigned parts of the task to other group members during their discussion, and she was the most helpful in assisting other group members and checking on their progress. Then, she also took on the majority of the responsibilities for the task. She constructed the front and cover page, the table of contents and list of illustrations page, as well as inserted page numbers for the proposal report. She also contributed the most revisions, revising her group members' parts for content, language and alignment of style and format. Lastly, she organized the whole report, making sure the format and spacing were appropriate before submission. In contrast, Becky, who was the appointed leader and the most proficient among the group members, did not really contribute any extra effort in editing other people's work on the task besides her own parts of the task. Amy's contributions were crucial in improving the quality of the group's written outcome.

The second influencing factor was the computer-mediated mode. Similar effects as group C1 were observed in this group, namely the lack of in-depth discussion of task, the group members' failed attempts in seeking help from each other, and the increased instances of direct editing of each other's work. This finding then, help to affirms this new understanding about the affordances and constraints of the computer-mediated mode in terms of collaborative work.

5.3.3 Learners' attention to language

In terms of learners' attention to language, this group had fewer occurrences of LREs compared to group C1, as well as different focus of language aspects. The highest category was discourse-based LREs, specifically written-discourse LREs, which mainly consisted of the group members' attempts to align the writing style and format of their part of the task with other group members' work. This was followed by lexis-based LREs as the second highest category, and lastly form-based LREs. No translation-based LREs were observed in this group's collaboration. Below I illustrate the different categories of LRE as observed in the collaboration process of Group C2.

Table 5.3. Occurrences of LREs in group C2

LRE categories	Group C2	
	Q. Review	Prop. Rep
Lexis-based LREs		6
Form-based LREs		2
Discourse-based LREs - Genre-related - Written-discourse related		8
Translation-based LREs		0
Total		16

Figures 5.10 and 5.11 above provided examples of written discourse related discourse-based LREs where the group members modified the linguistic features and style of writing of their work to align with their group member's work. This helped to increase the coherence and cohesion of the final work. As for lexis-based LREs, Figure 5.13 shows an example where Amy corrected a spelling error in the introduction section which was written by Ayu.

Figure 5.13. Example of lexis-based LREs in group C2

Then, Figure 5.14 below showed an example of form-based LRE, where Faye corrected a grammar error in the introduction section written by Ayu.

Figure 5.14. Example of form-based LREs in group C2

Overall, although the group did not share the same focus of language aspects with group C1, both groups shared similar ways of attending to language, which was direct editing of other group members' work most of the time. Thus, this finding affirmed the discovery that computer-mediated collaboration promotes direct editing from the learners, especially about language.

In the next section, I will discuss the findings of both computer-mediated groups together to illuminate in greater details, the benefits and shortcomings of computer-mediated collaboration.

5.4 Discussion

The findings of the two CMC groups were enlightening in several aspects. There were similarities, but also differences in the findings, and this can be attributed to the mediational effect of the computer-mediated mode as well as the individual dynamics of each group.

In terms of similarities, firstly, both groups utilised synchronous communication while working on the task on Google Docs. On several occasions, the group members were working on the task at the same time, and they would use either Google Hangout or WhatsApp to discuss the task simultaneously. This is interesting as it highlighted the need for synchronous communication when learners collaborate in the computer-mediated mode. This finding add valuable insights about computer-mediated collaboration, particularly about the choice of CMC tools for instructors to use. It seemed that Google Docs, which allowed for both synchronous and asynchronous communication, may meet the needs of learners and encourage more collaboration than Wikis, which are a commonly utilised CMC tool in collaboration, but are asynchronous in nature.

Additionally, both groups also displayed a lack of in-depth discussion and failed attempts at seeking help from other group members. The synchronous interactions among the learners mostly revolved around the planning and managing of the task, such as dividing the work and checking with each other about task details and progress. Although they also discussed the content of task, it mostly took the form of short discussion involving only two out of the five group members. Furthermore, there were several occasions where a group member asked for help but the request was unheeded by other group members. This finding is interesting as it illuminated the effects of the detached nature of the CMC mode and its lack of visual and paralinguistic cues, and how that deterred the learners in certain aspects of collaboration. This corresponded with Curtis and Lawson (2001) who also found that their computer-mediated collaborative

learning participants had a lot of planning but lacked 'challenge and explain' interactions.

However, direct peer editing was prevalent in both groups, and furthermore, involved almost all of the group members. The peer editing concerned language errors, content and even formatting and organisation of the task, and most editing was correct. There was no sign that the group members asked for permission to correct other members' work, but another characteristic found in both groups was the openness of the group members in asking each other to give feedback and revision. Likewise, this can also be attributed to the computer-mediated mode, as the open access of Google Docs meant that all the group members had access to all parts of the task at all times. The group members, aware of the fact, were then able to utilise that to improve the quality of the task. Further, this also suggests a cultivation of a sense of shared ownership of task among the group members, which was especially obvious in group C2, where the group members had no problem contributing more than their individual share of work for the collective benefit of the group. As such, this has emerged as one of the significant feature of computer-mediated collaborative writing.

As for differences, the biggest difference between the groups was the attitudes of the group members, and this had considerable effects on the groups' collaboration process. Some of the members of group C1 were not committed to the task and they used excuses such as unfamiliarity with the CMC mode, problems with Internet access and laptops to justify their inability to do the task. On the other hand, all the members of group C2 were committed and responsible. Faced with a similar problem of Internet access, the group members sought alternatives like going to the library or working elsewhere and managed to complete the task collectively. This finding accentuated the significance of group members' attitude in determining the success or failure of a collaboration, regardless of the mode of collaboration.

Another difference observed was in the manner of composition. The members of C1 preferred to write somewhere else and then copy and paste their writing into Google Docs. This finding is similar to that of Zorko (2009) who found that her participants were only willing to publish the finished product on their group Wiki. Presumably, they did not want other group members to comment on their incomplete work. However, all the group members of group C2 constructed their writing in Google Docs itself. They had

no problem leaving incomplete work for other group members to see. This perhaps suggest a lack of familiarity or trust among the members of group C1, as compared to group F2's members. Thus, this is also perhaps one of the reasons why group C1 had fewer collaborative experiences than group C2.

In addition, in terms of attention to language, it was reported that group C1 focused most on discourse-based LREs while group C2 focused most on form-based LREs. This was an interesting finding, especially in contrast of the F2F groups' findings, as it illustrated the tendency of the CMC groups to focus on more structural level of language aspects, compared to F2F groups who focused more on lexical LREs. Thus, to certain extent, this finding supports the assertion by Sykes et.al. (2008) that computer-mediated collaboration fosters learners' attention to language use and structure.

Lastly, overall the nature of collaboration of the two groups was different. From the outset, group C2 could be seen as more collaborative than group C1 as there were equal contributions and collective commitment from all the group members, as well as a strong collaborative mind-set and awareness. The group members also put in effort to make sure that their written work was as collaborative as possible, at least in terms of format and writing style. In a conventional sense, Group C2's collaboration was effective and successful. However, there was a lack of depth and sense of actual collaboration among the group members. In contrast, although Group C1 had stark inequality in contribution, there were more instances of involvement and collaboration among the group members, particularly where Hassan and Ashraf discussed and co-constructed the content of task. There was also more extensive scaffolding between the group members, which led to more sharing of knowledge. Thus, in the true sense of collaboration, Group C1 can also be considered collaborative. This suggests the need for a discussion on what truly constitutes collaboration, and while this is beyond the scope of the current study, it is an interesting area for future study.

Overall, the findings helped to pinpoint the extent of affordances and constraints of computer-mediated collaborative writing. This will be informative for instructors who are looking to implement this approach in their classes. Furthermore, while it was found that there are issues that need to be addressed and overcome, this study has shown that there is potential for longitudinal out of class collaborative work to be carried out in the computer-mediated mode.

5.5 Chapter summary

This chapter has described the collaboration features and enabling factors of the two computer-mediated groups participating in this study. The findings will be further discussed comparatively with the findings of the face-to-face groups in Chapter 7. In the next chapter, I will elucidate the perspectives of all the participants in both modes about their collaborative experiences.

Chapter 6. Learners' perspectives on face-to-face and computer-mediated collaborative writing

6.1 Introduction

In previous chapters, I have looked at the collaboration process of the face-to-face (F2F) and computer-mediated (CMC) collaborative writing groups. In this chapter, I will discuss the learners' perspectives on their collaborative experiences. Understanding what and how the learners felt can help to inform a better understanding of their collaboration process, as well as the collaboration approach in general. The members from each group were interviewed individually three times throughout the semester as they worked on the collaborative writing task.

6.2 Face-to-face collaborative writing groups

In their interviews, the learners were given the freedom to speak in any language that they preferred. The members of group F1 mostly spoke English during their interviews, as they wanted to practice their English, while some members of group F2 spoke English and others spoke Malay. The interviews were transcribed or translated mostly verbatim, with occasional modifications of grammar for clarity.

Both of the F2F groups had quite successful collaboration, although group F1 was observed to have more equal participation from all group members and no conflict between the group members. Group F1's members were also more forthcoming with their opinions, while group F2's members were more reserved and tended to say everything was fine, except for Azziz who divulged details about conflict that occurred between the group members.

The group members' interviews revealed several prominent themes that helped to further understanding about their collaborative experiences and their perspectives on collaboration. In particular, their reflections on what was important in collaborative work, their perceived learning from the collaboration, the effects of pedagogical measures, and their changing or unchanging perspectives about collaborative work at the end of the collaboration, were highlighted. I consider each of these in what follows.

6.2.1 Important aspects in collaboration

The interviews with the participants revealed several aspects that they considered to be important in determining the success of collaboration.

Equal Contribution

The most important aspect of collaboration, as identified by almost all participants from both face-to-face groups, was the contribution of their group members in the task. When asked whether they considered their collaboration successful, most of the participants cited the fact that “everyone contributed their parts” (Amir, interview 3) as their main reason why it was successful. Kenneth elaborated on his answer, explaining that “yes, successful, because every group member did their part, everyone was responsible and efficient, finished their work on time” (Interview 3). Similarly, when asked whether they had enjoyed their collaborative experience, the participants echoed the same sentiment, with Annie and also Yvonne making the point that “it was a good experience, because everyone did their job” (Yvonne, interview 3). This was an interesting finding as the learners seemed to associate the success or enjoyment of collaborative work with the contributions of their group members in completing the task. This differed from the findings of previous literature where the learners mentioned the opportunities to pool their knowledge and learn from each other as the reasons for their positive perceptions (e.g. Storch, 2005; Shehadeh, 2011; Al Ajmi & Ali, 2014). This is perhaps due to the extended and out-of-class nature of the collaborative task, where the learners had to work by themselves, without the presence of instructor, for twelve weeks, and thus it was the contributions and cooperation of their group members that they valued the most, and which was determined as the most essential for the success of their collaborative work. Furthermore, the collaborative task was part of the requirement of the case, which mean that the assessment of the task contributed to the learners' grades. Thus, that increased the importance of performing the collaboration effectively to complete the task successful, and this aspect may also be lacking in the existing studies of collaborative writing.

Relationship with group members

Additionally, another point that the group members stressed was the close-knit relationship they had with their peers. This was especially evident in group F1. For

example, in excerpt 6.1 below, Kenneth reported that he enjoyed collaborating with other group members because they were friends and could make jokes with each other, which made the collaboration process interesting.

Excerpt 6.1. Kenneth's positive opinion about collaborative work

1	Researcher: Okay, and how do you feel about your group work?
2	Kenneth: Hmm, quite happy la, because during discussion we are so happy, we used
3	funny ways to talk, because we are friends
4	Researcher: Okay
5	Kenneth: So, not boring

(Kenneth, interview 2)

Similarly, Winnie talked about her ease in giving feedback and pointing out mistakes made by other group members because they have been “friends for a long time” (Interview 3). She further stated that “I think relationship between group members is really important” when doing collaborative work (Interview 3). Annie noted the same point. She proclaimed that the collaboration process was smooth-sailing because the group members had worked together before and they know each other's styles and how each other work, thus “we get used to it, so we don't really like, they do little things and we get angry” (Interview 3).

Another point made by the group members was their equality in status. Although Annie was the elected leader, she clarified that that was just in name and that everyone was equal (Interview 2). Polly agreed, stating that “it was equal and everyone can speak their mind” (Interview 3). All these insights suggested that the nature of relationship between the group members can be described as friendly, familiar and equal.

The group members' answers elucidated the importance of their relationship with each other when carrying out the collaboration, as it was clear that the friendly relationship that they shared brought many benefits to their collaboration. Their familiarity with each other helped to make their collaboration process enjoyable, reduce the possibility of conflict, and improve the outcome, while their equality in status possibly enhanced the group members' sense of responsibility and encouraged their participation and contribution to the task, which was key to the group's successful collaboration. This finding then, helped to provide some explanation of why group F1 could work collaboratively, and lends support to the pedagogical option of letting learners self-select their group members, especially when doing out-of-class collaborative work.

Presence of group members

The third aspect found to be important to the group members was the physical presence of their group members. This was the case in group F2, where although all the group members contributed to the task and had a friendly relationship with each other, the lack of participation of one group member became a source of tension among other group members, as Azziz revealed in his interview (Excerpt 6.2).

Excerpt 6.2. Azziz's discussion about Azwan's absence during group discussions

1	Researcher:	In terms of collaboration with your group members, is everyone working
2		well together? Did everyone do their work so far?
3	Azziz:	Actually for us it's collaborative, except for Azwan 'coz he stay at another
4		area. He stay at his own home because he's married already
5	Researcher:	Ohh okay. So he did less work?
6	Azziz:	Not less work but we minimised his content work and gave him technical
7		work like printing
8	Researcher:	Ohh
9	Azziz:	So far, we structured the task so that he gets more printing or collect the
10		information that we need, like questionnaire
11	Researcher:	Oh, so why do you think this is not collaborative?
12	Azziz:	Because I think...our discussion is actually not effective, because not all
13		our group members are involved
14	Researcher:	Ohh
15	Azziz:	Ya, but we try to be considerate, okay we are tolerant with him.. it's okay
16	Researcher:	Do you do his work for him or you try to give him less work? In this
17		project paper task
18	Azziz:	It's not like we gave him less work, when dividing our parts we gave him
19		work too, it's just we discuss more without him
20	Researcher:	Ahh, but in terms of his part is he doing well?
21	Azziz:	He still give it fair and square to us

(Azziz, interview 2)

Despite acknowledging that Azwan contributed his part to the task, Azziz lamented the lack of Azwan's presence in the group's discussion and opined that it was not a true collaboration. Similarly, although they did not mention the conflict with Azwan, there was also a sense of dissatisfaction from both Aidil and Hafiz who stressed that in future it would be "better if all group members live nearby" (Hafiz, interview 3) or "can meet outside of class" (Aidil, interview 3). The group members' opinion came despite them having interactions and discussion about the task on WhatsApp with Azwan, who lived

away from the other four group members and thus did not attend many of the group's meetings.

This finding showed that for the learners, their perception of collaboration constituted both construction of the task as well as participation in discussion of the task, which meant that for them the process of collaboration is equally important as the outcome of collaboration. Thus, this indicated that when implementing collaborative tasks, instructors need to pay attention to how learners work together, and not just how much each learner contributes to do the task. Additionally, this finding demonstrated the inadequacy of technology in replacing actual face-to-face interaction, at least in the opinion of these group members. However, on the other hand, for Azwan, it was undeniable that technology was a crucial tool in enabling him to collaborate successfully with his peers. Hence, it is premature to dismiss the possibility of technology use in collaboration (further discussion in sub-section 6.2.3 below). Overall, the lack of physical presence of Azwan, and his group members' unhappiness about it, was perhaps one of the reasons that group F2 had fewer occurrences of collaborative features such as co-construction of task, scaffolding and negotiation of task, as compared to group F1 who met frequently to do the task together (refer section 4.3.1)

To sum up, the learners revealed that in out-of-class face-to-face collaboration, the aspects that matter to them were equal contributions from all group members, good relationships with each other, and the physical presence of group members as well as their participation in discussion of the task.

6.2.2 Perceived learning

The second prominent consideration of the learners, as revealed in their interviews, was in terms of what they had learnt from this collaborative experience. Interestingly, members from both groups discussed learning in terms of human behaviours and values, rather than content of task or course as I had expected.

In group F1, Polly said she learnt that "cooperation is very important, especially from all members" (interview 3), while Annie talked about learning to "accept everyone's ideas" and "resolving conflicts together" (interview 3). Likewise, in group F2, Azwan said, "I learnt from other group members about efficiency of doing work, and helping each other, I think that's why our team work well together" (interview 3). For Amir, it was

about “I think in terms of how other people work, and like, how to say, even giving opinion, sometimes they give different opinion that I don’t think of, so I learned that in this group work” (interview 3).

Other group members did describe learning a more tangible form of knowledge: Azziz said that he learnt how to do the IEEE style of referencing (interview 3); Aidil revealed that “I learnt new words, especially from Amir when he tell me to change this and that, for my parts of the task, so my language improved” (Interview 3); while Hafiz said “I think I learnt a lot of knowledge because sometimes our thinking is not the same with other people’s thinking right? And sometimes the meaning is the same, but the sentence is different when other people say it, so I learnt that” (Interview 3)

It was interesting to see the diverse answers given by the learners, especially when many of the learners talked about learning in terms of how to work better with other people, rather than in terms of learning content or book knowledge. It is important that learners learn about responsibilities, tolerance, and helping each other. This revealed that perhaps collaborative work can bring about different kinds of learning, all of which are essential to the success of collaboration and constitute a different kind of personal growth for the learners.

6.2.3 Technology use

The third consideration that the learners discussed was regarding the use of technology. Although they were asked to collaborate in the conventional face-to-face way only, they acknowledged in their interviews the use of technology, especially mobile chat applications such as WhatsApp and WeChat, which are ubiquitous to these learners.

When asked about the idea of using technology in collaboration, group F1’s members were very approving of the idea, especially the use of mobile chat applications that were easily accessible on their mobile phones. The group members cited convenience, usefulness, and ease of contacting each other when they had problems or questions to ask as they were not always physically together. Yvonne explained “sometimes when we are doing the task, we have problem and we want to solve it immediately, then we use WhatsApp” (interview 3), and Kenneth even asserted that he “cannot don’t have WhatsApp” (Interview 3).

The use of technology was even more essential to group F2, who relied on WhatsApp to contact and discuss the task with Azwan, as he lived a distance away from the other four group members who all lived in a hostel. The four group members were positive about the use of technology, acknowledging that “it is important, it made our work easier” (Azziz, interview 3) and that “it is very beneficial, especially for group members who doesn’t stay in hostel” (Amir, interview 3). As for Azwan, unsurprisingly, he was also positive about technology use, stating that he found WhatsApp effective for long-range communication and admitting that he mostly relied on WhatsApp to communicate and collaborate with other group members.

Although not intended or anticipated, this was an interesting finding as it illuminated the increasing reality of technology use in learning nowadays, especially for learners who now have their mobile phones with them at all times. This finding also points the way to the utilisation of a blended approach in collaboration, as the learners made clear that the immediacy and convenience of the CMC mode were important for them, even in a collaboration mode that was largely face-to-face.

6.2.4 Pedagogical effects

The final consideration that the learners discussed quite often, concerned the effects of pedagogical measures employed by the instructor in their collaboration. For most of the learners, their usual way of doing collaborative work, as they noted in the first interview, was to divide the task and do it separately. As a result, Annie admitted that: “I don’t read other people’s work, even if we have a presentation, we just present our own part” (Interview 1). She acknowledged that “it’s good for finishing work faster, but not good in terms of knowledge.” However, in interview 2, Annie reported that for the current task the group members sat together to discuss the task, and review and read each other’s parts. This was to make sure their work was uniform across different sections of the task, according to the instructor’s requirements (Excerpt 6.3).

Excerpt 6.3. Annie’s explanation about the group members’ attempt to align parts of task with each other

1	Researcher:	So, in terms of feedback, after you have finished your part, do you give
2		feedback to other group members’ part?
3	Annie:	Umm, we have discussion, because we want to make sure like, because the
4		course instructor asks us to make sure the report will seem like one
5		person is doing it.
6	Researcher:	Ahh
7	Annie:	Ya, so, we want to review it, like try to make as similar as possible, the way

8	Researcher:	Ahh, in terms of writing style?
9	Annie:	Ya, we all discussed it and check to make sure everyone is doing same
10		thing

(Annie, interview 2)

A similar point was raised by members of group F2, although in a different manner. Both Amir and Azwan grumbled about the interlinked nature of the task, which meant that the group members, who divided the task to do individually, had to check and work closely with each other, as different sections required information from other sections. They described it as a challenge (Excerpt 6.5).

Excerpt 6.5 Amir's answer about the challenges of the collaborative work

1	Researcher:	Any challenges you faced when doing the collaborative task?
2	Amir:	We have to meet and discuss to finish the job because every part is related
3		to each other so we have to check others' [parts] because we have to make
4		sure it's related to each other. You know like the problem is related to the
5		solutions and benefit. So basically, we have to make sure that everything is
6		in correct explanations
7	Researcher:	Ya, that is why it is called collaboration
8	Amir:	Ya, it's quite challenging but it's okay, we did it

(Amir, interview 3)

These learner views showed that the requirements of the task made them change their usual way of doing collaborative work. Although the group members still divided the task to do individually, later they gathered together to discuss the task, to get information from each other, and to make sure different parts of the tasks were aligned with each other. Meeting together gave them opportunities to seek help and give feedback to each other, which improved the collaboration process as well as the outcome. Thus, it can be observed that the nature of the task encouraged the group members to work closely together, thus promoting collaboration among them.

Lastly, when asked about his motivation to do the task, Kenneth mentioned his excitement at the possibility of the group's proposal report being implemented by the university's student representative council (Excerpt 6.4).

Excerpt 6.4. Kenneth's answer about his motivation in doing the collaborative task

1	Researcher:	Then in terms of motivation level? Personally, are you still motivated to do
2		this group work?
3	Kenneth:	It's okay la, because it's doing the survey, about the convenience store. So
4		it's quite interesting
5	Researcher:	Interesting?
6	Kenneth:	Ya, because it's something that we use, and this project will be conducted
7		because one of the MPP [student representative council], our course mate,
8		they will try to do this project and they will, consider our project
9	Researcher:	Oh, that's good
10	Kenneth:	Ya, so now we are more interested to do about this...

(Kenneth, interview 2)

This finding indicated the importance of designing a task that is contextually relevant and which has real-life implications for the learners. This will encourage their interest in the task and can become an important source of motivation when carrying out collaborative work.

6.2.5 Overall preferences

Overall, there were not many changes to the learners' preferences from their initial interviews to their third interviews, after they had completed the collaborative task. For group F1, although the group members had a successful collaboration and they were happy about their experience, the group members were "still neutral" (Annie and Kenneth, interview 3) to the idea of working collaboratively with their peers. The group members explained that that their willingness to work collaboratively would depend on the group members they worked with. As Winnie stated, "it depends on group members, if got good members, then good, if not, I prefer to work alone" (Interview 3). Kenneth clarified that "In this group, I am satisfied, but in other course, it's terrible [laughs]". Polly elaborated on a bad experience of doing collaborative work in another course, in which the groups were formed by the instructor. She described the bad attitude of some group members, who did not respond to messages and did not attend meetings, which forced her to have to do most of the task herself before the deadline for submission (Excerpt 6.6). This again, highlighted the importance of allowing the learners to self-select their group members when doing collaborative work.

Excerpt 6.6. Polly's answer about her overall perception towards collaborative work

1	Researcher:	So, after this experience, would you say that you changed your mind about
2		collaborative work?
3	Polly:	I still like individual work
4	Researcher:	[Laughs] Okay. Why, what is the reason you like individual work?
5	Polly:	Not for this group
6	Researcher:	Oh?
7	Polly:	But for another group. They didn't do work, didn't reply to messages, I
8		have to do for them
9	Researcher:	Oh ya, you mentioned earlier
10	Polly:	Ya, and that's also group work
11	Researcher:	Ahh
12	Polly:	And, the mark is divided. But I do the work more than them, I mean...I
13		think, half of the report was done by me.
14	Researcher:	But the grade, later, is it the same for all?
15	Polly:	Ya

(Polly, interview 3)

This finding was similar to a number of previous studies (e.g. Elola & Oskoz, 2010; Strobl, 2014) (refer section 2.6.3) whose learners also professed positive perspective towards their collaborative experiences but remain hesitant about the approach. These group members' answers help to shed some light on the reason for this ambivalent attitude. It seemed that the previous bad experiences with collaborative work that the learners experienced caused them to remain averse to the idea, despite their positive and even successful collaborative experience. This suggests that it is really important for instructors who are looking to implement the approach to be aware of all potential pitfalls, and find ways to reduce or remedy them by educating or preparing the learners adequately. As these comments from learners indicated, this awareness among instructors about implementing an effective collaboration approach, is still severely lacking.

For group F2, the situation was a little different. All the group members, except for Azziz, started with a positive view on collaboration. They mentioned that they found collaboration useful "because by discussion with others we can learn much more" (Amir, interview 1), and "can finish the work faster" (Aidil, interview 1). Only Azziz explained that "I love working alone, because I don't get distracted by other people's ideas, I stick to my own ideas" (Interview 1).

After the collaborative experience during the study, the group members maintained their positive perception of collaborative work, and even Azziz indicated that he had changed his mind (Excerpt 6.7). The group members explained that “working in group is easier” (Hafiz, interview 3), “if I don’t know something, others can teach me” (Aidil, interview 3), and “it’s good when everyone cooperate to do the task” (Amir, interview 3). This was despite the group encountering conflicts and having fewer instances of collaborative interaction than group F1 in their collaboration.

Excerpt 6.7. Azziz’s answer about his changing perception towards collaborative work

1	Researcher:	So at the start of the semester, you said prefer individual work if you can?
2	Azziz:	Yep
3	Researcher:	So now after this experience what do you think about group work? Still
4		neutral?
5	Azziz:	Hmm no, I changed my mind, it’s good
6	Researcher:	Oh, so what’s the best part about group work for you?
7	Azziz:	Jokes
8	Researcher:	Jokes?
9	Azziz:	Mostly from Aidil, he always like to tease me, and Amir too, it’s fun
10	Researcher:	Okay, so you think group work is good because it makes you happy? How
11		about the work?
12	Azziz:	The work? The work is still on, we joke, but work is still on

(Azziz, interview 3)

The contrasting responses from the members of both groups can be attributed to two factors. Firstly, perhaps the learners had different prior experiences of collaborative work, and group F2 members’ previous experiences had been positive, which helped them to retain their positive views on collaboration. Secondly, this can perhaps be traced to how the learners truly perceived the concept of collaborative work and how that affected their preferences with respect to collaborative work. Group F1’s members saw collaboration in terms of working together to complete the task in the most efficient way possible, to meet the requirements and expectations of the task. On the other hand, group F2’s members viewed collaboration in terms of being able to share the workload and learn from each other as well as experiencing enjoyment and camaraderie with their peers. Perhaps because of that, they were able to see beyond the mere completion of the task to the more general purposes and benefits of collaboration and to maintain their positive opinion on collaborative work despite having a less fruitful collaboration than group F1.

Overall, the findings contributed insights into how learners felt about collaborating for an extended period of time and without the presence of instructors, and the things that affected them in their collaboration with their peers. This finding is similar to Storch (2005) and Shehadeh (2011) who both reported on mixed perceptions from their participants about collaborative work. Thus, this study helped to inform in more detail, the reasons why some learners were reluctant to engage in collaborative work. The findings also affirmed the multi-faceted nature of collaboration, where there are many factors that can affect the collaboration process, and that successful collaboration does not necessarily equate to the learners' having a positive perspective about it.

6.3 Computer-mediated collaborative writing groups

For the computer-mediated groups, it was their first experience of this mode of collaboration, and thus their perspectives were especially valuable in contributing insights about this phenomenon. In their interviews, the learners discussed their experiences, and in particular, the benefits and the shortcomings of computer-mediated collaboration. They also discussed their opinions about collaborating in the computer-mediated mode.

In their first interviews, the members from both groups were largely positive about collaborative work, preferring that over individual work. They mentioned being able to "exchange knowledge", as "some members might know something I don't know" (Ashraf, interview 1), "save time and get more ideas" (Kafi, interview 1), "do less work" (Amy & Becky, interview 1) and "learn from others" (Ayu, interview 1). However, the learners also reported the problems they had previously faced when collaborating with their peers, namely time wasting when having to wait for group members who were not punctual or did not attend meetings (Ashraf & Ayu, interview 1), "people who are not hardworking" (Aiman, Amy & Becky, interview 1) or "uncooperative members" (Hassan, interview 1), and having to do "last minute work" when other members did not do their part (Becky & Frida, interview 1).

6.3.1 Strengths of computer-mediated collaboration

After they had been collaborating in the computer-mediated mode for a few weeks, the learners were interviewed about their first impression of the approach. In group C1, all of the group members, aside from Suhail, expressed their enjoyment in using the mode.

Aiman and Kafi stated that Google Docs and Hangout were “easy to use” (interview 1), despite their initial reservations. Hassan said that it was “fun” and it was good that they could “edit at any time”. Lastly, Ashraf elaborated on being able to focus better on the task as compared to his previous experiences of collaborating in the face-to-face mode (Excerpt 6.8).

Excerpt 6.8 Ashraf's explanation about the benefits of computer-mediated collaboration

Researcher:	So you said it's good, what is good about working together online, on Google Docs and Hangout?
Ashraf:	Er, good because when we meet face-to-face we always talk about other things, sometimes do other things
Researcher:	Oh okay
Ashraf:	But like last night we put more focus la, more focus to do the work, no chatting about other stuff. Like when face-to-face, we play with our own phone, and then if we are using a laptop, we watch videos, maybe play some songs
Researcher:	Ahh
Ashraf:	So, more time consuming, but last night, [in CMC mode] it is more specific, just, just do the work. So, more efficient I think

(Ashraf, interview 1)

As for group C2, three of the group members were also positive, while two other members were more cautious. Ayu, Amy and Faye were enthusiastic about collaborating in the computer-mediated mode. Ayu stated that “it's great, I like it because when we typed, it auto-save, so don't have to worry when we work, and we can also use Google Hangout to ask friends” (Interview 1), while for Faye, she liked it because “when we use Google Hangout, it's much better because when we meet to discuss, we always gossip [laughs] and so on. When we use Hangout, the time taken is shorter” (Interview 1). Ayu also mentioned that the group members had started utilising the feature of Google Hangout to have discussions about the task while being physically away from each other (Excerpt 6.9).

Excerpt 6.9. Ayu's answer about the group's use of Google Hangout to discuss task

Ayu:	Yesterday I do the work, my part, but not at hostel, because I have to be in town. Others were in hostel, but we discussed the task together.
Researcher:	Were you able to do that?
Ayu:	Ahh ya. I got Internet connection and try to use Hangout to ask them, then I do my part myself, in town

(Ayu, interview 1)

After the learners had completed the collaborative task, they were interviewed again to find out about their full experiences of collaborating in the computer-mediated mode and whether they had changed their opinion. In this third interview, the group members highlighted some of the benefits of computer-mediated collaboration.

In group C1, Aiman and Ashraf mentioned the sharing feature of Google Docs. Aiman explained that he enjoyed the experience because “Google Docs is shared by whole group, if I do alone, it’s less fun, because we will just use Microsoft Word, in our own computer. With Google Docs, we can work with other people” (Interview 3). For Ashraf, he liked that “we can see the progress of the whole report at the same time, so we can see other group members’ progress, we can know what’s happening, and we can correct errors immediately.” (Interview 3). On the other hand, Hassan and Suhail pointed out that it was “easy to use, and don’t have to meet up somewhere” (Hassan, interview 3) and “still can contact my group members when we are far apart from each other.” (Suhail, interview 3). Finally, Kamil explained that “it was interesting because I learn many things about Google Docs, we get to explore how to use technology to communicate with each other without see face-to-face” (Interview 3).

In group C2, the group members also mentioned several benefits of computer-mediated collaboration. Amy explained that computer-mediated was easier, more convenient and more efficient (Excerpt 6.10).

Excerpt 6.10. Amy’s explanation about her perception towards computer-mediated collaboration

1	Researcher:	Do you like using Google Docs?
2	Amy:	Half-half?
3	Researcher:	Half-half, okay. What’s the good half?
4	Amy:	Umm, how to say, because we are doing group work, so its easy to see who
5		is doing work and who is not, and others can help before we have to
6		submit to the instructor. Also, because the instructor just commented on
7		[Google Docs], so we don’t have to print a lot
8	Researcher:	Ah right. So, the bad half is?
9	Amy:	Internet problem
10	Researcher:	It must have make you feel down, because at first you were excited to try
11		the new technology right
12	Amy:	Not really down, I actually like Google Docs more
13	Researcher:	Oh? Why?
14	Amy:	I don’t like to meet, feel lazy to get ready to go out, have to wear headscarf
15		as well, so I prefer to sit at home in front of the laptop

16	Researcher:	Oh, you don't like to meet and chat with other group members?
17	Amy:	Hmm, if we meet, it's hard to do work, we always gossip [laughs]
18	Researcher:	Ahh
19	Amy:	So, not efficient, and sometimes we meet until late, like midnight, so feel
20		scared to go home

(Amy, interview 3)

Aside from Amy, Frida noted that "it was easy to use, especially for group work, because we can all do it on one document, don't have to copy paste and compile again"

(Interview 3). Ayu expressed the same idea, saying that it was easy to learn and use the technology. For Faye, she stated that it increased the sense of responsibility among the group members to do their work as they were supposed to and compared the experience of her friend who did not use computer-mediated collaboration (Excerpt 6.11).

Excerpt 6.11. Faye's explanation about the benefits of computer-mediated collaboration

1	Faye:	My friend, she complained that only one person does the work, the other
2		just ignore
3	Researcher:	Oh, on Google Docs?
4	Faye:	No, no, from another class, they didn't use Google Docs. My friend
5		complained the group members never take part, then on presentation day
6		only they asked, where's my part?
7	Researcher:	Oh, that's bad
8	Faye:	Ya, my friend was so stressed, so Google Docs is good because we can see
9		whether everyone is doing their work

(Faye, interview 3)

Overall, the participants' sharing summed up several benefits of computer-mediated collaboration. Firstly, the computer-mediated tools are collaborative, and are easy to learn and to use. Secondly, computer-mediated collaboration provided convenience in terms of access, as the learners could discuss and do the task collaboratively without needing to leave their room. Thirdly, computer-mediated collaboration promoted increased focus and work efficiency. Lastly, computer-mediated collaboration provided constant access to every group members' work, which is important for accountability and also security, as the participants can see whether everyone was doing their work or not.

6.3.2 Shortcomings of computer-mediated collaboration

However, as Amy mentioned in her interview, it was “half-half” (line 2, excerpt 6.10). That means that despite the numerous beneficial features of computer-mediated collaboration, there were also a number of shortcomings reported by the participants.

In group C1, Suhail was the group member that had doubts from the start. In his first interview, he said that although Google Docs is “easy to work on”, he felt that ‘they did not work as a team’. He elaborated that it was because everyone was in different places and they just texted each other to discuss, thus there was no real sense of working in a group. Later, in his third interview after completing the collaboration, Suhail elaborated on the lack of interactions in computer-mediated mode and how misunderstanding was more prone to happen due to the lack of paralinguistic cues (Excerpt 6.12).

Excerpt 6.12. Suhail’s elaborations on the shortcoming of computer-mediated collaboration

1	Suhail:	Interaction in computer-mediated mode is less and more difficult
2	Researcher:	Oh?
3	Suhail:	If someone ask some questions, 1 or 2 questions, then maybe first
4		question will get the answer and then the other group members will just
5		keep silent.
6	Researcher:	Why is that?
7	Suhail:	Because there is an answer already, when face to face maybe we can say
8		like everybody have ideas, they can give, it’s easier to speak than type, but
9		in CMC mode when someone gives the answer, then I think it’s okay, that’s
10		the answer already, and I feel too lazy to type, I don’t know, I feel face to
11		face we can talk directly, just sitting like this, and people don’t get angry
12	Researcher:	Oh?
13	Suhail:	Sometimes people don’t understand what we want to say because we just
14		type, so maybe people will think other meaning from what we are trying
15		to do
16	Researcher:	Ah, misunderstanding happen
17	Suhail:	Ya, misunderstanding will happen. If we are face to face when we talk, we
18		have the tone of our voice and facial expression so people will understand
19		more what we want to tell them and ask them

(Suhail, interview 3)

Suhail also, as well as Hassan and Kafi, raised the issue of the Internet connection, especially in their hostel, which was weak and unreliable at times. Kafi stated that sometimes he had to go online “after midnight, because less people are using at that time” or “use my own data” in order to do the task. In addition, Ashraf mentioned that

sometimes “there is misunderstanding because some group members were not fluent in English, but they want to practice, so sometimes I get what they want to say, sometimes I don’t get what they want to say.” (Interview 2). Another complaint raised by Hassan and Ashraf was the difficulties in creating graphs and tables on Google Docs. Hence, it was easier to “do the task on Microsoft Word first, then copy paste to Google Docs” (Hassan, interview 3). This explained the finding of the group members observed inserting chunks of texts into their Google Docs page, rather than composing it word by word on the page.

In group C2, the group members had more to say about the shortcomings of computer-mediated collaboration. Similar to group C1, the main complaint of the group members was the weak and unreliable Internet connection in their hostel which made doing the task challenging. However, the group members explained that they tried to overcome the obstacle by taking “bus to university library, because Internet there is stronger” (Frida, interview 3) and by working “in campus, when we have two hours gap before next class” (Amy, interview 3). Besides Internet connection, Becky also pointed out the difficulties of understanding each other when they were discussing the task (Excerpt 6.13).

Excerpt 6.13. Becky’s answer about the disadvantages of computer-mediated collaboration

1	Researcher:	Now about the disadvantage of CMC mode. Anything that you don’t like
2		about Google Docs and Hangout?
3	Becky:	Hmm, misunderstanding easy to happen
4	Researcher:	Oh?
5	Becky:	Ya, that was the biggest problem I had
6	Researcher:	I see, so Google Hangout is not clear enough? Cannot replace face to face?
7	Becky:	Em cannot, I don’t know because I think talking is better
8	Researcher:	Oh okay. So typing is tiring?
9	Becky:	Not because of tiring but...sometimes the information is not clear.. and, I
10		don’t really understand
11	Researcher:	Why is that you think?
12	Becky:	Maybe because I’m the type of...who is, uh who will understand better if I
13		talk face-to-face.

(Becky, interview 3)

Elaborating further, Becky explained said that it was more difficult to receive information in the CMC mode. Thus, for her, it could not replace face-to-face interaction. A similar point was also raised by Ayu. She explained that discussing the task with other

group members was difficult because “sometimes they don’t understand, but they said okay” (Ayu, interview 3). Eventually, she had to meet other group members face to face to clarify and discuss the task. This perhaps accounted for why there was a lack of depth and detail in the group members’ discussion during the collaboration (point discussed previously in section 5.3.2).

In general, both groups of learners mentioned similar shortcomings of computer-mediated collaboration that they faced when doing the task. The first shortcoming was the weak Internet access which hampered their efforts to collaborate with each other. The second shortcoming was the inclination for misunderstandings to happen, due to textual nature of communication and the lack of paralinguistic cues.

6.3.3 Overall preferences

In their final interviews, one of the last questions presented to the participants was now that they had experienced collaboration in both modes, what were their preferences now when doing collaborative work. In group C1, interestingly, the more proficient group members, i.e. Hassan and Ashraf, preferred computer-mediated collaboration while Aiman, Kafi and Suhail all stated that they preferred face-to-face collaboration. Hassan’s reasons were convenience and comfort, as he said that “I don’t have to meet people or wait for people, I can just do my work whenever I want” (interview 3). As for Ashraf, he said that Google Docs was suitable for report writing due to its shared access feature that can show every group members’ progress and allow for peer editing. On the other hand, Aiman, Kafi and Suhail preferred interactions with group members in the face-to-face mode. Aiman stated that “it’s easier to understand when we talk face-to-face, and I can ask for help, and they will help me” (Interview 3) while Kafi thought that computer-mediated collaboration would be good “if we stay far away from each other, but if not, of course face-to-face is easier.” (Interview 3).

Ultimately, Hassan said that in his opinion, the attitude of the learners is a more defining factor than the mode of collaboration in determining a successful collaboration. He believes that computer-mediated collaboration is feasible and he discussed the attitude of one of his group members to explain his point (Excerpt 6.13).

Excerpt 6.14. Hassan's explanations about important factors that determined the success of collaboration besides the mode of collaboration

- 1 Researcher: So Internet connection was the most important ya?
 2 Hassan: Actually, not really, it all depends on our attitude, because this is the
 3 modern world, everywhere we can get Internet, even in hostel, just
 4 sometimes good sometimes slow, and then in campus library, there's fast
 5 Internet, but in my observation, like when we go to library and there's Wi-
 6 Fi, but we don't use it to do our assignment
 7 Researcher: Oh
 8 Hassan: Ya, there is a member of our group keep saying he has no Internet
 9 connection, but I observed, because we got Twitter right, that that
 10 someone is in love, I mean he got a girlfriend
 11 Researcher: Ah, okay
 12 Hassan: Twitter needs to use Internet [laughs]
 13 Researcher: Ya
 14 Hassan: So I didn't see him, on Google Docs we can see history right? I didn't see
 15 his name, but then I see him on other places like Twitter, like something
 16 else that uses the Internet
 17 Researcher: I see
 18 Hassan: And then we go to library, because we have long gap between classes, on
 19 Tuesday, but then he didn't use the chance, the Internet wifi, to do the
 20 report
 21 Researcher: Ahh, so you think it's the commitment level?
 22 Hassan: Erm, it's someone take it for granted, so nothing wrong with the
 23 application, it's the attitude of people

(Hassan, interview 3)

This was an interesting insight about the extent of online presence and how visible and traceable it is. To the extent of my knowledge, this has not been discussed before in the literature and this added a new dimension to the approach of computer-mediated collaboration, especially in terms of issues of accountability and responsibility.

In group C2, there were also mixed reactions from the group members. Amy, Faye and Frida acknowledged the benefits of computer-mediated collaboration and they want to try it again. Amy stated that it was because "we can see everyone's work, and we can just discuss, do the task, compile and send" and "the quality of work is better on Google Docs because we can get feedback from each other, check each other's work" (Interview 3). Faye elaborated on the convenience of 'working on my own bed, no need to go out for discussion and take long time' (Interview 3) while Frida said that computer-mediated collaboration was "more fun" and "can learn when other people give feedback" (Interview 3), although she did stress that the Internet connection must be good as well.

However, for Ayu and Becky, their preference was face-to-face collaboration because “can discuss more detailed and get more ideas” (Ayu, interview 3) and “clearer communication” (Becky, interview 3). The group members elaborated that it was easier to understand each other and work better when seeing each other face-to-face.

The mixed responses from the participants indicated the complexities of the computer-mediated approach, where there are many factors that can play a part in shaping the learners' experiences. Perhaps proficiency is one factor, or perhaps another factor, which was mentioned often by the participants themselves, was their tendency to do last minute work. Nevertheless, a number of benefits and shortcomings of computer-mediated collaboration were noted by the participants, which will be informative for instructors looking to implement the approach.

6.4 Chapter summary

This chapter has discussed the participants' perspectives about their experiences of collaborating in both modes of collaboration. It has illuminated the various considerations that different participants had, which helps to deepen understanding of the collaboration approach in both modes as well as corroborating the findings in the previous two chapters. In the next chapter, all the findings will be discussed comparatively to elucidate clearer understanding of out-of-class face-to-face and computer-mediated collaborative writing in the second language context.

Chapter 7. Comparative discussion of face-to-face and computer-mediated collaborative writing

7.1 Introduction

In previous chapters, I have discussed the processes and participants' perspectives on collaborating out-of-class in the face-to-face (F2F) and computer-mediated (CMC) modes. The findings revealed some similarities as well as differences in the ways the participants collaborated throughout the semester to complete the writing task. In this chapter, I will compare the findings between the two modes of collaboration to illuminate the extent of the influence of each mode on the learners' collaboration. Additionally, I will discuss other factors that played a part in shaping the learners' collaboration.

The findings showed that all the groups from both modes exhibited several features that were paramount in collaboration. However, a closer look revealed disparity in terms of detail, depth and extent of the features, as discussed below.

7.2 Contribution of group members

The first feature is the contribution of group members, which is the most important aspect in collaborative work, as the contributions from each group member will determine the success or failure of a collaboration. It was also the main concern of the majority of the learners (as discussed in section 6.2.1). Contribution here refers to the effort invested by the learners, both in participating in task discussion as well as producing the writing task. The findings showed that both face-to-face groups and group C2 of computer-mediated mode had fairly equal contributions from all group members. Group C1 was the only exception, with two of the group members contributing much more than the other three members (as discussed in section 5.2.1).

The main reason for group C1's unequal contributions was the group members' differing attitude in doing the task. However, the CMC mode also contributed to the cause. Its detached nature, with the group members not seeing each other physically, made it easier for some group members to shirk their responsibilities by going offline, and also made it more difficult for some group members to seek help when doing the task. This result supports Arnold, Ducate and Kost's (2012) observation that while the distributed

nature of CMC tools could be a big advantage for learners to work in the time and space of their convenience, the distance it creates could also allow for learner anonymity and shirking of responsibilities.

In addition, the F2F groups often held lengthier, more detailed discussion of tasks. All the group members would participate: contributing their ideas, asking questions, challenging and negotiating with each other. In contrast, the CMC groups mostly had shorter and more straightforward interactions, between a few but not all of the members. The reasons for this can be attributed to the immediacy and presence of face-to-face interactions. The group members could see each other and rely on paralinguistic cues to gauge their true reactions, which made it easier for them to express themselves without having to worry about offending other group members. The CMC groups' members also addressed this issue in their interviews, as reported in Chapter 6. They noted that one of their concerns was miscommunication with other group members as there were occasions where they could not comprehend each other. This may have been the reason the group members were reluctant to engage in more detailed discussion or negotiation of task. Since they could not be certain of the feelings and thoughts of other group members, they ran the risk of misunderstanding each other which had the potential to jeopardise the task outcome and also their relationship with each other. Moreover, oral interactions often involve less physical effort, a point made by some of the CMC groups' members themselves, which may also contribute to the more detailed and extensive discussion of task for the F2F groups.

This finding supports Rouhshad et al. (2015) who found substantially more negotiation of meaning and form between the learners in the F2F mode as compared to synchronous computer-mediated communication (SCMC) mode. The researchers credited the textual nature of the SCMC, which means the learners could just scroll up to read previous messages rather than having to ask again. However, in revealing the difficulty of understanding, this study provides an alternative explanation as to why participants contributed less when collaborating in the CMC mode. The lack of paralinguistic cues has also been mentioned by another study, Kim (2014), as the reason why the participants provided less assistance in the SCMC mode as compared to when they were collaborating in the F2F mode. Kim (2014) speculated that the participants did not offer help because they were not aware that their partner required help as they could not see

each other. The present study confirms that the lack of paralinguistic cues also made the participants reluctant to engage in discussion with each other.

7.3 Co-construction of task

The second feature that is essential in collaboration is the co-construction of the task by the group members. When co-constructing the task, the participants pool their knowledge, engage with and build on each other's ideas, which leads to an enhanced collective understanding about task and knowledge, as well as better written outcome (Storch, 2005; Storch & Wigglesworth, 2007; Wigglesworth & Storch, 2009; Shehadeh, 2011). This meant that one of the main purposes of collaboration, where learners share expertise and create new knowledge, was achieved. In this study, co-construction of task was observed in both modes of collaboration. However, there were fewer occurrences, and different ways of co-construction of task in the CMC groups.

Co-construction of task, especially in terms of content, was prominent in both F2F groups. In their meetings, the group members had long discussions, where all members contributed ideas, agreed and disagreed, and negotiated extensively to obtain consensus. Besides content, the group members also co-constructed their collective understanding about various aspects of the task, such as in terms of the structure, format and the appropriate genre conventions required of the task.

On the other hand, instead of discussing the task, the CMC groups' members directly co-constructed the task on Google Docs itself by continuing writing the section written partly by other group members (e.g. Figure 5.8), or extensively revised the work of another group member. Another way of proceeding was for the group members who were physically away from each other to combine their efforts via the synchronous WhatsApp chat, to construct the task. As Excerpt 5.4 showed, Ashraf who was away from his laptop, texted his ideas to Hassan who proceeded to translate and type the text out on Google Docs, and vice-versa.

This finding demonstrated how the participants adapted their way of collaborating in regard to their circumstances and reiterated the importance of physical presence of group members in the same place, and the convenience of oral interactions. As observed, these conditions prompted more instances of pooling of knowledge and building on each other's ideas in the F2F groups. In contrast, the group members in the CMC mode

utilised the shared access to Google Docs to directly build on other group members' ideas and made changes to other group members' work. They also took advantage of the convenience and synchronicity of the WhatsApp chat, downloaded on their mobile phones, to pool their resources to do the task while they were physically away from each other. This provides new insights into the little-explored area of computer-mediated collaboration process.

Many studies that have investigated computer-mediated collaborative writing, have preferred to focus on learners' revision process (e.g. Arnold, Ducate, & Kost, 2009; Kessler, 2009; Kost, 2011; Lee, 2010), rather than the task construction. The reason for this may be due to the asynchronous nature of Wiki, the main tool used in many of the studies, which may not encourage co-construction of task among the learners.

Only Li and Zhu (2013) and Li and Kim (2016), who researched patterns of interaction in computer-mediated collaborative writing, have investigated learners' co-construction of the task as part of the research they did. Both studies found that co-construction of task and engagement with each other's ideas could happen in correlation with collaborative patterns of interaction, but the researchers did not provide further detail on how learners co-constructed task in the CMC mode.

Overall, this finding of differences in learners' co-construction of the task in different modes shares some similarities with Chamberlain (2010) and Tan, Wigglesworth and Storch (2010) who both reported that their participants changed from working *collaboratively* in the F2F mode to working *cooperatively*, where they divided the task and focused only on their parts, in the CMC mode. Chamberlain's (2010) participants mentioned the difficulties of discussing the task in the CMC mode, as well as the time limit, while Tan et al. (2010) cited the learners' prior experiences and familiarity with CMC tools as the reason. In the present study, the participants provided more detailed insights into the reasons why. As we have seen, and it bears repeating, the participants talked about the tendency for misunderstanding due to the lack of paralinguistic cues like facial expressions and voice tone (Suhail, group C1); they also mentioned the lack of clarity due to the mediational effects of the CMC mode, which caused difficulties in fully understanding the explanations provided by other group members (Becky, group C2); another issue mentioned was reluctance to spend time typing long elaborations, as compared to the convenience of verbal interactions (Suhail & Ashraf, group C1).

7.4 Peer assistance and feedback

The third feature that is crucial in collaboration is the assistance and feedback provided by the group members to each other. From the perspective of sociocultural theory, which this study is anchored upon, peer assistance is essential in collaboration (Barnard & Campbell 2005) because it is from their peers and people around them, that learners receive assistance to complete a task that they could not do by themselves, and garner information and knowledge which they then internalise as their own.

The findings showed that the nature of peer assistance differed in the collaboration process of the two modes. In the F2F groups, it was a prominent feature. The group members frequently sought and received help from each other in many aspects of the task. This ranged from minor corrections and provision of spellings of words and grammar, to negotiation and explanations of terms and concepts, to translations of phrases from English to their shared L1 to aid the understanding of their group members. In group F2, although Amir provided most of the assistance due to his superior proficiency in English, there were occasions where other group members were also able to collectively help each other (e.g. Excerpt 4.21). Moreover, in some instances, the group members' assistance led to the construction of personal understanding for individual group members (e.g. Excerpt 4.5). These instances of peer and collective scaffolding (Donato, 1994), were instrumental in the group members' successful completion of the collaborative task.

However, in the CMC groups, there were fewer requests and offers of help among the group members, and there were also instances where the group members sought but failed to receive help from other group members. Unlike their F2F counterparts, the CMC group members generally had short exchanges and only with one or two group members, with little follow-up questions or participation from other group members. The group members would also ask their peers to refer to external resources, such as reading the textbook or look up information on the Internet.

Instead, what was prominent for both of the CMC groups was the many occurrences of direct feedback given by the group members to their peers' work on Google Docs. Interestingly, most of the group members, even members with low proficiency, were involved in at least one instance of editing their peers' work. The editing ranged from minor aspects like correction of spelling, vocabulary, and grammar to wholesale changes

of the entire sections as Hassan did (Figure 5.2). The group members themselves were encouraging of peer editing, where they explicitly requested feedback and editing from their group members in their synchronous chat (e.g. Excerpt 5.5). In their interviews, the participants also stated that they liked the shared access feature provided by the CMC mode. They explained that they were happy that other group members could read their work, as it made them feel their contribution was valued, and they contrasted this with their previous experiences of F2F collaboration, where the group members just compiled their work and submitted it without reading each other's work (Frida, C2). Moreover, they welcomed peer editing as it helped improve the written outcome, which they believed had the potential to translate to a better grade for them (Amy, C2).

This finding provided clear illustration of the different affordances and constraints of each mode of collaborative work. In face-to-face collaboration, the immediacy and physical presence of all the group members at the same time and place allowed for extensive, collective and in-depth scaffolding by the group members via verbal interactions. However, there was no reading or direct editing of each other's work, which remained the personal responsibility of individual group members. Only at the end, one of the group members would be responsible for compiling the task into one text and checking for language mistakes. On the other hand, in computer-mediated collaboration, the interactional scaffolding was both less frequent and less in-depth, and there were also several failed attempts at seeking help, presumably because other group members were not online at the same time. However, the shared access to the task allowed the participants to read each other's work and this encouraged a different form of scaffolding, which is direct editing of each other's work. Further, most of the group members, regardless of language ability, were able to contribute to that, which is an encouraging prospect in collaborative work.

This finding contributes to the literature in several ways. The F2F groups showed firstly, that collective scaffolding could also take place in out-of-class collaboration, where there was minimal instructor supervision, and regardless of the participants' proficiency. This affirmed the notion of collective scaffolding, which was first proposed by Donato (1994) and has been considerably discussed in the literature, but mostly in in-class context. Secondly, this adds support to the literature on out-of-class language learning, which has been identified as an important context of learning due to its various positive effects and potential for learners (Benson, 2011; Richards, 2015). The F2F participants

demonstrated that when there was no presence of an instructor, they had the agency and autonomy to do the task and assist their group members, on their own accord. Existing studies have mentioned the shifting from teacher to learner-centred learning in collaboration, but mainly in computer-mediated modes (Blake, 2006). This study shows that it is also possible in conventional F2F collaboration.

For the CMC groups, firstly, the finding corresponds with a number of studies that have also reported considerable peer revision among learners who carried out computer-mediated collaborative writing (Arnold et al., 2012; Kost, 2011; Kessler, Bikowski & Boggs, 2012). However, no studies have attempted to reason why peer revision was frequent in the CMC mode. Thus, this study provides a clearer understanding not only of the unique way the participants collaborated in the CMC mode, but also of how the mode plays a part in shaping the participants' collaboration process. Secondly, the peer editing happened throughout the duration of the task, which as Elola and Oskoz (2010) established, is an indication that the group members regularly read their peers' work. The majority of the peer editing was related to language, and it was mostly correct. This was similar to Kessler et al.'s (2012) findings, and points to the benefit of peer editing in increasing the quality of the written outcome. Lastly, the group members being able to read the whole task and edit different parts of the task, reflected a stronger sense of shared ownership, where the contributions and responsibilities of the group members were no longer as distinguishable as was the case in the documents of their F2F counterparts. This notion concurs with Kessler et al. (2012) who suggested that computer-mediated collaborative writing could redefine learners' ideas of authorship from individual to collective. This is an important issue, as Spigelman (2000) has suggested that willingness to share authorship is a crucial factor of success in collaborative writing.

Nevertheless, the different nature of peer assistance presented by the learners collaborating in different modes raised the question of whether the different types of peer assistance carry the same effects and benefits to the learners' collaboration process. From the perspective of sociocultural theory that governs this study, the concept of scaffolding was definitely present in the F2F groups, where learners worked together, shared ideas and pooled their knowledge to complete the task that they otherwise could not have completed it individually (Mirzaei & Eslami, 2015). However, for the CMC groups, while the direct peer editing definitely improved the quality of the

written outcome, the question remains whether the learners whose work was edited, were aware of or benefited from the changes made to their work. Thus, in the view of sociocultural theory, perhaps scaffolding is present in the F2F collaboration, but not in the computer-mediated collaboration. As such, this suggests another advantage of F2F collaboration as compared to the CMC mode.

7.5 Learners' pattern of interactions

The fourth important aspect in collaboration concerns the groups' pattern of interactions, which has been a major focus in research on collaborative writing in the L2 context. According to Storch (2002), the overall pattern of learners' collaboration could be determined by looking at their contribution and control of the task (equality), and the level of their engagement with each other's contribution (mutuality).

As my findings showed, I have determined that both of the F2F groups had patterns of interactions that were considered collaborative (see discussion in section 4.2.1 and 4.3.1). As per Storch's categorisations, group F1 had a collaborative pattern of interactions, where both equality and mutuality were high as all the group members contributed their parts and were also engaged in each other's work. The pattern of group F2 was expert/novice, as Amir who was the expert, guided and assisted his group members to do the task. He did not, however, dominate the task. Instead, he solicited other group members' ideas and discussed the task together with them. Thus, although equality was not high, as Amir had more control of the task, mutuality was high because most of the group members were involved in the discussion of the task and were engaged with the task.

For the CMC groups, the patterns observed in both groups did not fit into any existing patterns found by Storch (2002) or by Li (2012) who investigated patterns of interaction in computer-mediated collaborative writing. Thus, this study proposed two new patterns of interaction, especially for the context of computer-mediated collaborative writing. For group C1, the equality was low as the contributions were very unequal between the group members. The mutuality was also moderately low, because the group members did not engage much in the task and with each other's work except for Hassan and Ashraf. However, Storch's classification of low equality and mutuality was the Dominant/passive pattern which was not the case in group C1, as Hassan played

a prominent role as a leader. Instead, the reason for low mutuality was because other group members were lackadaisical and reliant on him. Thus, a more appropriate pattern for group C1, would be leader/loafer.

In group C2, equality was high as all group members contributed their parts and had control of the task. However, mutuality was moderately low because they did not discuss much or engage in-depth with each other's work. Rather, the general pattern is that they worked in parallel towards achieving a collective goal. In Storch's classification, the high equality and low mutuality pattern of interaction was dominant/dominant, but that was not the case here, as no group members dominated the collaboration. In this case, a more accurate description of the group's pattern of interaction would be cooperative. Figure 7.1 below shows where the groups belong within the framework created by Storch (2002).

Figure 7.1. The groups' pattern of interactions in relation to Storch's framework

The findings of the F2F groups reinforce the notion proposed by some researchers (Edstrom, 2015; Storch & Aldosari, 2013; Watanabe, 2008) that pattern of interaction is more significant than other factors such as proficiency level in determining the success of collaborative writing. Group F1 members' English proficiency was intermediate, while in Group F2, there was a significant disparity in terms of proficiency levels between the group members. Nevertheless, everyone participated and contributed their ideas and efforts to the task. This showed that it was the way the participants carried out collaboration that was more likely to determine the success of it.

The CMC groups' findings expand the existing framework of patterns of interaction for computer-mediated collaboration. Moreover, it further illuminated the effects of the CMC mode in shaping the participants' patterns of interactions. In group C1, the lack of physical presence made it easier for the group members to shirk their responsibilities and made it harder for other group members to seek help, thus exacerbating the lack of equality and mutuality among the group members. In group C2, the detached nature of CMC mode, with its textual nature and lack of paralinguistic cues, put the group members off having detailed discussion about the task, thus contributing to the cooperative pattern of the group. This may have been the reason why both groups displayed patterns of interaction that did not exist in the initial classifications generated by other researchers.

Li (2013) carried out a follow-up study to her prior study (2012) which focused on only one computer-mediated collaborative writing group that had a collaborative pattern of interaction. The researcher reported that the group members' collaborative attitudes was the contributing factors to the group's success. However, in this study, the attitude of group C2's members were generally collaborative. Nevertheless, they remain hindered by the constraint of the computer-mediated mode, which again pointed to the significant impact of the mode on the participants' way of collaborating with each other.

7.6 Collaborative awareness of task

The fifth aspect important in the participants' collaboration is their display of collaborative awareness when doing the task. This was especially crucial in this collaboration due to the nature and genre requirement of the task. The proposal report task consisted of 8 interlinked sections where each required information from other sections. Furthermore, the expectations of the proposal report were standardization and uniformity of format and organisation, as well as written coherence and cohesiveness.

The extended and expanded nature of task meant that all the groups divided the work to do individually. Nevertheless, collaborative awareness of task was observed in group F1 and group C2 but manifested in different ways. In group F1, the group members had very detailed discussion about organisation and formatting of the task, even down to minute details such as font size and spacing to ensure that everyone's work was aligned and uniform. On the other hand, in group C2, there was not much discussion, as the

group members could see and access each other's work. Therefore, the group members observed other group members' parts and made changes to their own parts accordingly to make sure the format and structure of task was aligned. On other occasions, the group members revised other group members' parts to match their own parts. Additionally, being able to see each other's work allowed the group members to make more detailed changes, such as the specific terms used and the sentence structure of writing to ensure uniformity and coherence.

The finding is important as this issue of learners' collaborative awareness in collaboration, to the extent of my knowledge, has not been discussed before in the literature. This finding may help to explain Wang's (2014) finding that learners who collaborated on Wiki performed better in terms of organization of text as compared to learners in F2F mode. Thus, this finding again illustrates the effect of the mode of collaboration on the learners' way of collaborating with each other.

7.7 Conflict

The sixth important aspect in learners' collaboration is the possibility of conflict. Researchers have identified two types of conflict that can happen during collaboration (Tocalli-Beller, 2003; Pathinathan & Yong, 2012). Cognitive conflicts revolve around the task and can lead to knowledge construction (Nykopp et al., 2014), bringing benefits to the learners. On the other hand, affective conflicts happen when personal issues became involved and this type of conflict can jeopardise the collaboration process and outcome.

In this study, cognitive conflict was observed in group F1, while group F2 and C1 both experienced affective conflict. This showed that affective conflict can happen in both modes of collaboration. In group F1, the group members were involved in many disagreements and negotiations about the task, but they were able to resolve them amicably without making it personal. As a result, they were able to come up with better ideas, enhance their own understanding, and produce better written outcomes (see discussion in section 4.2.1). While the group members' attitude was commendable, it was also noted that the F2F mode was conducive to cognitive conflicts. The physical presence and immediacy of F2F mode, and verbal interactions, allowed for disagreeing, debating and clarifying of ideas as the participants could see each other and did not have to use too much effort when voicing their opinions.

For group F2, ironically, the affective conflict occurred because one of the group members could not meet face-to-face. Azwan, who lived away from the other four group members, rarely came to group meetings as he did not want to make the effort to attend. Instead, he had short meetings with them in class and relied on the mobile app, WhatsApp, to communicate with other group members about the task. Although the group members resolved the conflict and did not mention it, except Azziz, they did stress that for future collaborations, they would choose group members who lived nearby and who could meet face-to-face to discuss the task. In a way, this emphasized the importance of face-to-face interactions for the group members, which is irreplaceable by synchronous online chat.

As for group C1, the affective conflict occurred due to the lackadaisical attitude of some group members, particularly Suhail, who chose to prioritise his personal activities over the collective task. However, the CMC mode enabled him further as he just went offline and did not do what he was assigned to do. The shared access of the task meant that other group members could see the task progress and eventually Hassan had to take responsibility and do Suhail's parts as the task was graded collectively. Additionally, Suhail gave the excuse that he had Internet problems and could not do the task, but Hassan was aware that Suhail was not telling the truth because he could track Suhail's non-task-related online presence from his social media postings. All these issues created personal conflict between the group members, although they were able to resolve the conflict later on and resume their friendship. Interestingly however, this finding revealed another affordance of computer-mediated mode for collaboration that has not been discussed before, which is the ability to track learners' online presence and thus attempt to hold them more accountable for their contribution to the task.

7.8 Learners' attention to language

The seventh important feature in collaboration is learners' attention to language. Learners' attention to language and its implication for language learning has received considerable attention from researchers studying collaborative writing in the L2 context. However, most of the studies have centred on short, in-class tasks that were oriented for language learning. In this study, the main purpose of task was for the participants to identify and apply the appropriate genre format and conventions. Language learning was a secondary purpose. Nevertheless, it is illuminating to consider

how much attention the participants placed on language when they were collaborating in both the face-to-face and computer-mediated modes.

The findings showed that in total, group F1 recorded 61 language-related episodes (LREs), group F2 had 10 LREs, while for the CMC groups, group C1 had 32 LREs and group C2 recorded 16 LREs. Both F2F groups had lexis-based LREs as the highest category and form-based LREs as the lowest category, while for group C1, the highest category was form-based LREs, and for group C2, the highest category was discourse based LREs. Both CMC groups had translation-based LREs as the lowest category, with only one episode of LRE in group C1 and none in group C2.

This finding concurred with the findings of other features discussed in the previous sections. Once again, the influence of the mode of collaboration was visible. As mentioned, the F2F groups had extensive discussion and co-constructed the task together, hence the group members focused more on finding the appropriate words and terms to convey their ideas and to use in the task. In contrast, it was more difficult to discuss grammar because individual group members were still in charge of their respective parts of the task, thus other group members would not know whether there were errors or difficulties unless it was brought to the discussion. Even when the group members co-constructed the task, Annie was the scribe and she was proficient enough in writing the task that she only required help occasionally.

For the CMC groups, the shared access allowed the group members time and space to read their peers' work in detail, and that prompted more detailed editing of language, such as structural and sentence level editing. As a result, there were sentence level editing of grammar, changing the tenses, adding prepositions, etc. They were also able to make changes to the format and structure of the task. In contrast, the detached, textual nature of the CMC mode caused them to interact with each other less, and hence there were hardly any occurrences of translation-based LREs.

Besides the differences in language focus, another difference between the groups in both modes of collaboration is the nature of their attention to language. The F2F groups had many episodes of 'linguaging', where they used language to discuss about language, as they were physically together most of the time when they discussed the task. As a result, all group members, even those who did not participate in the discussion, could perhaps reap the benefits of linguaging (Fernández Dobao, 2016). In contrast, although the CMC

groups were sometimes online at the same time, the group members did not engage much in 'languaging'. Instead, most of the group members were involved in peer editing. While peer editing may bring some benefits to the group members who edited their peers' work, as it may affirm and consolidate their personal understanding, the group members' whose work was edited may not be aware of the editing and thus is unlikely to learn anything. As such, this may well be a downside of computer-mediated collaboration.

Overall, this finding contributes more insights about learners' attention to language. Existing studies had reported on three factors that could affect learners' production of LREs during collaboration: task types, learners' proficiency level, and learners' nature of interaction (Storch, 2011). Now, this study adds support to Rouhshad and Storch's (2016) discovery that the mode of collaboration could also have an impact on how and what aspect of language learners focused on during collaboration.

7.9 Roles of group members

Lastly, another aspect of the findings that was significant concerned the different roles taken by the group members during the collaboration process. The role of leader was prominent in all four groups, although the nature of the role was different in each group.

This finding suggests the importance of the roles taken on by individual group members during collaboration with their peers. Each of the role took on by the group members was crucial to the success of their respective groups, regardless of the mode of collaboration.

It was interesting to note that the group members were not taught or briefed about the types of roles in collaboration, and thus, appeared to be, when they perhaps observed that there was a need for certain action to be taken in managing the collaboration process. In some situations, such as group F2 and group C2, the leadership role was displayed by the group members who were not the appointed leaders.

In this study, it appeared that the extended, out-of-class nature of the collaboration, without the presence of an instructor, perhaps evoked the need as well as provided the time for the group members to develop and perform certain roles that are perceived by them to be necessary for the success of the collaboration. However, further investigation

should be carried out to find out how learners develop the specific roles that they take on, and the extent of the impact of the roles they perform towards the success of the collaboration.

7.10 Other factors affecting collaboration

Although the mode of collaboration is crucial to the learners' collaboration, there were also a few of other factors that were influential. The first and main factor was the attitude of the group members. Comparing between both CMC groups, it was obvious that the main reason for the differences in collaboration features was the members' attitudes. For group C1, some of the members were not committed and not serious about doing the task. They put personal goals above the collective goal and they were reliant on their group leader to remind and even help them to do the task. As a result, affective conflict occurred between the group members, as well as unequal contributions, where two out of the five group members did most parts of the task.

On the contrary, group C2 members were all oriented towards the task. They were responsible, taking turns to remind each other to discuss or do the task, even when they were away for the semester break. Furthermore, the group members had no problem putting aside their personal expectations to fulfil the collective goal. When negotiating the task, the group members were quick to offer their involvement and happy to compromise personal wishes to ensure that the collaboration process could proceed smoothly. This finding, then, agrees with previous studies (Fernández Dobao, 2012b; Storch, 2004; Yu, 2015) which concluded that learners' orientation towards the task and their perceived goals, which are shaped by their attitudes, beliefs and previous learning experiences, are essential factors that influence collaboration.

The second factor that was observed to be influential was the disparity in English proficiency level of the group members. This was particularly evident in group C1. Aiman tried his best to participate and contribute to the group's collaboration process, but was hampered by his lack of proficiency which made him struggle to understand task instructions and to do his part of the task. In addition, the detached nature of the computer-mediated mode made it difficult for him to seek and receive assistance. As a result, he could not provide good contributions to the task despite his best efforts. In contrast, his other group members who were more proficient, namely Hassan and

Ashraf had no problem discussing and co-constructing the task using Google Docs and Hangout. Further, they relished the convenience of time and space that computer-mediated collaboration brings and both Hassan and Ashraf stated that they enjoyed collaborating in the computer-mediated mode.

This finding offers some indications about the link between proficiency and mode of collaboration. It seems that computer-mediated collaboration is suited for learners with reasonable proficiency levels as they could have the flexibility of working by themselves on the task and the ability to discuss the task with other group members online when the need arises. However, for lower proficiency learners, the physical presence and close proximity of other group members are important in helping them to navigate the collaboration task and process.

Interestingly, this insight contradicts several studies that have reported on the equaliser effect of the computer-mediated mode in collaborative writing, especially for learners who are less proficient or more introverted (Chew & Ng, 2016, Tan, Wigglesworth, & Storch, 2010; Warschauer, 1995). Those studies compared the F2F and SCMC mode and they found that low-proficiency students, as well as introverted students could participate and engage more in the collaboration in the CMC mode. The finding of this study suggests otherwise. Therefore, this finding raises an alternative line of thought for educators who are looking to implement the collaborative approach.

Lastly, another notable factor that affected the learners' collaboration was the number of group members. This was particularly evident in the F2F groups. It was observed that having five group members allowed the participants to generate more ideas, have extensive negotiations about the task, as well as provide and receive more assistance from each other. Additionally, when one or two group members went off-task during discussions and talked about other things, the other three members could remain focused on discussing the task and eventually the other group members were drawn back into the discussion. This showcased the additional benefits of having larger groups of learners in collaboration, especially for extended, out-of-class tasks where learners have more time to discuss the task, all group members would have equal opportunity to contribute, and instructors' presence would be minimal. The issue of deciding the number of group members is an important consideration for instructors when implementing collaborative work (Storch, 2017). Literature has found that having large

groups such as the whole class is not conducive to collaboration as it allows many learners to shirk their responsibilities (Kessler & Bikowski, 2010). Yet, if smaller groups are the answer, then the question of how small should the group be remains. Many collaborative writing studies have preferred to employ either pairs or trios (Storch, 2017). However, the findings of this study echoed Fernández Dobao's (2012b, 2014) findings that a larger number of group members is better for collaboration as the learners could draw on more linguistic resources to complete the task. Fernández Dobao (2016)'s subsequent study found that even group members who did not participate much in the discussion, could benefit from the collaboration process just by listening in. Thus, the finding of this study contributes further insights onto the benefits of having more members in the group when doing collaborative writing.

7.11 Conclusion

The comparative discussion of the collaborative features exhibited by the groups from both modes have illuminated how the mode of collaboration affected the participants' collaboration process. Face-to-face collaboration encouraged extensive and detailed discussion of task, offered more peer support, and allowed for participants to take on more defining roles that helped to enhance the collaboration. On the other hand, computer-mediated collaboration seems to redefine the traditional conception of collaboration, which has always emphasised joint construction of tasks (Storch, 2005). The lack of paralinguistic cues created a barrier against detailed discussion and against constructing the task together. However, the shared access provided the means for direct peer editing, which can be seen as a different type of co-construction of task. Both modes of collaboration have their own affordances and constraints, and side-by-side comparison helped to elucidate the details. This will provide invaluable insights to instructors and researchers who are looking to implement the collaboration approach, in deciding which mode is more effective and suits their learners better, or perhaps deciding whether a combination of the two modes would be the best route to go.

7.12 Chapter summary

This chapter had explicated how participants collaborated in the face-to-face and computer-mediated mode, and the reasons why. Furthermore, the comparison of both modes helped to illustrate the extent of the influence of mode of collaboration as well as

other factors in shaping the participants' collaboration. This helps to inform instructors better in their consideration of which mode of collaboration is suitable for their learners. In the next chapter, I will summarise the main findings of this study, and discuss the implications for further research.

Chapter 8. Conclusion

8.1 Introduction

In this final chapter, I will first summarise the main findings of the study in relation to the research questions. Then, I will discuss the various implications of the study as well as its limitations. I will conclude the chapter with suggestions for further research.

8.2 Summary of main findings

This study was carried out with several purposes in mind. First, I wanted to provide a comprehensive understanding of collaboration processes that happened in an out-of-class context, in both face-to-face and computer-mediated mode. Secondly, I aimed to identify and delineate in detail, the factors that shaped the learners' collaboration. I am especially interested in finding out how each mode of collaboration influences the learners' collaboration, and the extent of the influence.

In what follows I will summarise the main findings in relation to each of my research questions.

RQ1. How do learners carry out an extended collaborative writing task in the out-of-class, face-to-face mode?

The findings of both face-to-face (F2F) groups illustrated the ways the learners collaborated in an extended task, out-of-class. In particular, both groups demonstrated three similar features that are paramount in collaboration, which were co-construction of task, peer scaffolding and negotiation of task. These features reflected the efforts of the group members to participate, construct the task, and assist their peers during collaboration. As such, this is an indication of the learners' abilities to work together autonomously, even without the instructor's presence.

In addition, the findings revealed several factors that influenced the collaboration. The most notable factor was the roles played by different group members during the course of the collaboration. This was a major finding as it was observed that the different roles the group members took on, such as group leader and sceptic, were crucial to an effective and successful collaboration.

Another notable factor was the inadvertent use of technology by the F2F groups' members, particularly the mobile chat application WhatsApp. The participants explained the necessity of technology use, especially on their mobile phones, for instant communication and convenience, and for mitigating the physical distance between the group members. This finding presents the reality of the present generation of learners, where technology use is ubiquitous. Thus, this suggests that computer-mediated tools may be a useful addition in face-to-face collaboration, and perhaps points the way to a blended approach in collaboration.

The third notable influencing factor was the number of group members. Having five group members seemed to bring several benefits to the learners' collaboration. They were able to generate more ideas, discuss and negotiate about task extensively, and help each other to focus on task during discussion. Although no concrete conclusion could be made, this finding adds to the literature on group size in collaborative work, which remains a contentious issue, and provide more information for the consideration of instructors who want to implement the collaboration approach in their class.

Besides the factors that influenced the learners' collaboration, another finding of the F2F groups concerned the group members' attention to language during the collaboration. Both groups had the highest occurrences of lexis-based LREs, which was the result of their extensive efforts in discussing and co-constructing the task together, even down to selecting the right words to write in the report.

Additionally, there was a new category of LREs, translation-based LREs, which was observed in both groups' collaboration. The translation-based LREs occurred when learners translated a word or an idea from their shared L1 to English, or vice-versa during discussion of the task. Therefore, although the translation happened when learners were discussing a lexical item or a grammar item, the act of translating indicated an extra step of process that the learners perform consciously to achieve certain purposes, such as to co-construct the task (e.g. Excerpt 4.15), or to ensure the understanding of other group members (e.g. Excerpt 4.16). In other words, the act of translating, rather than the lexical or grammar item that was being translated, was the linguistic focus of the learners in these episodes. This unique finding perhaps illustrated the reality of second language learning in countries where the L2 was not the dominant language. In out-of-class collaboration where instructor's supervision is minimal, the

duality of language use is a common occurrence as learners switch easily between their L1 and L2, and as a result, translation-based LREs will occur.

Lastly, the participants were also asked about their thoughts on their collaborative experience and collaborative work. It was found that the learners' emphasis in collaboration were equal contributions, good relationship between group members, and physical presence of group members. The learners also discussed the effect of pedagogical aspects of the task, such as having to read other group members' work and align their work with each other, which was an encouraging prospect for instructors looking to implement this approach. However, in terms of overall perception towards collaborative work, it was found that the participants were affected not only by this collaborative experience, but also their previous collaborative experiences. This contributes new insights on how to encourage collaboration among the learners, as it appeared that one collaborative experience will not be sufficient in changing the learners' mind or convincing them. Thus, instructors will need to implement collaborative work at least a few times first, before they can expect to see the true perception of the learners towards collaborative work.

RQ2. How do learners carry out an extended collaborative writing task in the out-of-class, computer-mediated mode?

The computer-mediated collaboration (CMC) groups were relatively dissimilar from each other in terms of their collaboration processes, with peer scaffolding the only feature displayed by both groups. However, they shared a number of similarities in their ways of carrying out the collaboration, which pointed to the influence of the computer-mediated mode.

Firstly, the group members did not have much discussion about the content of the task as they focused more on task planning and coordination, such as dividing the work and checking with each other about task deadlines. Most of their discussions were short and succinct, unlike the depth and details observed with the F2F groups. It was found that the lack of paralinguistic cues and the fear of miscommunication and misunderstanding were the reasons the participants did not want to engage in detailed discussion of task.

Secondly, although they did not have detailed discussions, both groups' members were observed carrying out direct peer editing on each other's work, on Google Docs. The

editing done ranged from correcting language errors to rewriting of a whole section of the task. Furthermore, almost all the group members, regardless of their proficiency level, were involved in editing their peers' work. This indicated a potential benefit of computer-mediated collaboration, where the shared access seems to promote peer editing and provide equalizing effects where all group members could contribute and edit each other's work regardless of their proficiency. This was in contrast to face-to-face collaboration where there was little peer editing as the learners worked separately on different parts of the task, and editing of the task was only given to the most proficient member of the group.

Thirdly, both CMC groups were observed utilising both synchronous and asynchronous modes of interaction at the same time during their collaboration processes. As they worked on the task on Google Docs, the group members communicated with each other on Google Hangout or WhatsApp chat, discussing about the task and asking for help. This finding showed the importance of providing learners access to both forms of communication when doing computer-mediated collaboration.

Fourthly, in both groups, there were several failed attempts by the group members to seek help from their peers. The reason for this was probably because other group members were not online at the same time. Nevertheless, this finding informed a potential shortcoming of computer-mediated collaboration, as the detached nature of the mode may cause difficulties for learners to seek assistance or support from their peers during collaboration.

Finally, in terms of patterns of interactions, both groups exhibited different patterns from their face-to-face counterparts. Group C1 showed leader/loafer pattern of interaction, while group C2 demonstrated cooperative pattern of interaction. The different patterns of interactions signified the effects of mode of collaboration in influencing the way learners collaborate. While a cooperative pattern of interaction had been observed in computer-mediated collaboration (e.g. Rouhshad & Storch, 2016; Tan et.al, 2010), the leader/loafer pattern adds to the growing categories of patterns of interaction observed in computer-mediated collaboration.

Aside from the learners' collaboration process, the possible factors that influenced their collaboration were also observed. It was found that, in addition to the mode of communication, the attitudes of the group members were also influential. The

comparison of group C1 and C2 revealed how the differing attitudes among both groups' members, led to unequal contributions and affective conflict in group C1, and equal contribution and friendly relationships in group C2. Other factors that influenced collaboration included the pedagogical aspects of task, where the periodic deadline for submission of drafts set by the instructor proved to be effective in getting the learners to work on the task. This finding showed that the mode of collaboration is not the only factors that shaped the learners' collaboration, with other factors were also quite or equally influential.

Another finding of the CMC groups relates to the learners' attention to language. In contrast with the F2F groups, form-based LREs and discourse-related LREs were the highest categories in group C1 and group C2 respectively. This finding demonstrated how the shared access to the task, which was given to the CMC group members, allowed them to carry out more peer editing and made bigger changes, such as sentence level and structural level revisions, as compared to the face-to-face groups.

The last enquiry for the computer-mediated groups was their perception towards computer-mediated collaborative writing. Overall, the participants had mixed responses. It was interesting to note that group members who were more proficient preferred computer-mediated collaboration while their peers who were of weaker proficiency, preferred face-to-face collaboration. This suggested a possible link between the learners' proficiency level, and their preferences for different modes of collaboration. Thus, this is worth exploring further, and should also be a consideration for instructors who are looking to implement the collaboration approach in either mode.

RQ3. What are the affordances and constraints of face-to-face and computer-mediated collaborative writing in out-of-class, English for technical writing context?

The comparative discussion in Chapter 7 revealed that F2F collaboration encouraged more detailed discussion about the task, especially about the content of the task. The physical presence of the group members and the immediacy of responses allowed for extensive, lengthier discussion as well as negotiations among group members. Further, it also allowed for more comprehensive peer support than was apparent in the CMC groups' interactions. However, the constraint of the face-to-face mode was that once the work had been divided, the group members mostly focused on their own parts of the

task and would not have access to other group members' work. Only the group member who was tasked with compiling and editing the whole document would see the whole written product.

As for the computer-mediated mode, the physical distance and lack of paralinguistic cues during interaction made it harder for the group members to have detailed discussion about the task. There was also less peer support among the group members. However, their shared access to the task allowed the group members to see and be aware of each other's progress at all times. This encouraged peer editing among all group members, regardless of their proficiency. The shared access also enhanced the group members' sense of shared ownership, and they welcomed feedback and revision from the other members with no qualms as well as having no problem revising other group members' work.

RQ4. What are the factors, besides mode of collaboration, that affect out-of-class face-to-face and computer-mediated collaborative writing?

As discussed in the preceding paragraphs, the findings indicate that the roles the group members took on during collaboration, their attitudes, their proficiency level, and the pedagogical aspects of the task, were the other factors that also played a part in shaping the learners' collaboration in both modes.

8.3 Implications of study

This study has several implications, for methodology, literature and pedagogy. In terms of methodology, this study is one of the few studies that investigated extended, out of class collaboration, possibly because of the difficulties in collecting data. However, the longitudinal nature of the study allowed time for the participants to familiarise themselves with the situation; and the out-of-class context, where the learners were working on their own, allowed for the capture of genuine and naturalistic interactions and collaboration between the group members. Additionally, I employed comprehensive methods of data collection, where I gained full access to the learners' collaboration process and interviewed the learners individually three times through the course of the collaboration. Thus, I was able to gain a fuller understanding of the collaboration process, which helped me to see features that might have been previously unnoticed,

such as the roles the group members took on during collaboration, which were important for their collaboration.

Another methodological implication relates to computer-mediated collaboration. Besides the observation that learners needed both synchronous and asynchronous modes of interaction during their collaboration, this study also showed that both computer and mobile applications were used extensively by the learners and they had different functions. When the learners were in front of their laptop working on Google Docs, they used Google Hangout. However, when they were in class or outside their rooms, WhatsApp, installed on their phones, was essential for discussing the task. In addition, the majority of the learners had positive perceptions about Google Docs, which suggested that it may be a suitable tool for computer-mediated collaboration.

In terms of literature, this study resulted in several new insights about face-to-face and computer-mediated collaboration. The revelation about the different roles the group members took on during collaboration was important and requires further investigation to discover more about role distribution in collaborative work. As for computer-mediated collaboration, the discovery of the learners' direct peer editing was an interesting finding, especially regarding its equalising effect between learners of different proficiency levels and enhancing the sense of shared ownership. Additionally, the comparative discussion of both modes helped to illuminate the strengths and shortcomings of each mode in great detail. This helped to inform the literature on collaborative work, especially in the L2 context.

Next, an important aim of this study is to inform pedagogy in terms of implementing collaboration in different modes, and several pedagogical implications can be derived from the findings. Firstly, computer-mediated collaboration is a feasible alternative to face-to-face collaboration, particularly for extended, out-of-class tasks. The shared access to the task at all times by all group members promotes collaboration and a sense of accountability, which is sometimes lacking in face-to-face collaboration. However, the detached nature of computer-mediated mode may not provide adequate support for low-proficiency learners, who may need more constant and immediate feedback and assistance. Secondly, periodic monitoring from an instructor is essential for out-of-class collaboration. The findings showed that regardless of mode of collaboration, the learners were most motivated by deadlines set by instructors to check their work. Many

episodes of changes and improvement to the task were also triggered by the feedback given by the instructor.

Thirdly, assessment of collaborative tasks needs to be extended to the process of collaboration, rather than just the usual practice of assessing the written outcome. Peer assessment can be an effective way to evaluate and also to motivate learners' participation and contribution to the collaboration, in the F2F mode. On the other hand, a significant advantage of the computer-mediated mode is the ability to see every contribution made by different group members during collaboration, which is very helpful when it comes to assessing the collaboration process. Thus, this can be an aspect of consideration for instructors. Fourthly, the use of L1 is a contentious issue in L2 classroom, and in L2 collaboration. This study found that for low-proficiency learners, L1 was a crucial aid for them in understanding the task and subsequently participate in the collaboration process effectively. Furthermore, in out-of-class collaboration, it is likely to be difficult to control what language the learners should use when doing the task. Thus, as this study found, the learners' use of L1 may not be detrimental to the collaboration process, though of course, if possible, learners should be encouraged to practice communicating in their L2 as much as possible.

Fifthly, preparation of the learners before implementing collaborative work is paramount. The learners may lack awareness of the purpose of collaborative work, or have reservations about collaborative work due to prior collaborative experiences, and that will affect their attitudes towards doing the collaborative task. It is up to the instructor to inform learners of the purpose and benefits of collaboration, and to prepare the learners by informing them of the different roles they can take on during collaboration to make sure the process can proceed smoothly. Finally, the discovery that the learners from both modes ended up using a combination of both F2F and CMC modes perhaps points the way to instructors planning and using a combination of both modes for different stages of collaboration, so as to reap the benefits they each offer. This is especially relevant for courses that utilise extended, out-of-class tasks, such as distance learning.

Lastly, this study is important for educators in Malaysia and other similar ESL contexts, where technological advancement is perhaps not as advanced as other countries. The feasibility of CMC collaboration, despite the technological and Internet access

constraints, as well as the learners' enthusiasm, paints a positive picture for the implementation of technology in L2 classrooms. It also informs all considerations required for implementation of the approach, which will hopefully spark more interest and encourage more studies in the future.

8.4 Limitations of study

There are several limitations in this study. Firstly, my comprehensive focus on four groups of learners for both modes of collaboration meant that I gained in-depth detail and understanding about their collaboration process, but it limited the number of generalisations that I could make.

Secondly, my decision to entrust the face-to-face groups with the voice recorders to self-record their discussions gave the learners agency to decide how much they wanted to share with me, and as a result, I obtained more authentic and voluntary data. However, due to reasons previously discussed, group F2 did not record many of their interactions, and the data obtained is small compared with group F1. Thus, the findings discussed might not have fully reflected the complete understanding of the collaboration process that occurred between the group members.

Thirdly, for computer-mediated collaboration, many of the participants had raised the issue of Internet access being a problem, which caused some inconvenience to them. Thus, this issue might have influenced the nature of collaboration of both computer-mediated groups, and their resulting interactions may not reflect fully the nature of computer-mediated collaborative writing.

Fourthly, although I have identified and discussed several factors that were influential in shaping the learners' collaboration in both modes, I could not investigate further the influence of a few other factors, such as the gender of the learners, and the role of learners' L1, which have been discussed as possible influencing factors in the literature. Perhaps these can be included in directions for future research.

Lastly, Malaysia is a unique research context. The multilingual background of the participants and myself as the researcher, the unique status of English in Malaysia, and the disparity of exposure and proficiency of English in different parts of the country, all played a part in influencing the process of this study. Thus, what applies in this study, in

terms of research designs and methods, might not apply elsewhere in a different context.

8.5 Future research possibilities

Out-of-class collaboration is still an under-explored area of research. This study has shown that there is a lot of potential for the approach, especially in the field of technical writing, where many of the tasks were designed to be similar with workplace writing. Hence, more studies are needed to find out more about the best way to implement the approach and what kind of support should be given to the learners.

Among the factors that were found to be influential of the learners' collaboration, a prominent factor is the different roles played by different group members. To my knowledge, very little has been discussed about this in the literature. More studies are needed to investigate the extent of the effect and the variety of roles the group members take on, consciously or subconsciously, when they participate in collaboration with their peers, whether in face-to-face or computer-mediated mode.

The emerging area of computer-mediated collaborative writing is exciting, and this study have shown that it has the potential to be an alternative for face-to-face collaboration. Future studies can explore more about other computer-mediated tools and how that can help improve the learners' collaborative experiences.

This study has focussed extensively on the collaboration process of the learners; thus the next step is to find out whether what the learners did in the collaboration process is reflected in the collaboration outcome. Hence, future studies can look into learners' collaboration outcome to find out whether and how much of their discussion was incorporated into the actual written output, particularly in extended, out-of-class collaboration.

Lastly, this study has shown that both modes of collaboration have their respective strengths and shortcomings, and the reality is, the learners themselves were already utilising both modes in their collaborative work. Thus, future studies can explore the option of a blended approach, which involves combining the use of different modes at different times and stages of collaboration, to investigate how to create the ideal circumstances for effective and successful collaboration.

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Appendices

Appendix 1: Ethics approval memorandum

MEMORANDUM

Phone 0-4-463 5676
 Fax 0-4-463 5209
 Email Allison.kirkman@vuw.ac.nz

TO	Shih Min Loo
COPY TO	Derek Wallace Jean Parkinson
FROM	Dr Allison Kirkman, Convener, Human Ethics Committee
DATE	19 September 2014
PAGES	1
SUBJECT	Ethics Approval: 21305 Investigating Face-to-face and Computer-mediated Collaborative Writing in the Tertiary ESL Classroom: A Comparative Study

Thank you for your application for ethical approval, which has now been considered by the Standing Committee of the Human Ethics Committee.

Your application has been approved from the above date and this approval continues until 31 December 2016. If your data collection is not completed by this date you should apply to the Human Ethics Committee for an extension to this approval.

Best wishes with the research.

Allison Kirkman
Human Ethics Committee

Appendix 2: Information sheet for participants

PARTICIPANT INFORMATION SHEET (Face-to-face groups)

Title of the research:

Investigating Face-to-Face and Computer-mediated Out-Of-Class Collaboration in an English for Technical Writing Course in Malaysia

Hi, my name is Shih Min Loo. I am undertaking this research project as part of the requirement to obtain a doctoral degree in Applied Linguistics at Victoria University of Wellington (VUW), New Zealand. Part of my PhD project is to find out more about what happens when learners work in groups to complete a collaborative writing task in the tertiary ESL classroom. This research project has received approval from the VUW Human Ethics Committee.

I would like to invite you to participate in this study. Should you agree, I will observe you as you work on the collaborative writing task of the UVW312 English for Technical Communication course with your group members throughout the semester. You will be asked to record all the discussions that you have with your group members about the task and I will also have access to the drafts of your task. Your participation will not in any way, influence your marks and grade for the course.

Also, if you agree to be my case study participant, I will be analysing your contributions and interactions with other group members as well as interviewing you on your collaborative writing experience. The interviews will be scheduled at a time that is convenient for you.

All the data gathered will be reported on a confidential basis. Only me and my supervisors, Dr. Derek Wallace and Dr. Jean Parkinson, will have access to the data.

The results of the research will be anonymously presented in my thesis. You will not be identified in any way in the thesis, which will be publicly available. The research may also be presented at academic conferences, and published in academic journals, or books, also without identifying any participants. All collected data will be destroyed three years after the end of the project.

Since your participation in this study is voluntary, you are free to decline without giving any reason and withdraw any data provided. The period of withdrawal is from 10/3/2015 to 10/4/2015, one month after the semester starts. In that case, the data collection process will be stopped immediately.

If you have any questions or would like to receive further information about the project, please contact me at the e-mail address provided below. Thank you for your cooperation.

CONTACT DETAILS

Researcher:

Shih Min Loo

shihmin.loo@vuw.ac.nz

School of Linguistics and Applied Language
Studies

Victoria University of Wellington

PO Box 600, Wellington 6140

New Zealand

Phone: +64 4 463 5600

Supervisors:

Dr. Derek Wallace

derek.wallace@vuw.ac.nz

Dr. Jean Parkinson

jean.parkinson@vuw.ac.nz

PARTICIPANT INFORMATION SHEET (Computer-mediated groups)

Title of the research:

Investigating Face-to-Face and Computer-mediated Out-Of-Class Collaboration in an English for Technical Writing Course in Malaysia

Hi, my name is Shih Min Loo. I am undertaking this research project as part of the requirement to obtain a doctoral degree in Applied Linguistics at Victoria University of Wellington (VUW), New Zealand. Part of my PhD project is to investigate what happen when learners work in groups to complete a collaborative writing task using only the computer and the Internet in the tertiary ESL classroom. This research project has received approval from the VUW Human Ethics Committee.

I would like to invite you to participate in this study. Should you agree, I will observe you as you work on the collaborative writing task of the UVW312 English for Technical Communication course with your group members throughout the semester. You will be asked to discuss and carry out the task on the computer, using Google Docs. Training sessions will be arranged for you and your group members before the task starts. Google Docs automatically saves the discussions and writing drafts that you make and all the information will form part of my research. I will have access to all this information throughout the collaboration process. Your participation will not in any way, influence your marks and grade for the course.

Also, if you agree to be my case study participant, I will be analysing your contributions and interactions with other group members as well as interviewing you on your online collaborative writing experience. The interviews will be scheduled at a time that is convenient for you.

All the data gathered will be reported on a confidential basis. Only me and my supervisors, Dr. Derek Wallace and Dr. Jean Parkinson, will have access to the data.

The results of the research will be anonymously presented in my thesis. You will not be identified in any way in the thesis, which will be publicly available. The research may also be presented at academic conferences, and published in academic journals, or books, also without identifying any participants. All collected data will be destroyed three years after the end of the project.

Since your participation in this study is voluntary, you are free to decline without giving any reason and withdraw any data provided. The period of withdrawal is from 10/3/2015 to 10/4/2015, one month after the semester starts. In that case, the data collection process will be stopped immediately.

If you have any questions or would like to receive further information about the project, please contact me at the e-mail address provided below. Thank you for your cooperation.

CONTACT DETAILS

Researcher:

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Dr. Jean Parkinson

jean.parkinson@vuw.ac.nz

Appendix 3: Participant consent form

School of Linguistics and Applied Language Studies
Victoria University of Wellington
PO Box 600, Wellington 6140, New Zealand
Phone: +64 4 463 5600

Researcher: Shih Min Loo (shihmin.loo@vuw.ac.nz)
Supervisors: Dr. Derek Wallace (derek.wallace@vuw.ac.nz)
Dr. Jean. Parkinson (jean.parkinson@vuw.ac.nz)

Title of the research:

Investigating Face-to-Face and Computer-mediated Out-Of-Class Collaboration in an English for Technical Writing Course in Malaysia

CONSENT FORM

1. I am clear about the purpose and procedure of this study.
2. I have been given the opportunity to ask and I have had my questions about the study answered to my satisfaction.
3. I understand that I have the right to ask further questions at any time.
4. I agree to be a research participant for this study and I agree to provide the information as required in the information sheet to the researcher.
5. I understand that any information I give will be completely confidential and pseudonyms will be used.

Participant's Name : _____

Participant's Signature : _____

Date: / /

Appendix 4: Transcription notation system for research data
Transcription notation system

Symbol	Notation and explanation of use
Words in bold	Spoken in English
...	Redacted parts of interaction for purpose of conciseness
..	Short pause
[]	Researcher's note or explanation
xxx	Indiscernible text
a-b-c-d-e-f	Speaker is spelling out a word
?	Speaker is asking a question or speaking in rising intonation
Upper case e.g. WATER	Emphasis
R	Researcher

Appendix 5: Participants' Peer assessment form

Peer Assessment Form

Please assess the contributions of each of your group members by rating them in each of the category according to the scale below.

Rating scale

Excellent - 4
Good - 3
Moderate - 2
Weak - 1

Categories of assessment

1. Participation - Does he/she **come to every group meeting**?
Does he/she **join in discussion** of the project paper?
Does he/she **give ideas** during discussions?
Does he/she **listen to ideas** from other members?
2. Contribution - Does he/she **contribute** to the project paper?
Does he/she **complete his/her part** as assigned?
Does he/she **produce good quality work** for the project paper?
3. Time management- Does he/she **come to meetings on time**?
Does he/she do and **submit his/her work on time**?
4. Giving feedback - Does he/she **read other's people parts** on the project paper?
Does he/she **give feedback** on other group members' part for the project paper?

Group member's name	Participation	Contribution	Time management	Giving feedback
1.				
2.				
3.				
4.				

...Continued the page behind

Additional comments

Group member 1

Group member 2

Group member 3

Group member 4

This information will be kept PRIVATE & CONFIDENTIAL

Appendix 6: Questionnaire for face-to-face collaboration's participants

Collaborative Writing Questionnaire

Hi, thank you for answering this questionnaire. The questions below are about your group work and collaborative writing experience. All information collected will remain confidential and be used only in my PhD research.

Instruction: Please tick the relevant answers.

Section 1: Group work experience

1. How many times have you carry out group work (e.g. oral discussion, oral presentation, written tasks, etc) before in university?

☐ Less than 5 times ☐ 5 to 10 times ☐ More than 10 times

2. Do you like working in groups?

☐ Very much ☐ Somewhat ☐ Neutral
☐ Not much ☐ Not at all

Why? _____

3. Do you think that group work is useful for your university learning?

☐ Yes ☐ No ☐ Not sure

Section 2: Collaborative writing experience

4. Have you tried collaborative writing before in university?(where you work on a **writing task** with other people to produce a **written work**)

☐ Yes ☐ No

5. If yes, how many times have you tried **collaborative writing**?

6. Have you carried out collaborative writing in **English language** before?

☐ Yes ☐ No

Section 3: Collaborative Writing Process

6. When you do group work/ collaborative writing, besides meeting face-to-face, do you use **other methods** to communicate with your group members?

☐ Yes ☐ No

7. If yes, what are the methods that you use to communicate with your group members?

(You can choose more than one answer)

☐ Facebook ☐ Email ☐ Phone calls

☐ Text messages ☐ Social media apps, e.g. Whatsapp & WeChat

Other methods _____

8. What do you **like** about working in a group?

9. What do you **dislike** about working in a group?

Section 4: General information

1. Your Nickname: _____

2. MUET result: _____

3. Foundation English course

Taken: Sem _____, Year 20____

Result: _____

Thank you!! ☺

Appendix 7: Questionnaire for the computer-mediated collaboration's participants

Computer- mediated Collaborative Writing Questionnaire

Hi, thank you for answering this questionnaire. The questions below are about your group work and collaborative writing experience. All information collected will remain confidential and be used only in my PhD research.

Instruction: Please tick the relevant answers.

Section 1: Group work experience

10. How many times have you carry out group work (e.g. oral discussion, oral presentation, written tasks, etc) before in university?

☐ Less than 5 times ☐ 5 to 10 times ☐ More than 10 times

11. Do you like working in groups?

☐ ☐ ☐
☐ ☐ ☐
 Very much Somewhat Neutral Not much Not at all

Why? _____

12. Do you think that group work is useful for your university learning?

☐ Yes ☐ No ☐ Not sure

Section 2: Collaborative writing experience

13. Have you tried collaborative writing before in university?(where you work on a **writing task** with other people to produce a **written work**)

☐ Yes ☐ No

14. If yes, how many times have you tried **collaborative writing**?

6. Have you carried out collaborative writing in **English language** before?

☐ Yes ☐ No

Section 3: Collaborative Writing Process

7. When you do group work/ collaborative writing, besides meeting face-to-face, do you use **other methods** to communicate with your group members?

☐ Yes ☐ No

8. If yes, what are the methods that you use to communicate with your group members?

(You can choose more than one answer)

☐ Facebook ☐ Email ☐ Phone calls

☐ Text messages ☐ Social media apps, e.g. Whatsapp & WeChat

Other methods _____

Section 4: Computer experience

9. How often do you use your computer/laptop?

☐ 1- 2 days per week ☐ 3- 4 days per week

☐ 5-6 days per week ☐ Everyday

10. How do you rate your computer skill?

☐ Poor ☐ Average ☐ Good ☐ Excellent

11. Have you **heard** of Google Docs before?

☐ Yes ☐ No

12. Have you **use** Google Docs before?

☐ Yes ☐ No

13. How **excited** are you to try online collaborative writing using Google Docs?

☐ Very much ☐ Somewhat ☐ Neutral ☐ Not much ☐ Not at all

14. How do you usually work on your assignments?

☐ Pen & Paper ☐ Laptop
☐ Tablet/iPad ☐ Mobile Phones

Others _____

Section 4: General information

4. Your Nickname: _____

5. MUET result: _____

6. Foundation English course

Taken: Sem _____, Year 20_____

Result: _____

Thank you!! ☺

Appendix 8: Semi-structured interview questions for face-to-face collaboration participants

Semi-structured interviews- Face-to-face collaboration groups

Interview 1

Warm-up questions

1. Which state did you come from?
2. Do you like it here?
3. What do you usually do in your free time?

Interview questions

4. Comparing between individual and group work, which do you prefer?
5. From your experience, what is your usual way of doing group work?
6. Do you like it?
7. Have you experienced any conflict before while doing group work?
8. What do you learn when doing group work?

Interview 2

1. How do you feel about this group work so far?
2. Is everyone contributing to do the task?
3. Do you give feedback to your group members and do they give you feedback?
4. How are you interacting with your group members?
5. Are there any conflicts so far in your group?
6. Are you satisfied with the group work so far?
7. Is there anything you or your group members can do to improve the process?
8. Any additional comment?

Interview 3

1. What do you think of this group work experience? Is this a successful group work in your opinion?
2. What are the reasons this group work was successful/unsuccessful?

3. In this group work, what are the things that you think did not work well?
What are the things that can be done to improve this group work in the future?
4. How many times your group met this semester to discuss the assignment?
5. Do you have a leader in this group or it is equal among all members?
6. Besides meeting face-to-face, do you use other methods to communicate and discuss the assignment? Why is that?
7. Did you read other group members' parts of the task besides your own? Give feedback?
8. What is your perception about collaborative work after this experience?
9. Any last comments about this collaborative experience?

Appendix 9: Semi-structured interview questions for computer-mediated collaboration participants

Semi-structured interviews- Computer-mediated groups

Interview 1

Warm-up questions

1. Which state did you come from?
2. Do you like it here?
3. What do you usually do in your free time?

Interview questions

Previous experience in group work

1. Do you like doing group work?
2. How do you usually carry out group work?
3. Have you experience conflict before when doing group work?
4. What do you learn when doing group work?

Computer-mediated collaboration

5. You have started using Google Docs the collaborative task ya, how is it so far? Is it easy to use?
6. Any problem that you've faced so far? Technical issue?
7. How about Google Hangout?
8. Have you downloaded the mobile app to use on your phone?
9. Do you work on Google Docs using your laptop or mobile phone?
10. As you are aware, by joining my research, you have to do all the assignment and discussions totally online, using Google Docs and Hangout, without meeting face-to-face. Are you able to avoid meeting face-to-face so far?
11. Is it difficult not being able to meet face-to-face?
12. Do you like using computer-mediated collaboration so far?

Interview 2

1. How do you feel about doing the collaborative task on Google Docs and Hangout so far?
2. Is it easier to use Google Docs now? Is the manual I gave you useful?

3. Comparing your other experiences of collaboration, do you think GD helps or does not help make doing collaborative work better?
4. Is everyone contributing to the task so far?
5. In terms of interaction, how does it feel to communicate with your group members online only when you discuss the assignment? Is it difficult to not talk face-to-face?
6. Are you satisfied with the group work so far?
7. Do you think there's anything you or your group members can do to improve the collaboration process?
8. Any additional comment?

Interview 3

1. How does it feel after you have tried out computer-mediated collaborative writing? Did you like it?
2. What are the advantages of computer-mediated collaborative writing?
3. What are the disadvantages of computer-mediated collaborative writing?

Group dynamics

4. What is the approach of your group in doing this collaborative task?
5. Did every group member contribute equally?
6. While you were doing the task, did you read or give feedback to other members' part or you just focus on your own part?
7. How did you and your group members communicate to discuss the task? Google Hangout? Whatsapp?
8. Did you meet face-to-face? How many times? Why did you meet F2F?

Computer-mediated collaboration

9. Do you think Google Docs and hangout are good tools for doing collaborative work? Why?
10. Were the tools difficult to use? What were the difficulties you faced when using the computer-mediated tools?
11. What do you like most about doing collaborative work in the computer-mediated mode?

12. What do you not like about doing collaborative work in the computer-mediated mode?
13. Overall, do you think this group work is a successful experience?
14. Why? What makes it successful?
15. What are the reasons it is not successful?
16. What do you think can be done to improve this online collaborative writing experience?
17. If given a choice next time, would you still choose computer-mediated collaboration or you prefer face-to-face collaboration?
18. Any final comments?

Appendix 10: Manual about Google Docs and Google Hangout usage for the computer-mediated participants

Google Docs + Google Hangout Tutorial

Google Docs

1) There are two ways to access Google Docs.

a. Log on to drive.google.com

b. Log on to your gmail account, go to the top right corner, click on the **apps** icon, and then click **Drive**.

Google Drive

Google Drive is the place where all your **Google Documents** are stored. It can also function as an online storage for you to store all your files and folders.

- For this course, EUW312 English for Tech Comm, all your assignments can be found under the tab ***Shared with me**.

Google Docs

Google Docs is a free online program that allows users to **create documents, spreadsheets and presentations online** and **share them with others for collaboration**. The best part of Google Docs is that it can be accessed anywhere and everywhere as long as there is Internet connection.

1. The layout and features of Google Docs are similar to **Microsoft Word**.
2. Google Docs automatically **saves every 4 seconds**, thus reduces the risk of losing information.
3. Google Docs **can be shared with many people**, providing opportunities for collaboration.
4. Google Docs **track and save every contributions** and changes made, so the contribution made by each person can be seen and evaluated fairly.
5. Google Docs has **mobile application** that can be downloaded from Google Play Store or App Store for added convenience of use.

Giving Comments

- A. First, put the cursor at the part that you want to comment **OR** highlight the part that you want to comment.
- B. Go to **Insert -> Comment** **OR** Right click, and choose **Comment**.
- C. You can also click on the **Comment icon** (Circled below).

- D. As you can see above, once you have commented, a tab will appear, with your name, and your comment.
- E. If you want to reply to a comment posted by other people, click on the comment tab, and then a **Reply option** will appear (see above). Type in your reply and then press Enter to publish your reply.

- F. After you are finished with the comment, click on the **Resolve** button, and the comment will disappear.

- G. All comments are saved automatically. You can find old comments by clicking on the **Comment** tab located at the upper right side of Google Docs interface. (See above).

Using Research Tools

One of the advantages of Google Docs is that it comes with several useful tools that you can use to help you in doing your work.

- A. On your Google Docs page, click on **Tools**, and then **Research**. A new tab will appear at the right side of the page.

- B. Type in your search item (e.g. proposal report) and by clicking on the tiny arrow at the side, you can search for anything, such as **images, or meaning of the word, or related quotes and so on.**
- C. This will be especially useful in helping you **find references** for your project paper. (You need at least 4, remember?)

How to Create Graphics and Visuals on Google Docs.

For your project paper, **graphics and visuals play an important role**. Unfortunately, you cannot create graphics on Google Docs.

However, you can create it at somewhere else, e.g. Microsoft Excel, and then save the graphs as image before inserting it into Google Docs.

Another option is to use Google Spreadsheet, also located in Google Drive.

Option 1: Use Microsoft Excel

A. If you want to use Microsoft Excel, here are the steps to save your graphs as image (.png, .jpg, .bmp etc.) so that you can insert them in Google Docs.

How to copy a chart to a graphics program and save as picture

After you have created the graph,

1. Right-click somewhere on the **chart border** and click **Copy**. Do not place the cursor within the chart; this may select individual elements rather than the whole graph and you won't see the Copy command.

Right-click on the chart border to copy it.

2. Open **Paint** and **paste the chart** by clicking the Paste icon on the Home tab or pressing Ctrl+V:

3. Now all that is left to do is **save your chart as an image file**. Click the "**Save as**" button and choose from available formats (.png, .jpg, .bmp and .gif). For more options, click the "Other formats" button at the end of the list.

It is that simple! In a similar fashion you can save your Excel chart to any other graphics painting program.

Taken from

<https://www.ablebits.com/office-addins-blog/2013/08/27/save-excel-chart-as-image/>

Option 2: Use Google Spreadsheet

Google Spreadsheets is an online app just like Google Docs. Just as Google Docs is similar to Microsoft Word, Google Sheets is similar to Microsoft Excel.

A. Go to Google Drive, and click on the **New** tab at the left side, and choose Google Sheets.

B. To create graphs and charts using Google Sheet, first key in your data, and then click on the **Insert** tab and then **Chart**.

C. The **Chart Editor** tab will open and here you can create the graphs that you want.

D. There are many types of graphics that you can choose by clicking on **More** or **Charts**.

E. Then, click on the **Customise** tab to name/label your graph. Then click **Insert**.

F. After you have created your graph, click on the graph, then click on **the arrow at the top right side** of the tab, and then **save image** to save the graph in (.png, .jpg, .bmp and .gif) image.

You will now be able to insert the graph in your Google Docs.

How to Insert Images in Google Docs.

A. First, go to Insert, then Image.

B. Then you can **drag and drop** the image or choose to **upload it** from your folders.

Google Hangouts

Google Hangout is an instant messaging and video chat platform that allows both private and group messaging between individuals around the world. It allows for real-time conversation as well as delayed communication where you can leave messages for your friends even when they are offline.

To have best access of Google Hangouts, you need to use **Google Chrome** as your web browser. Once you have install Hangouts on your laptop, the green coloured icon should appear in the top right corner of your Chrome browser.

Once you click on the icon, **Google Hangout** will pop up, and there you can access the message group that has been set up.

With Google Docs and Google Hangouts, you will be able to discuss with your group members as you work on your project paper at the same time.

- * If you have any problems, please let me know.
- * I believe that technology can enhance our learning experiences. So, I hope that you will take the time to explore and find out what are the many wonderful things that Google Docs can do.
- * Also, a gentle reminder that if you agree to participate in my research, it means that you will have to work on your project paper **completely online** for the whole semester, using only Google Docs and Hangouts, and/or WhatsApp. You **should not** meet face-to-face to discuss and work on your project paper.
- * Please try your best to make that happen.
Thank you. :)

Produced by Loo Shih Min
Victoria University of Wellington
April 2015